MANAWATU
DISTRICT COUNCIL

Asset Management Plan

Three Waters 2021

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Contents

1. EXECUTIVE SUMMARY

1.1 The Purpose of the Plan

Asset management planning is a comprehensive process ensuring delivery of services from infrastructure is financially sustainable.

This Asset Management Plan (AMP) details information about infrastructure assets with actions required to provide an agreed level of service in the most cost-effective manner while outlining associated risks. The plan defines the services to be provided, how the services are provided and what funds are required to provide over the 2021-2041 year planning period. The Asset Management Plan will link to a Long-Term Financial Plan which typically considers a 10 year planning period.

This plan covers the infrastructure assets that provide three waters to the Manawatū District Council.

The purpose of this Plan is to improve the stewardship of assets by Council on behalf of its customers and stakeholders and achieve compliance with statutory obligations. This plan specifically does that by:

- Demonstrating responsible stewardship of three waters infrastructure assets
- Identifying minimum lifecycle (long term) costs to provide the agreed level of service
- Improving understanding of service level standards and options
- Assisting with an integrated approach to asset management throughout the organisation
- Improving customer satisfaction and organizational image
- Managing the risk of failure to deliver the required level of service
- Supporting long term financial planning of the Council
- Clearly justifying forward works programmes
- Improving decision-making based on costs and benefits of alternatives.

1.2 Asset Description

The Council provides a variety of infrastructure to manage water supply, wastewater and stormwater within identified urban and rural areas. Three waters infrastructure assets provide a significant and essential service for residents and businesses within the Manawatū District Council area. The three waters function represents around 24% of Council's overall annual operating expenditure, with capital works also making up a large proportion of the Council's expenditure.

The following information provides an overview of the assets involved in the Manawatū District three waters activity. The information shown is collated here as a reference resource of the extent of the assets involved. The three waters infrastructure assets have a replacement value of $307,856,468.

Asset Register

Three waters assets are managed in the Assetfinda database. Over 47,852 individual assets or components are detailed in the database. The following table shows a summary of the Replacement Costs and Depreciated Replacement Costs of Asset Values for the Utilities.

Class Group	Replacement Value	Depreciated Replacement Value	Annual Depreciation Value
Water	$120,018,675	$61,607,128	$1,709,914
Wastewater	$119,543,793	$77,541,263	$2,017,766
Stormwater	$68,294,000	$38,973,120	$627,435
Total	$307,856,468	$178,121,511	$4,355,115

Assets Included in this Plan

An overview of the three waters assets owned by the Manawatū District Council are outlined in Tables 1-3 below.

Table 1 - Water Supply Service Summary

Scheme	Source	Treatment	Reticulation
Feilding	**Surface water:** • Ōroua River **Groundwater:** • Campbell Rd Bore • Newbury Line Bore	Almadale Treatment Plant (Surface Water) Awa St Treatment Plant (Groundwater)	On Demand Excluding Mt Taylor which is on a restricted supply
Sanson	Groundwater Fagan Street	Treatment Plant adjacent to the new bore	Restricted Supply
Rongotea	Groundwater	Rongotea Water Treatment Plant	On Demand
Hīmatangi Beach	Groundwater	Hīmatangi Beach Water Treatment Plant	On Demand
Stanway – Halcombe	Shallow bores adjacent to the Rangitikei River	Water Treatment Plant adjacent to bores	Rural water scheme Restricted Supply
Waituna West	Groundwater	Waituna West Water Treatment Plant	Rural water scheme Restricted Supply
Kiwitea Rural	Rural water scheme, Restricted Supply This scheme is operated entirely by a community committee and is not covered in this Asset Management Plan		
Ōroua No.1 Rural	Rural water scheme, Restricted Supply This scheme is operated entirely by a community committee and is not covered in this Asset Management Plan		

Table 2-Wastewater Service Summary

Scheme	Reticulation	Treatment	Within Centralisation Scope
Feilding	Gravity network (Excluding Mt Taylor which has a pressure system)	Feilding WWTP Dual land/surface water discharge system.	Yes – Destination Treatment Plant
Halcombe	Gravity network	Halcombe WWTP – Dual land/ surface water discharge	Yes
Sanson	Gravity network	Sanson WWTP – Dual land/ surface water discharge	Yes
Rongotea	Gravity network	Rongotea WWTP – Discharge to surface water	Yes
Cheltenham	Gravity network servicing onsite septic tanks.	Cheltenham WWTP – Discharge to land	Yes
Kimbolton	Gravity network servicing onsite septic tanks.	Kimbolton WWTP – Discharge to surface water	Yes
Awahuri	Gravity network servicing onsite septic tanks.	Awahuri WWTP – Discharge to surface water	Yes
Hīmatangi Beach	Pressure system with onsite pump stations.	Hīmatangi Beach WWTP – Discharge to land	No

Table 3 - Stormwater Service Summary

Scheme	Reticulation	Treatment	Within Centralisation Scope
Feilding	Well developed, urban stormwater network	Targeted stormwater rate	Harmonised stormwater rate
Rongotea	Formal, village stormwater network	Targeted stormwater rate	Harmonised stormwater rate
Sanson	Formal, village stormwater network	Targeted stormwater rate	Harmonised stormwater rate
Halcombe	Village stormwater service	No service	Harmonised stormwater rate
Cheltenham	Village stormwater service	No service	Harmonised stormwater rate
Hīmatangi Beach	Village stormwater service	No service	Harmonised stormwater rate
Tangimoana	Village stormwater service	No service	Harmonised stormwater rate
Bainesse	Rural Drainage Scheme	No change	
Maire	Rural Drainage Scheme	No change	
Makowhai	Rural Drainage Scheme	No change	
Ōroua Downs	Rural Drainage Scheme	No change	

Dwellings

Insurance No	Valuation Reference	Asset Description	Location
2315	14160/21010	Dwelling	341 Kawakawa Road, Feilding
2414	14160/07902	Dwelling	269 Kawakawa Road, Feilding
2649	14160/08000	Dwelling	223 Kawakawa Road, Feilding
2860	14160/08100	Dwelling	295 Kawakawa Road, Feilding

Asset Condition and Performance

Asset condition is a measure of an asset's physical integrity. Knowing the condition of an asset enables more accurate prediction of asset development, maintenance and renewal/replacement requirements.

The Manawatū District Council identifies the condition of the three waters infrastructure assets by the age of the asset, through visual targeted inspections (including sampling) and maintenance monitoring.

Targeted inspections are carried out on asset components that are considered critical to Council and the community, have the potential to impact on public health and safety; or where there is a specific requirement, for example to meet regulatory requirements or for asset acquisition, disposal, or justification. Targeted inspections of infrastructure assets are carried out by Council staff, or a specialist Consultant to identify the condition of specific asset components at intervals specified by the Utilities Manager or upon request.

To identify the general condition of its three waters assets Manawatū District Council undertakes the underground reticulation inspections, which are carried out by Council staff during works or as issues are identified. Maintenance monitoring is also carried out to identify the condition of infrastructure and any item(s) that need attention or could affect the integrity of the asset and the service it provides. Maintenance monitoring of stormwater includes:

- Underground reticulation inspections
- Inspection of manholes; and
- Visual stream inspections for obstructions (twice per year).

Condition Grading - Visual targeted inspections (including sampling), and maintenance monitoring provide both qualitative descriptions and quantitative grading of asset component condition. Condition grading supports the development, maintenance, and renewal/replacement of an asset by enabling more accurate prioritisation of forward works programmes. The International Infrastructure Management Manual (2011) provides guidance on assessing the condition of assets and approaches to grading the condition.

In line with this Manawatū District Council has developed a condition grading system to support identifying the condition of assets at the group level. Using this system, the assumed condition of assets are ranked from 1-5 as illustrated in Table 4 below.

Table 4

Grade	Condition	Description	Expected Proportion of network (%)
1	Very Good	Asset is structurally sound and in excellent physical condition. No work required	75%
2	Good	Asset is structurally sound and in acceptable physical condition. Minor work required (if any)	11%
3	Fair	Asset is structurally sound but shows deterioration. Moderate work required to return asset to agreed level of service	13%
4	Poor	Asset failure likely in the short term. Significant work required now to return asset to agreed level of service	0.5%
5	Very Poor	Asset has failed/is about to fail. Renewal/Replacement required Urgently	0.5%

Councils draft 2021 AMP initially described 48.42% of the network as N/A condition as listed in Council's Assetfinda database. As the assets condition was unknown, this percentage was placed under the 'very poor' category.

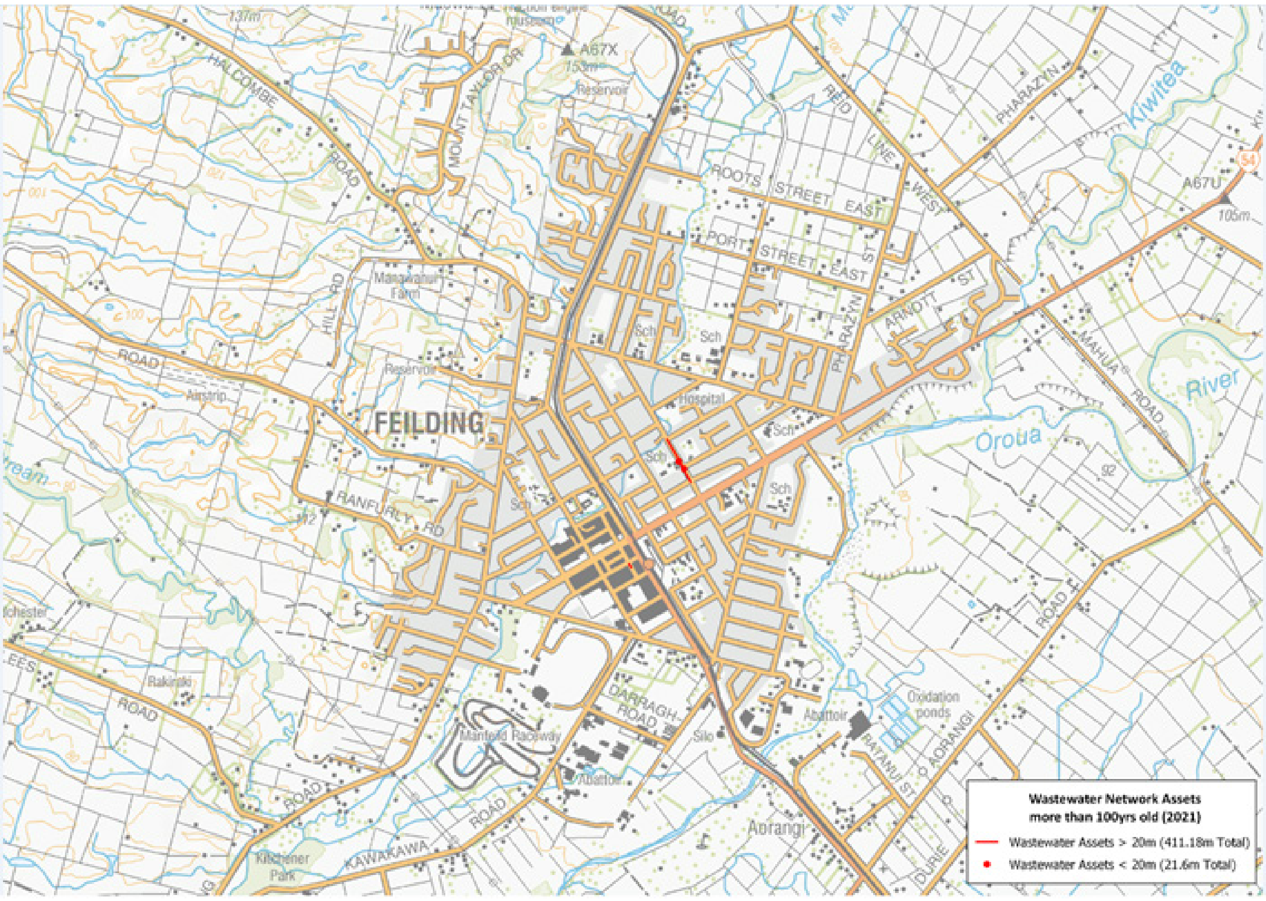
A recent manual review by staff was undertaken on Council's Assetfinda data on the age and material of the assets. It was found that the year 1931 had been used as a default date for sewer pipes and the material type of pipes did not match the age of the asset. This default setting resulted in a condition listing of N/A being applied to those assets.

Council staff were able to update this data by updating the age of the asset more accurately to when the material first became available.

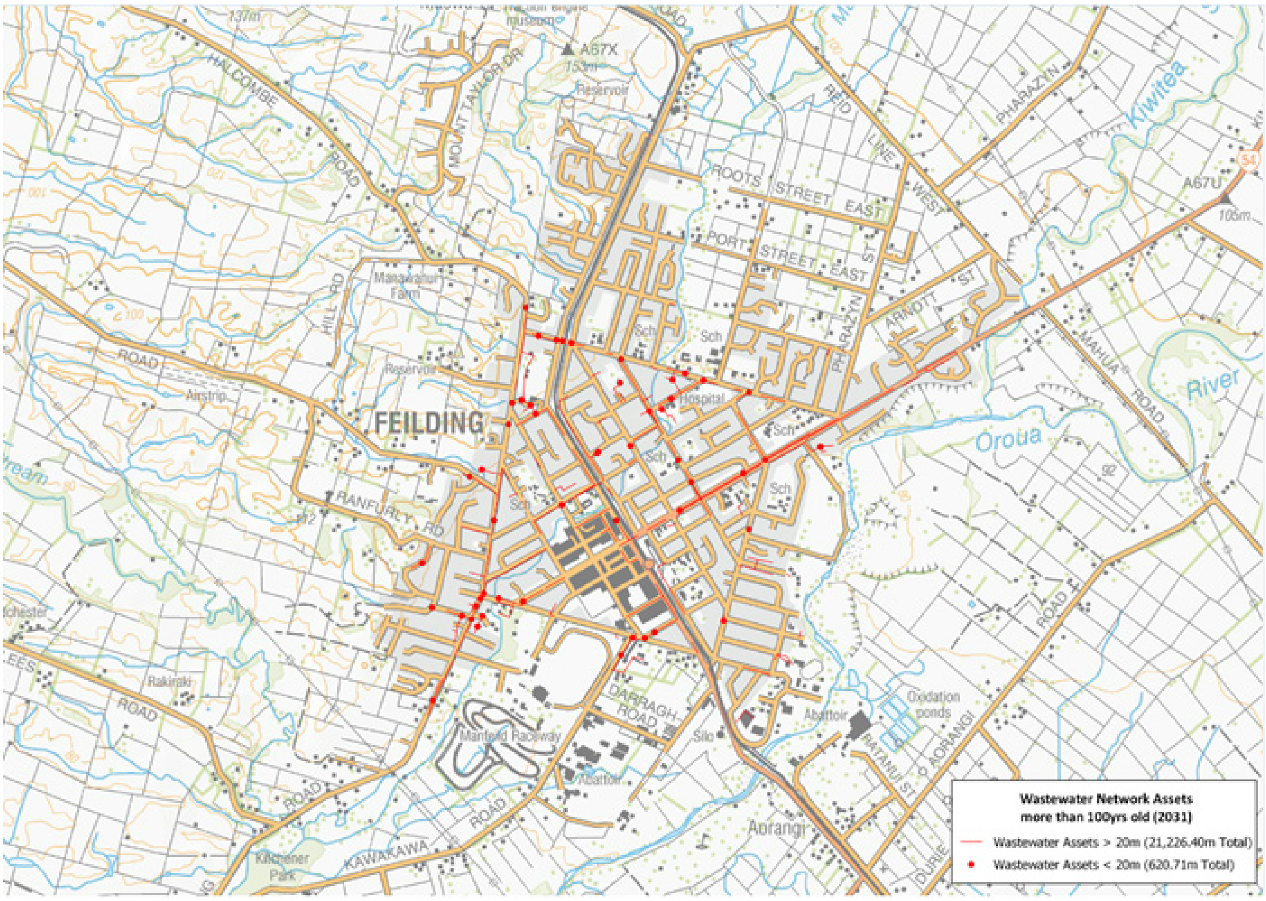
As a result of this manual review, staff were able to update Table 4 above giveng a higher level of confidence in the data integrity within Assetfinda, with the updates that have been made to the data.

There are still 1% of assets within the poor and very poor condition category however these are not critical assets. These assets are shown on the maps below.

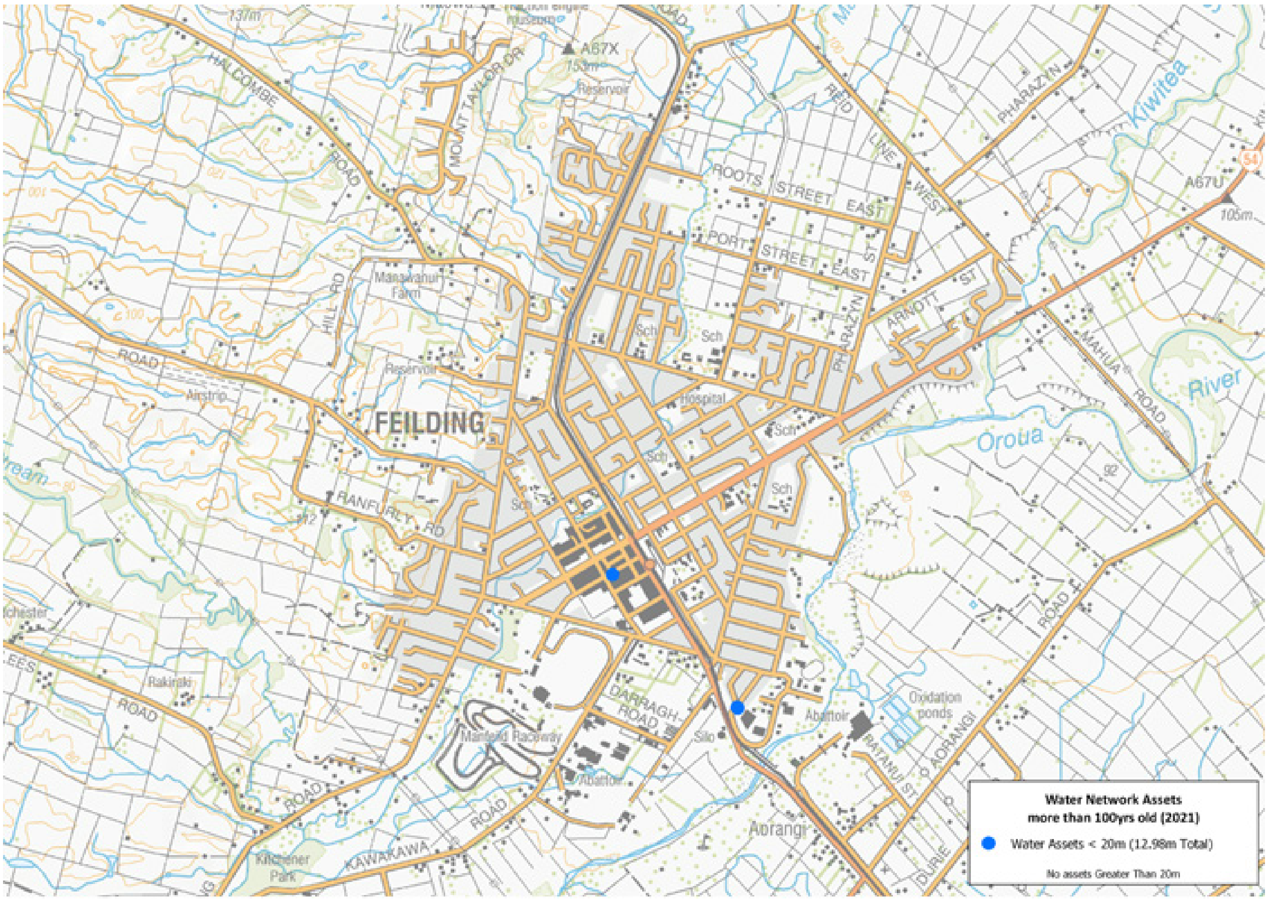
Map wastewater 2021



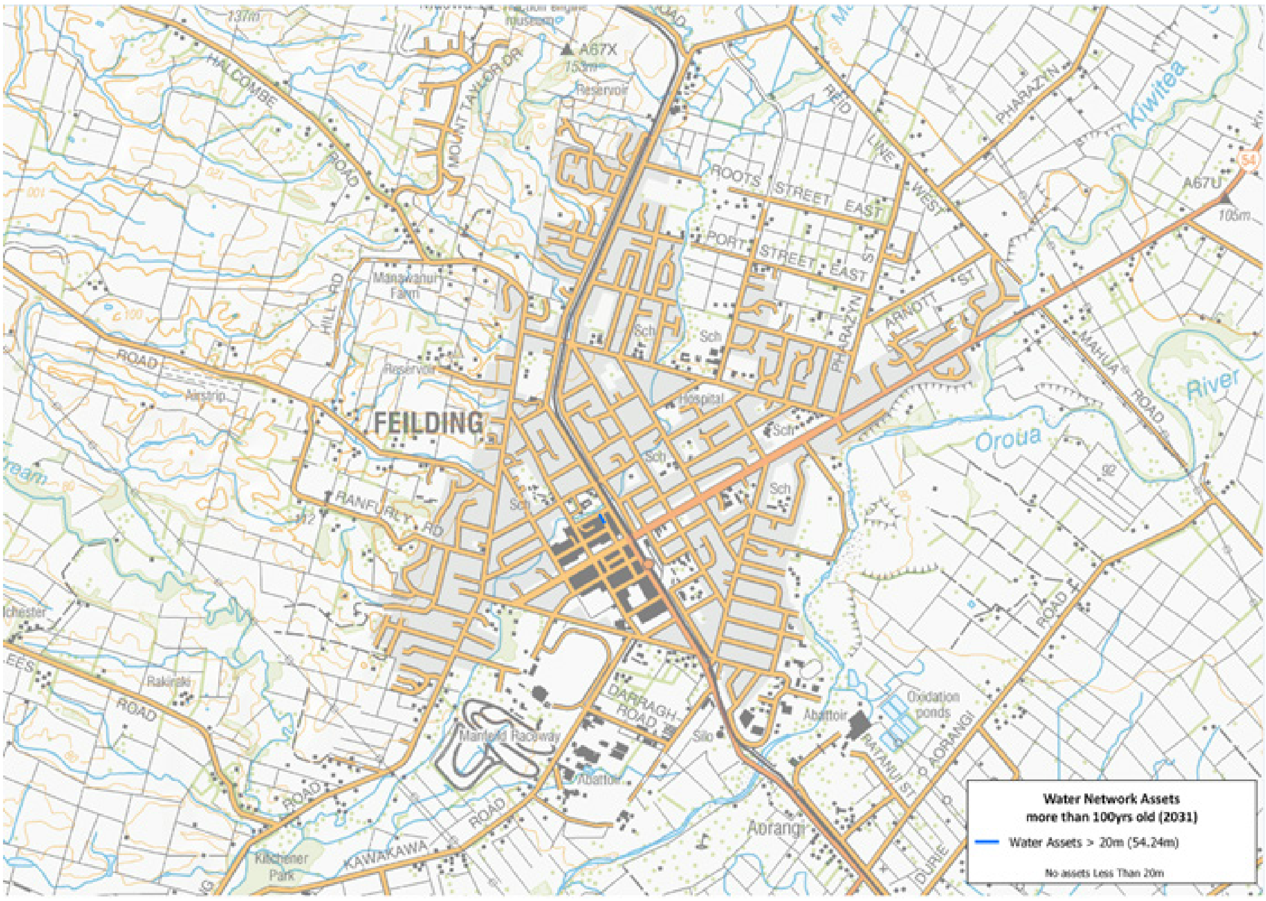
Map wastewater 2031



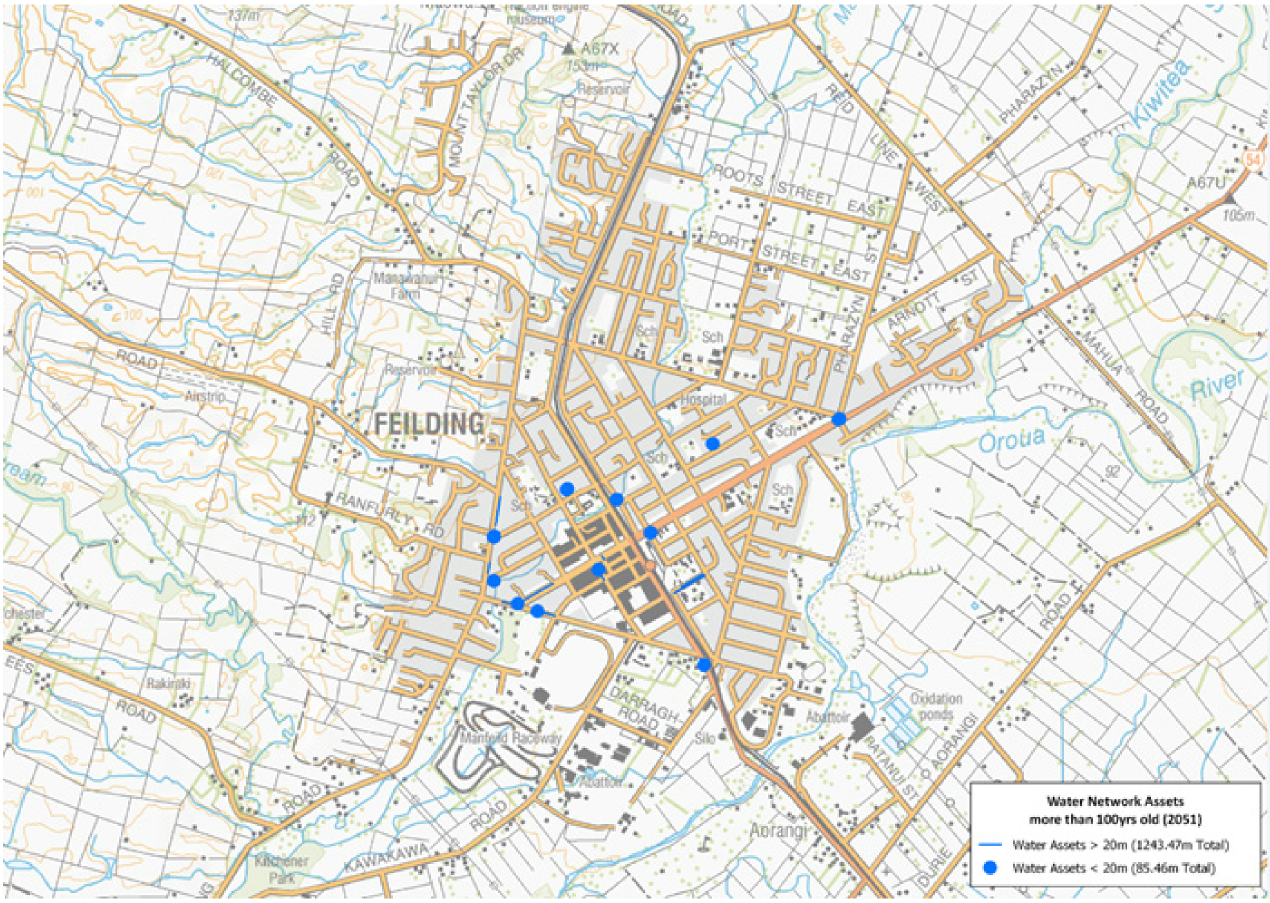
Map water supply 2021



Map water supply 2031



Map water supply 2051



Confidence in Condition Data

Council has recognised where there are gaps in asset information and has implemented a maintenance and monitoring programme to form a targeted renewals programme.

Council considers its current data confidence grading to be B. Reliable for Water Supply, C. Uncertain for Wastewater and B. Reliable for Stormwater. As part of our improvement plan, the data based in our asset management system will be assessed and updated accordingly and our confidence grading, adjusted to suit the updated information.

Confidence Grade	Description
A. Highly Reliable	Data based on sound records, procedure, investigations and analysis, documented properly and recognised as the best method of assessment. Dataset is complete and estimated to be accurate ± 2%.
B. Reliable	Data based on sound records, procedure, investigations and analysis, documented properly but has minor shortcomings, for example some data is old, some is documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate ± 10%.
C. Uncertain	Data based on sound records, procedure, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade A or B data are available. Dataset is substantially completed but up to 50% is extrapolated data and accuracy estimated ± 25%.
D. Very Uncertain	Data based on unconfirmed verbal reports and/or cursory inspection and analysis. Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy ± 40%.
E. Unknown	None or very little data held.

The improvement plan in the AMP allows for improving the confidence in condition data, particularly for critical assets and to reach a minimum rating of 'B' for all assets within the next AMP cycle.

Data confidence was evaluated and peer reviewed as part of the Infrastructural Assets Valuation Report 2019 for the Water, Wastewater and Stormwater Assets as at 1 July 2019. Data confidence is summarised below. The following table shows the NZIAVDG guidelines on recoding data confidence grades.

The confidence for asset attributes that would materially impact on the valuation (i.e quantity, age, size, replacement, costs etc) has been assessed for each asset class as follows:

Asset Class	Water	Wastewater	Stormwater	Comments
Pipelines	10% A 80% B 10% C	20% A 80% B	10% A 70% B 20% C	Since 2010: High accuracy in terms of quantities, descriptions, location and initial recognition of costs 2000-2010: Good accuracy in terms of quantities, descriptions and location Pre 2000: Good accuracy in terms of location and quantities but average descriptions
Points	40% A 60% B	40% A 60% B	20% A 70% B 10% C	See comments for Pipelines above
Plant & Equipment	20% B 60% C 20% D	10% B 60% C 30% D		Since 2010: Average accuracy. Components described at a high level only 2000-2010: Good accuracy. Adequate component descriptions, but initial purchase costs not recorded Pre 2000: Average accuracy, little supporting documentation
Pump Stations		30% A 60% B 10% C	60% A 40% B	
Three Waters Overall confidence	B	C	B	

Known and Unknown Asset Information

Council recognises the gaps in our data resulting from some poor information in our asset database. As our critical assets, (e.g plant and pump stations) are routinely maintained and monitored, Council considers the risk to these assets to be at a minimum as shown on the Critical Asset Condition Assessment table below.

The gap in our asset information is mainly on our pipeline systems. As these networks have been running since the early 1900's, accurate information on these older assets is not available. CCTV inspections have been conducted in parts of our network and this information is currently being assessed along with internal knowledge of our known fault areas to determine a targeted renewals programme. This renewals programme will be conducted in conjunction with our older network profile to eliminate the potential for failure in these areas.

Network Performance Data

Stormwater

Council reported 0 habitable floor flooding events in the 2019-2020 reporting year, with open drain maintenance being the most reported issue.

Wastewater

Overflows from Council's sewerage system during dry and wet weather were within our target for the 2019-2020 reporting year, these overflows were due to either blockages or stormwater infiltration. Sewerage system faults reported were also within our target with only 1 reported pipeline failure at Homelands Avenue due to a collapse within the Feilding network. Funds have been allocated for the replacement of this pipeline. Other faults reported were from blockages.

Water Supply

Councils compliance with drinking water standards was 100% achieved in the 2019-2020 reporting year. 33 watermain leaks were reported with no reported bursts. Leaks in the network have resulted from valves and fittings with only minimal leaks resulting from pipeline faults. A number of our network complaints are from toby's in the Feilding network that are aging and due for replacement. These replacements are being carried out by our in-house reticulation team as and when they are reported as leaking.

Condition of Critical Assets

Asset Type	Grade	Condition	Network Percent %
Water Reticulation	1	Very Good	45
Water Plant	1	Very Good	59
Sewer Pump Stations	1	Very Good	2
Sewer Pump Stations	3	Average	0.5
Wastewater Plant	1	Very Good	20
Wastewater Reticulation	1	Very Good	1
Wastewater Reticulation	2	Good	1
Stormwater Pump Stations	1	Very Good	100
Stormwater Reticulation	1	Very Good	32
Stormwater Reticulation	2	Good	0.5

Maintaining our Critical Assets

Council's critical assets are the water and wastewater treatment plants, wastewater pump stations and key trunk mains within the water and wastewater reticulation networks.

Council has reliable information on these critical assets and has made significant new capital and renewal investment in the water and wastewater treatment plants over the past 10 years. Council delivers water and wastewater maintenance services using contractor and in-house maintenance of our critical plant assets. Upon the installation of the equipment, the contractor will conduct routine maintenance on the equipment based on manufacturers recommendations and label the equipment with the date the maintenance was performed. This ensures we can actively monitor the ongoing maintenance of our critical assets. The treatment operators are also tasked to do regular small equipment checks, oil and filter changes. Pump stations are routinely checked and maintained by our in-house reticulation maintenance staff.

Annual Operational and Maintenance Spend 2016-2020

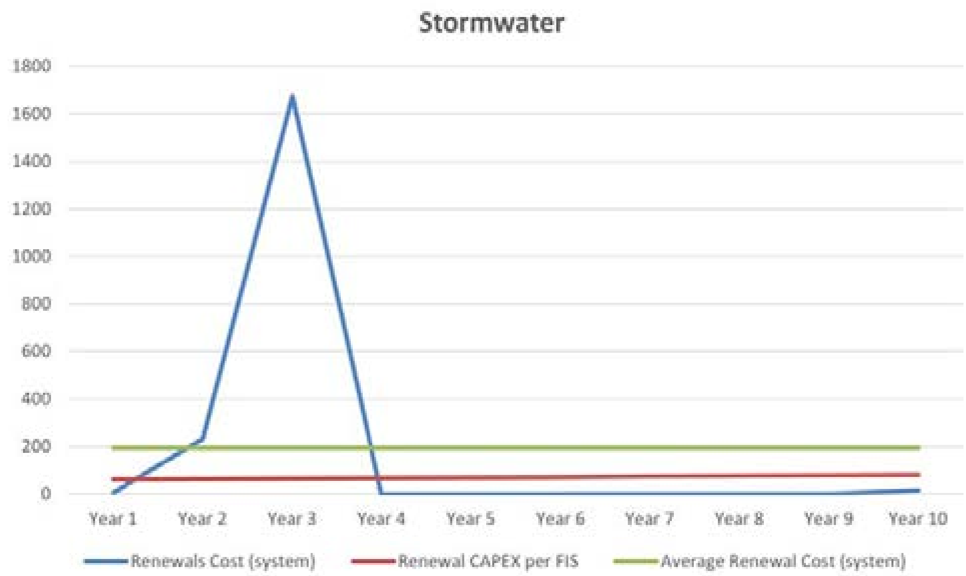
Operational Spend 2016-2020	2019/2020	2018/19	2017/18	2016/17	2015/16
23. Solid Waste	3,445,187	3,417,602	3,242,385	2,625,243	2,300,302
25. Wastewater	3,328,904	3,801,285	3,036,909	2,763,433	2,351,491
26. Stormwater and Drainage	504,140	511,686	535,466	329,899	252,011
28. Water Supply	2,500,091	2,222,822	2,143,978	2,030,964	2,014,546
Total	**9,778,322**	**9,953,394**	**8,958,738**	**7,749,538**	**6,918,349**

The implementation of the Wastewater Centralisation Programme and the Feilding Water Strategy have been ongoing for a number of years, and are renewal funded. Forecast renewals in Years 4-10 in the draft 10 Year Plan 2021-31 are predominantly reticulation focussed on less critical assets. The Asset Management Plan Improvement Plan identifies a data improvement period for renewals that are due on or before years 4–10. These will be reviewed as part of our ongoing condition assessment to see if they are in need of renewal or if we can increase the expected useful life. The targeted renewals programme for years 4–10 will contain the assets that are identified in the condition assessment as a priority for renewal. Condition assessment will provide higher confidence around current low-quality data which is expected to reduce the assets due for renewal in the next 10 years.

Funding of Renewals

In years 1-3 of the draft 10 Year Plan 2021-31 the shortfall for theoretical based renewals as shown in the Assetfinda database is $19M. This includes above ground assets at the Manawatu Wastewater Treatment Plant and the Almadale Water Treatment Plant, some of which have already been renewed through the implementation of the Feilding Water Strategy. This theoretical renewal expenditure will not be required, and the asset data verification will be completed in the implementation of the asset data improvement plan. Renewal expenditure of $8M is planned in years 4-10. This increase will provide the ability to renew additional assets that are identified in Council's ongoing condition assessment which will be added to the targeted renewals programme.

Stormwater	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**
Renewals Cost (system)	7	232	1,675	1	1	-	-	-	-	15
Renewals CAPEX per FIS	61	63	65	67	70	71	74	76	79	81
Average Renewal Cost (system)	193	193	193	193	193	193	193	193	193	193
Wastewater	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**
Renewals Cost (system)	4,550	3,614	2,354	99	276	1,800	1,215	865	3,265	1,846
Renewals CAPEX per FIS	3,683	2,857	2,475	2,276	2,266	1,458	1,555	1,424	1,471	1,509
Average Renewal Cost (system)	1,988	1,988	1,988	1,988	1,988	1,988	1,988	1,988	1,988	1,988
Water Supply	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**
Renewals Cost (system)	4,115	12,516	2,834	480	931	9,644	3,888	586	186	506
Renewals CAPEX per FIS	2,105	403	405	1,189	1,233	1,295	1,029	1,170	1,132	1,165
Average Renewal Cost (system)	3,569	3,569	3,569	3,569	3,569	3,569	3,569	3,569	3,569	3,569


Stormwater
1800
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1400
1200
1000
800
600
400
200
0
Year 1
Year 2
Year 3
Year 4
Year 5
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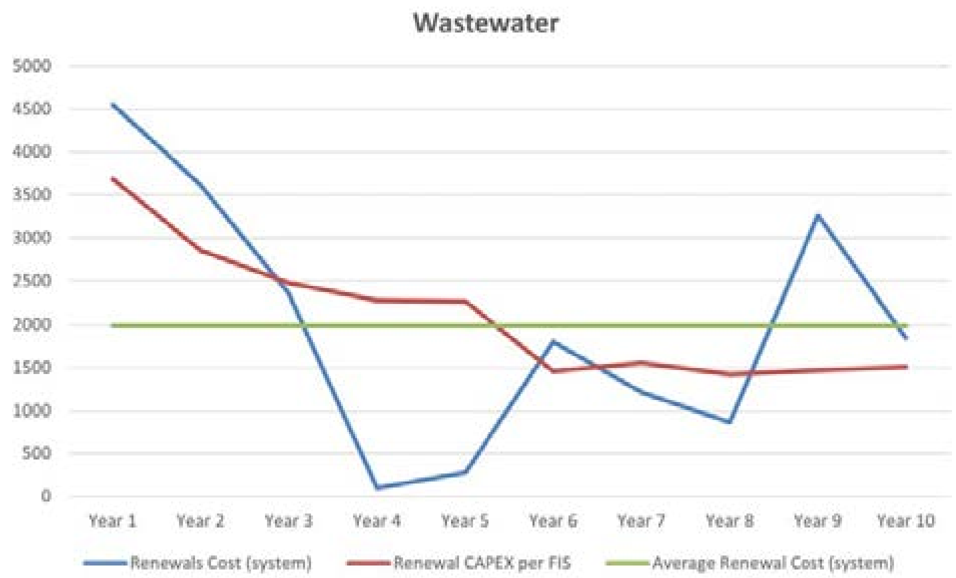
Year 7
Year 8
Year 9
Year 10
Renewals Cost (system)
Renewal CAPEX per FIS
Average Renewal Cost (system)


Wastewater
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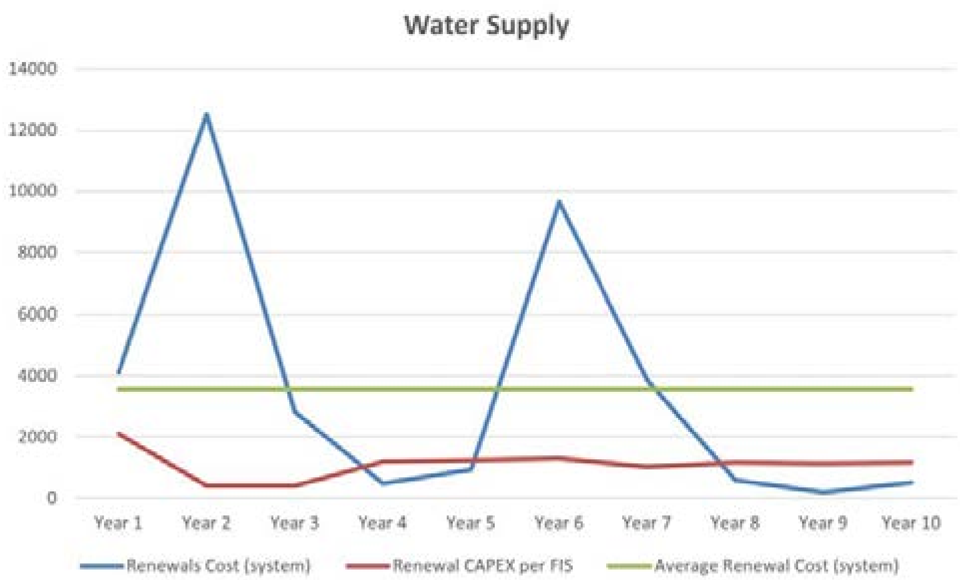
Renewal CAPEX per FIS
Average Renewal Cost (system)


Water Supply
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Year 1
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Year 7
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Year 9
Year 10
Renewals Cost (system)
Renewal CAPEX per FIS
Average Renewal Cost (system)

Strategic Environment

There is a relationship between the Asset Management Plan and other Council planning documents. The Levels of Service (LoS) provided through asset management have a connection with the Council Vision and priorities. Council recognises, and is managing increasing stakeholder expectations, meeting legislative requirement ie the National Policy Statement for Freshwater Management 2014, National Infrastructure Plans and localise areas of increased demand. The Plan also links to Horizons Regional Council's One Plan and Council's 30 Year Infrastructure Strategy.

AMP Response to the Strategic Context

Specific issues focused on for the period 2021-2041 and addressed in this plan are:

- Detention and treatment of stormwater at the individual property level or within the development or growth area
- New developments within the Precinct 4 residential area are required to demonstrate that they achieve stormwater neutrality so that their stormwater discharges do not cause or exacerbate flooding of any other property. A Stormwater Management Plan is to be prepared for all subdivision development within Precinct 4. This Plan is in addition to a Comprehensive Development Plan already required by the District Plan provisions for Precinct 4
- A new bore is to be developed in Feilding to ensure that there is backup supply in the event of mechanical failure and or seismic event. Feilding's reservoir at Almadale and the trunk water main into town are nearing the end of their useful lives and are in need of replacement. This is a 4-year project to upgrade and future-proof Feilding's water supply, which commenced in 2018/19 and is due to be completed in 2026/27. This project was determined to be both the most cost-effective and resilient option for renewing Feilding's water supply. It involves constructing a new Water Treatment plant (replacing the existing one at Almadale), a new trunk water main into town, and a new bore
- Council is proposing to utilise existing capacity at the Manawatū Wastewater Treatment Plant in Feilding (of both the plant and land) for the land-based discharge of treated wastewater from the villages through a new piped network. This will mean that Council is only responsible for managing and consenting two wastewater treatment plants, including the Hīmatangi Wastewater Treatment Plant (which already has a 100% land-based discharge regime). All of the remaining existing village treatment plants will be de-commissioned when the wastewater centralisation project has been completed.
- All drinking water supplies in the District are currently chlorinated. Council is assessing additional treatment options for schemes that utilise secure water (i.e., a water supply that meets national drinking water standards) in anticipation of further strengthening of the drinking water standards and associated treatment requirements
- The Ōhakea Rural Water Supply scheme will involve the construction of a potable water supply in the area affected by Polyfluoroalkyl substances (PFAS) compounds to the west of the Ōhakea Defence Force base. Central government (Ministry for the Environment) will fund $10.8 million of the costs of design and construction of the new water scheme – about 75 per cent of the cost. Council will fund the balance. Due to the contamination of current bore supplies in the Ōhakea area with PFAS compounds, the new supply (the preferred option being a pipeline from Sanson) will replace the existing bore supplies and provide PFAS-free water on a permanent basis to this area. Around 85 rural properties will be supplied with reticulated drinking and stock water rather than having to rely on tanks and bores.

- On 24 August 2020, Council signed a Memorandum of Understanding (MoU) with the Crown to work constructively together to explore future service delivery options to improve three waters services to communities. The MoU also set out government funding arrangements that will support investment in three waters infrastructure as part of the COVID-19 economic recovery. It is expected that the regulatory framework for Taumata Arowai (the new Water Services Regulator established under the Taumata Arowai – the Water Services Regulator Act 2020) will be in place by the end of June 2022, with the implementation to begin after that. This reform process creates a level of uncertainty around how drinking water and wastewater services will be delivered to the community in the future (including by what agency). However this AMP assumes the status quo (Council ownership and delivery).

1.3 Levels of Service

This Plan supports

- The provision of a good quality, safe and reliable water supply to the district and adequate supply for firefighting in some areas of the District
- Maintaining and developing the three waters infrastructure to meet the current and future needs including growth
- Managing the three waters activity in a financial sustainable way
- Three waters infrastructure which meets the growth requirement outlined by Council
- Three water services which comply with the regulatory and consenting requirements
- Mandatory compliance with the drinking water standards including meeting minimum residual chorine levels for all water sources
- Planned changes to pressure (LoS), to promote greater water efficiency and meet consent obligations.

Level of service measures for the above are included in Council's 10 year plan and include the Department of Internal Affairs mandatory performance measure.

1.4 Future Demand

The future demand for services will change over time in response to a wide range of influences. These demands will be approached using a combination of managing existing assets, upgrading of existing assets and providing new assets to meet demand. Demand management practice may also include a combination of non-asset solutions, insuring against risks and managing failures. The main demands for new services are created by:

- Local population trends
- Accuracy of predicted future populations
- Local economic trends
- Land use change
- Changing technologies
- Changing legislative requirements
- Changing regional and district planning requirements
- Climate and climate change
- Wet industries.

Increasing demand for services over time generates a requirement for the development of existing and additional infrastructure. Expenditure programmes need to be planned to fund the capital works and associated on-going operational expenditure. Alternately, it may be possible to manage demand within the existing system capacity.

Where a reduced demand is forecast it may be appropriate to renew assets with a lesser capacity, operational expenses may decrease or an asset may become surplus to requirements. It is quite evident that community expectations and growth demands are increasing which will result in continuing development and expansion of the networks.

Generally, the networks cope with the demands on them. While there is increasing demand for the supply of new infrastructure, the present network will also need considerable redevelopment over the next decade to cope with increasing capacity requirements. Factors that may force the need for change on the assets or the management of the asset are discussed below. In the next three years no extra sources are expected to be required and our planning provides for demand for an additional primary processing industry in Feilding.

1.5 Lifecycle Management Plan

The asset management process is intended to deliver agreed levels of service in the most cost effective manner to present and future customers. Managing three waters infrastructure is simply one of the inputs to this process. At the highest level, the services to be delivered and standards to be achieved are those that contribute towards the achievement of the priorities in Council's Long Term Plan. Gaps between required standards and services and the ability of the network to deliver them are identified and processes are put in place to manage these gaps within acceptable margins. In managing these gaps both asset solutions (such as new or enlarged asset elements) and non-asset solutions (such as use reduction programmes) are considered.

Decisions on the option to be followed in any particular instance are based on a range of factors such as risk assessments, legal requirements, through life costs, customer approval ratings and the ability of the community to pay for system improvements. The detailed considerations behind these decisions are not made or detailed in this AMP; rather, they occur during the early stages of the projects' development as determined by the complexity, scale and potential effects of the problem / issues and the options available to address them.

Renewals Plan

Historically, the 3 Waters capital and renewals programmes have been driven by asset age and expected useful life. Councils' asset register records 'Condition', 'Performance', 'Capacity' and 'Accuracy' fields on a per asset basis. However, this information is not used at present to support decision making as the confidence in this information is very low due to the provenance of this information is unknown; and it has been historic practice to update this information when an asset is created, but not update over time as additional information is collected.

1.6 Asset Management Practices

Our systems to manage assets include:

- Water Outlook
- AssetFinda
- Assets requiring renewal/replacement are identified from either the asset register or an alternative method. These methods are part of the Lifecycle Model

- If Asset Register data is used to forecast the renewal costs this is done using the acquisition year and the useful life
- The AssetFinda program was used to contribute to the Asset Register method was used to forecast the renewal life cycle costs for this Asset Management Plan.

1.7 Monitoring and Improvement Programme

The identification of asset requirements dictates the standards of performance, condition and capacity and the consequential funding requirements. It requires knowledge of existing asset performance and performance targets to identify the gaps in asset performance. The next steps resulting from this AMP to improve asset management practices are:

- Recognition that the AMP is a "live" document and shall be reviewed and updated on an ongoing basis
- Continually improve knowledge and detailed asset information, including ongoing asset condition assessment and further collection of appropriate Met data on assets
- Obtaining feedback from our customers and the wider community. Adjusting asset management direction and levels of service if necessary
- Review demand projections on an on-going basis consistent with the Council's Urban Growth Strategy
- On-going development of asset systems and collection and analysis of data to meet all asset management needs
- Capital renewal and development project planning
- Prioritise renewal programmes and better manage risks and costs in achieving the desired outcomes
- Resource planning is undertaken to ensure the recruitment, retention and development of sufficient and suitably qualified staff.

1.8 Conclusion

This Asset Management Plan sets out programmes for operating, maintaining, renewal and development of the three waters activity over the next 20 years that will ensure the required level of service is delivered to the community, the service potential of the asset is maintained for future generations, and growth of the District is provided for.

2. INTRODUCTION

2.1 Background

ISO55000 defines Asset management as the "coordinated activity of an organisation to realise value from assets". An asset is an item, thing or entity that has potential or actual value to an organisation. Asset Management involves the balancing of costs, opportunities and risks against the desired performance of assets, to achieve the organisational objectives. This balancing might need to be considered over different timeframes.

Asset management also enables Council to examine the need for, and performance of, assets and asset systems at different levels. Additionally, it enables the application of analytical approaches towards managing an asset over the different stages of its life cycle (which can start with the conception of the need for the asset, through to its disposal, and includes the managing of any potential post disposal liabilities).

This Asset Management Plan communicates the requirement for the sustainable delivery of services through management of assets, compliance with regulatory requirements, and required funding to provide the appropriates levels of service over the long term planning period.

2.2 Goals and Objectives of Asset Ownership

The goals in managing infrastructure assets is to meet the defined level of service (as amended from time to time) in the most cost effective manner for present and future consumers. The key elements of infrastructure asset management are:

- Providing a defined level of service and monitoring performance
- Managing the impact of growth through demand management and infrastructure investment
- Taking a lifecycle approach to developing cost-effective management strategies for the long-term that meet the defined level of service
- Identifying, assessing and appropriately controlling risks, and
- Linking to a Long-Term Financial Plan which identifies required, affordable forecast costs and how it will be allocated.

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- Linking to a Long-Term Financial Plan which identifies required, affordable forecast costs and how it will be allocated.

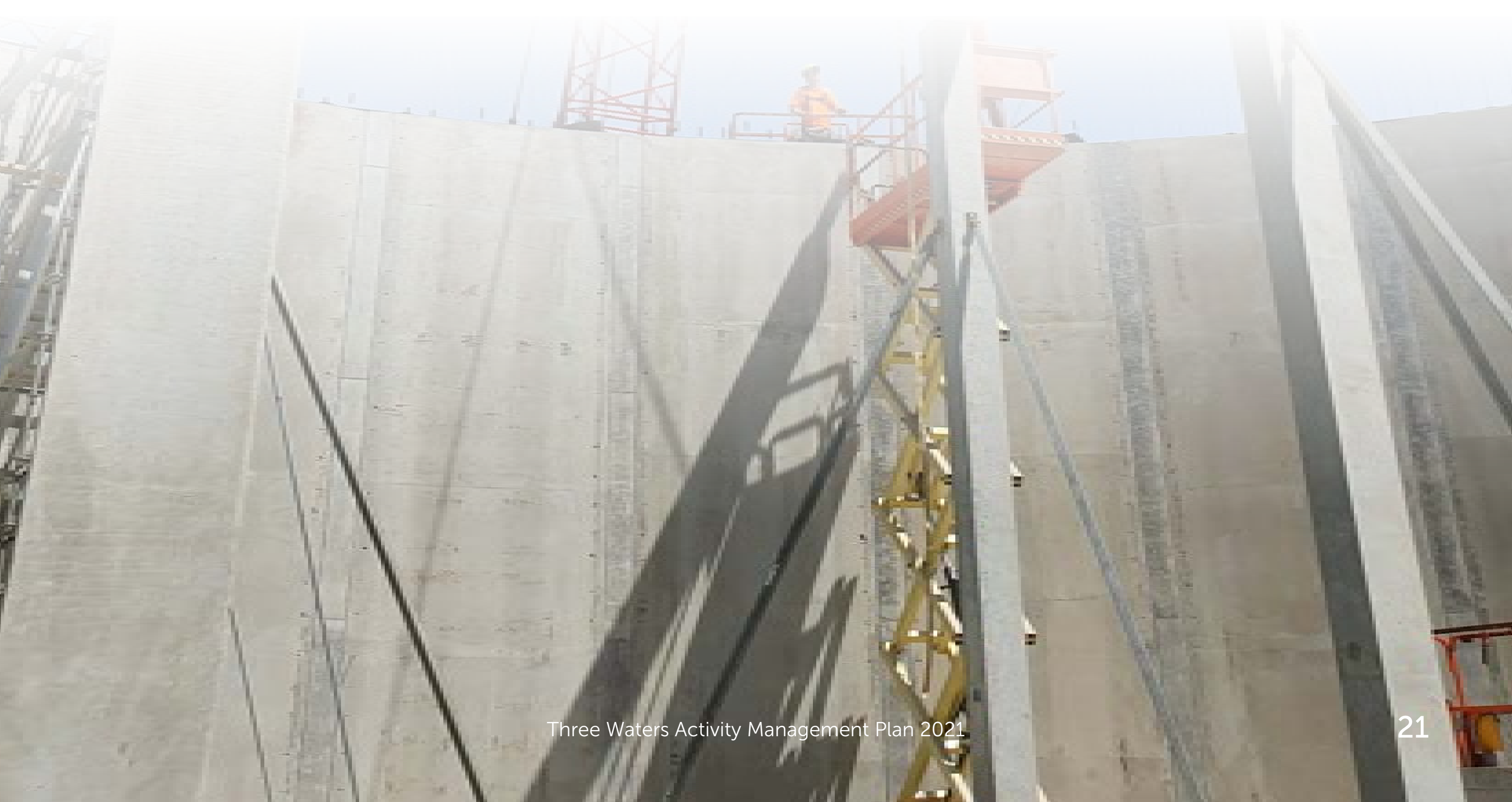
Key elements of the planning framework are:

- Levels of service – specifies the services and levels of service to be provided
- Future demand – how this will impact on future service delivery and how this is to be met
- Lifecycle management – how to manage its existing and future assets to provide defined levels of service
- Financial summary – what funds are required to provide the defined services
- Asset management practices – how we manage provision of the services
- Monitoring – how the plan will be monitored to ensure objectives are met
- Asset management improvement plan – how we increase asset management maturity.

Other references to the benefits, fundamentals principles and objectives of asset management are:

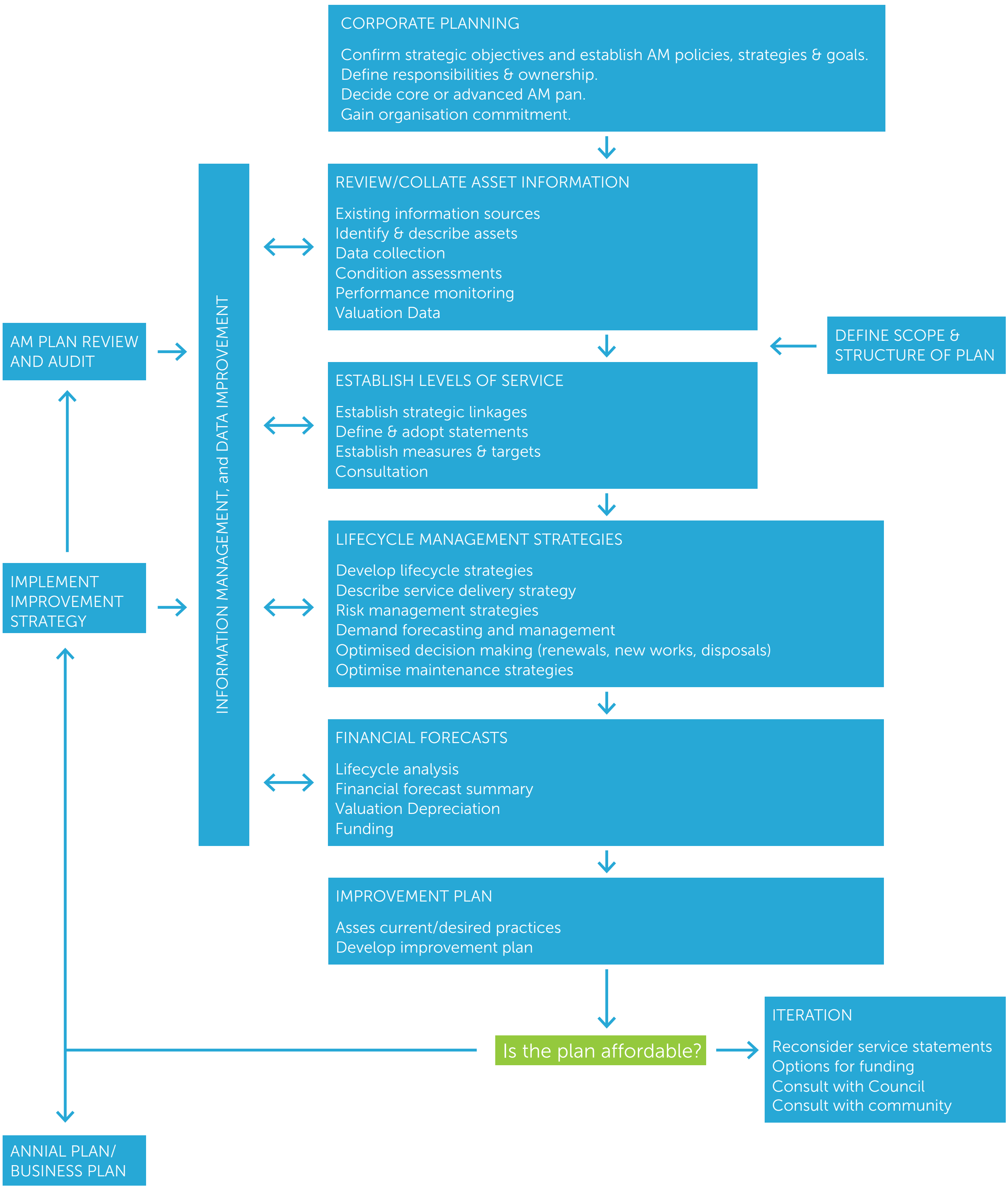
- International Infrastructure Management Manual 2015
- ISO 55000.

A road map for preparing an Asset Management Plan is shown on the next page.



Road Map for Preparing an Asset Management Plan

Source: IPWEA, 2006, IIMM, Fig 1.5.1, p 1.11



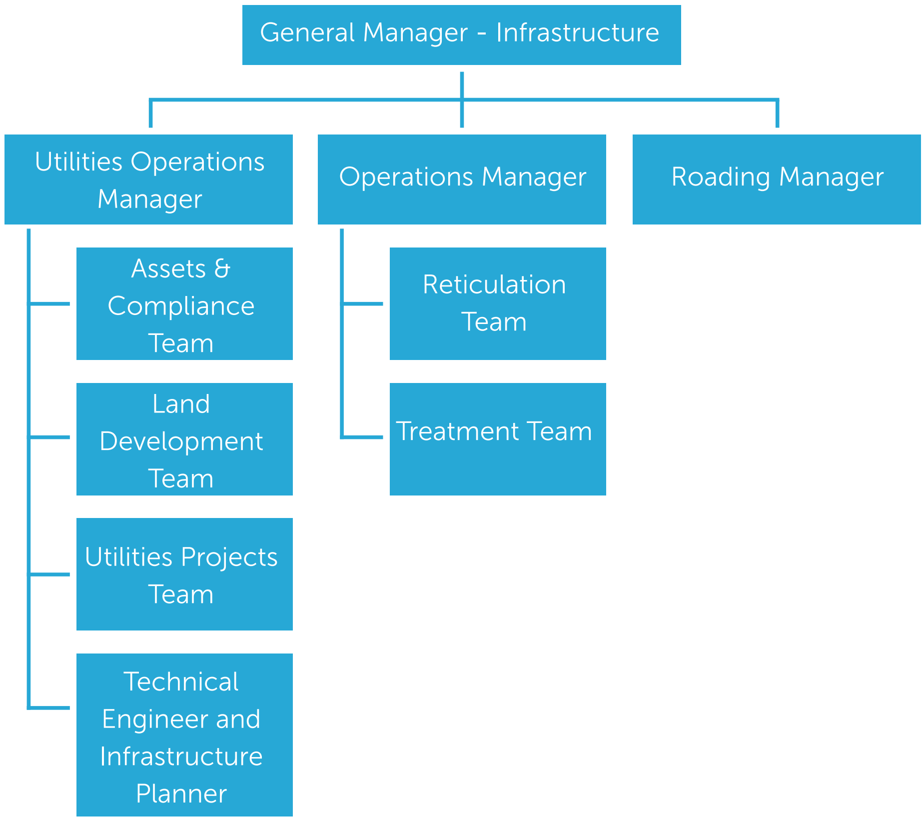
[1] Based on IPWEA 2015 IIMM, Sec 2.1.3, p 2| 13

[2] ISO 55000 Overview, principles and terminology

Business Frameworks

Council's three water assets are managed by the Utilities Manager. There are a number of cross- departmental links that are important to the correct functioning of the Utilities team. The most significant of these are with the Financial, Administration Services staff, Operations and Reticulation staff and Roading Staff.

The organisational structure for service delivery for infrastructure assets is detailed below:



Key points of the structure are:

- Overall responsibility for the three waters service delivery sits with the General Manager – Infrastructure, who reports directly to the Chief Executive
- Through the Utilities Manager and Operations Manager roles there is the clear delineation of responsibility for:
  - ✓ Infrastructure planning, engineering and project delivery activities
  - ✓ Operations and maintenance activities (Reticulation and Treatment)
- Manawatū District Council has a shared service contract with the Rangitikei District Council (RDC) for Roading (maintenance and professional services) and three waters professional services, operations and treatment. Under this agreement MDC employs staff and delivers the nominated services to RDC, but each Council owns their own assets and sets applicable rates and charges. The Reticulation Team (reporting to the Operations Manager) was brought in-house post a s17A review of the three waters services in 2015/2016. The review found an in-house model to be the most cost-effective model when compared to the existing external contract

Community Committees

Council's committee structure is extensive and are established under the Local Government Act 2002. Each township, excluding Feilding, and rural community also has a local Community committee elected every three years at a specially convened public meeting. The purpose of the committee is to consult with its community and relay local concerns and preferences to the Council or Community Committee. Township services are generally undertaken in conjunction with, or at the behest of, local township committees.

The full list of the Boards and Committees is:

- Āpiti Community Committee
- Beaconsfield Community Committee
- Halcombe Community Committee
- Hīmatangi Beach Community Committee
- Kimbolton Community Committee
- Pōhangina Valley Community Committee
- Rangiwāhia Community Committee
- Rongotea Community Committee
- Sanson Community Committee
- Tangimoana Community Committee
- Bainesse/Rangiotū Community Committee
- Cheltenham Community Committee
- Colyton Community Committee
- Hiwinui Community Committee
- Kiwitea Community Committee
- Waituna West and District Community Committee

Organisational Culture

An important measure of the quality of Council's asset management is the ability, experience and qualifications of the individuals and companies involved in its preparation. Council employs a limited range of technical staff qualified to carry out the asset management function.

In this context competency refers to applied knowledge, it is not just the knowledge itself. Competencies can be described as: The behaviours that employees must have, or must acquire, to input into a situation in order to achieve high levels of performance.

There are a large number of competencies that the Council requires of its staff to effectively manage its infrastructure assets; these are not statements of current individual's skills or competencies; rather, they are statements of the Council's desired competency in the areas and subjects detailed.

Council's People and Culture team establish the gaps between the competencies of current staff and the competencies required in the organisation. These gaps will be used to guide staff training and development programmes.

To ensure that staff were thinking and working towards a common LTP goal, Council management instigated a LTP planning process early in 2020 for the 2021-24 LTP. The group consisted of the four senior managers, LTP planners, asset managers and accountants.

This group meets regularly and provides direction on issues such as:

- Council priorities
- Agreed assumptions
- Growth projection
- Plan format and style
- Communication and consultation
- Auditing processes.

Financial Sustainability

The Local Government Act 2002 requires Council to prepare a Financial Strategy as part of its Long Term Plan. This Strategy outlines how the Council intends to manage it finances prudently. This means the Council will act with careful deliberation and will always consider the financial implications of decisions on the community. Council must make adequate and effective provision to meet expenditure needs identified in Annual and Long Term Plans.

The Financial Strategy provides a financial framework for making decisions. Simply, it enables Council to assess proposed spending against rates and borrowing requirements over the whole ten years of the Long Term Plan 2021-31 (LTP). It draws together all of the issues in the LTP along with the financial consequences and presents these along with the Council's response.

This will:

- Enable the community to readily identify what the financial issues are
- Provide the community with certainty about how expenditure will be met
- The impacts of proposals on levels of services, rates, debts and investment
- Enable the community to predict how the Council intends to manage the financial issues in the future
- Provide guidance to decision makers when considering implications of financial issues on communities now and in the future.

Council's vision is Manawatū District - proudly provincial. A great place to land. The services and projects outlined in the Long Term Plan will ensure this vision becomes a reality. The provision of services and projects comes at a cost. Council aims to spend within its means, achieving a balance between meeting the needs of the community with its ability to pay.

2.3 Asset Management

2.3.1 Assets Included in this Plan

Council aims to provide a potable water supply to meet domestic, commercial, rural and industrial requirements via a public reticulation network. This water supply network services the urban communities of Feilding, Rongotea, Hīmatangi Beach and Sanson, as well as rural supplies at Stanway-Halcombe and Waituna West. Council owns assets for the Kiwitea Rural and Ōroua No 1 Rural water supplies, but these are operated entirely by community communities.

Wastewater services are provided by the Council to protect public health and the environment. The Council owns and maintains reticulated wastewater systems in Feilding, Awahuri, Cheltenham, Halcombe, Kimbolton, Rongotea, Sanson and Hīmatangi Beach. These systems consist of a network of pipes that convey wastewater from residential and commercial properties to each town's wastewater treatment plant. Council holds resource consents for discharges of treated wastewater to either land or water from these plants. New Wastewater pipes continue to be laid to provide infrastructure to new development in Residential Growth Precint 4.

Council provides stormwater services for the collection and management of surface water. This links both private and public reticulation through the urban communities of Feilding, Rongotea, Sanson, Hīmatangi Beach and Halcombe. There are also stormwater assets on a lesser scale in Tangimoana, Āpiti, Kimbolton, Pōhangina, Rangiwāhia and Cheltenham. In addition to this, Council has four rural drainage schemes, at Bainesse, Maire, Makowhai and Ōroua Downs.

The inventory of the utilities services and assets owned by Council is shown below.

Water Supply

Scheme	Source	Treatment	Reticulation
Feilding	Surface water: • Ōroua River Groundwater: • Campbell Rd Bore • Newbury Line Bore	Almadale Treatment Plant (Surface Water) Awa St Treatment Plant (Groundwater)	On Demand Excluding Mt Taylor which is on a restricted supply
Sanson	Groundwater, secure	Treatment plant adjacent to new bore	Restricted Supply
Rongotea	Groundwater, secure	Rongotea Water Treatment Plant	On Demand
Hīmatangi Beach	Groundwater, secure	Hīmatangi Beach Water Treatment Plant	On Demand
Stanway – Halcombe	Shallow bores adjacent to the Rangitikei River	Water Treatment Plant adjacent to bores	Rural water scheme Restricted Supply
Waituna West	Groundwater, secure	Waituna West Water Treatment Plant	Rural water scheme Restricted Supply
Kiwitea Rural	Rural water scheme, Restricted Supply This scheme is operated entirely by a community committee and is not covered in this Asset Management Plan		
Ōroua No.1 Rural	Rural water scheme, Restricted Supply This scheme is operated entirely by a community committee and is not covered in this Asset Management Plan		

Wastewater

Scheme	Reticulation	Treatment	Within Centralisation Scope
Feilding	Gravity network (Excluding Mt Taylor which has a pressure system)	Manawatū WWTP Current project underway to implement a dual land/surface water discharge system.	Yes – Destination Treatment Plant
Halcombe	Gravity network	Halcombe WWTP – Dual land/ surface water discharge	Yes
Sanson	Gravity network	Sanson WWTP – Dual land/ surface water discharge	Yes
Rongotea	Gravity network	Rongotea WWTP – Discharge to surface water	Yes
Cheltenham	Gravity network servicing onsite septic tanks.	Cheltenham WWTP – Discharge to land	Yes
Kimbolton	Gravity network servicing onsite septic tanks.	Kimbolton WWTP – Discharge to surface water	Yes
Awahuri	Gravity network servicing onsite septic tanks.	Awahuri WWTP – Discharge to surface water	Yes
Hīmatangi Beach	Pressure system with onsite pump stations.	Hīmatangi Beach WWTP – Discharge to land	No

Stormwater

Scheme	Reticulation	Treatment	Within Centralisation Scope
Feilding	Well Developed, urban stormwater network	Targeted stormwater rate	Harmonised stormwater rate
Rongotea	Formal, village stormwater network	Targeted stormwater rate	Harmonised stormwater rate
Sanson	Formal, village stormwater network	Targeted stormwater rate	Harmonised stormwater rate
Halcombe	Village stormwater service	No service	Harmonised stormwater rate
Cheltenham	Village stormwater service	No service	Harmonised stormwater rate
Hīmatangi Beach	Village stormwater service	No service	Harmonised stormwater rate
Tangimoana	Village stormwater service	No service	Harmonised stormwater rate

Rural Drainage Schemes

Scheme	Reticulation	Treatment	Within Centralisation Scope
Bainesse	Rural Drainage Scheme	No change	No change
Maire	Rural Drainage Scheme	No change	No change
Makowhai	Rural Drainage Scheme	No change	No change
Ōroua Downs	Rural Drainage Scheme	No change	No change

Dwellings

Insurance No	Valuation Reference	Asset Description	Location
2315	14160/21010	Dwelling	341 Kawakawa Road, Feilding
2414	14160/07902	Dwelling	269 Kawakawa Road, Feilding
2649	14160/08000	Dwelling	223 Kawakawa Road, Feilding
2860	14160/08100	Dwelling	295 Kawakawa Road, Feilding

3. LEVELS OF SERVICE

3.1 Customer Research and Expectations

In previous years the community outcomes were shaped by the community. However, amendments to the Local Government Act in 2010 changed the definition of community outcomes from outcomes belonging to and achieved by the community, to "outcomes that a local authority aims to achieve". This is a significant change in emphasis from a community wish-list to a set of outcomes owned – and actively worked towards – by Council. Council believes it is also helpful for the public to understand what Council does and why, and for other stakeholders, including the private sector who both benefit from and contribute to Council activity.

Outcomes and Levels of service are developed to reflect the expectations of the community and regulators. Targets are established which indicate the standard that should be met. Outcomes are relevant across the three waters activity while Levels of Service statements are more specific.

3.2 Strategic and Corporate Goals

A number of strategies, policies and legislation overarch the three waters activities. These are discussed in brief in this section.

3.2.1 Significance Policy

Under the LGA 2002, each Council is required to have a Policy of Significance. The requirements for the policy can be seen as being a means for ensuring that in making decisions that Council is:

- Clear about why it is addressing a matter
- Has considered and evaluated the options and alternatives
- Has information on the community view about the matter and the options for addressing it, and particularly it has an understanding of the views and preferences of those persons likely to be affected by, or have an interest in the matter.

A Significant Activity is one that has a high degree of significance in terms of its impact on either:

- The well-being of the people and environment of Manawatū District and/or
- Persons likely to be affected by or with an interest in that activity and/or
- Capacity of the Manawatū District Council to provide for the well-being of the district
- Three Waters is considered by the Manawatū District Council as Significant Activities therefore requires consultation.

The Council's Public Consultation Policy states that the Council will;

- Clarify its expectations through public consultation
- Allow sufficient time for effective response to its proposals
- Report on public proposals and follow up when necessary
- Maintain the consultative process.

There are a number of instances where the Council will undertake consultation at a District wide or comprehensive level. This generally occurs when there is a requirement to use the special consultative procedure as prescribed in the LGA 2002. This occurs in the following situations:

- Adopting the annual budget
- Adopting, amending or reviewing a bylaw
- Proposing a change in the way a significant activity is undertaken
- Significant decisions not already provided for in the community plan
- Termination of a service.

The Council will decide that some decisions are significant and will therefore require a more rigorous assessment of options and a more robust consultative process. Those decisions are treated as amendments to the community plan and can be dealt with either separately or as part of the Annual Plan process.

3.3 Legislative Requirements

In order to fulfil community outcomes, Vision, goals and objectives, Council have adopted a systematic approach to the long term management of its assets by preparing this Asset Management Plan. Council has developed a broad range of documents including strategies to define the broad scope and direction of its activities. Once adopted by Council, no process or action should be inconsistent with it.

There are a number of strategies, policies and legislation that overarch the three waters activities. This section sets out the strategic framework within which assets are managed, describing;

- The Council Vision
- The AM policy and strategy consistent with the vision adopted for the management of infrastructural assets
- The social, environmental, economic, cultural and technical factors driving growth and changes to the levels of service.

3.3.1 Long Term Plan 2018 -2028

Council's vision is Manawatū District – proudly provincial. A great place to land. The services and projects outlined in the Long Term Plan will ensure this vision becomes a reality. The provision of services and projects comes at a cost. Council aims to spend within its means, achieving a balance between meeting the needs of the community with its ability to pay.

Underpinning the vision statements is a set of priorities which were developed to further define the priorities MDC is working towards. While infrastructure contributes to the achievement of all of Council's outcomes, of particular relevance are:

- **A place to belong and grow**. We provide leisure and sports facilities and support community activities to encourage social and cultural wellbeing for everyone
- **A future planned together.** We work with all parts of our community to plan for a future everyone can enjoy
- **An environment to be proud of.** We protect and cater for the Manawatū District's natural and physical resources
- **Infrastructure fit for the future.** We ensure the Manawatū District has infrastructure (water, roads, etc.) that meets the needs of the community now and into the future
- **A prosperous, resilient economy.** We aim to make the Manawatū District a great place to live, visit and to do business
- **Value for money and excellence in local government.** We take pride in serving our communities. We focus on doing the best for the District

Figure 1: Relationship to Key Council Planning Processes

3.3.2 Key Legislation

The key legislation relating to the management of Council's water, wastewater and stormwater assets are listed below.

Legislation	Requirement
Building Act 2004	Rules around building compliant structures
Civil Defence Emergency Management Act 2002	Requirement to continue service provision even in an emergency, and to be prepared for emergencies. Structure of emergency management.
Hazardous Substances and New Organisms Act 1956	Regulation of hazardous substances. Impacts on transportation of hazardous substances along the Roading network.
Health Act 1956	Requires local authorities to provide sanitary works. Requires Water Safety Plans for water supplies
Health and Safety at Work Act 2015	Health & Safety obligations and liability.
Land Drainage Act 1908	Regulates drains and watercourses.
Local Government Act 2002	Purpose of local government. Structure, governance, planning, decision-making. Regulatory powers.
Local Government (Rating) Act 2002	Provides powers to collect set, assess and rates to fund activities.
Public Works Act 1981	Enables acquisition of land for public works.
Resource Management Act 1991	Responsibility to manage natural resources in a sustainable manner and engage with iwi. Provides certain regulatory powers.
Utilities Act 2010	Requires Utility operators to comply with the Code of Practice
National Infrastructure Plan	The National Infrastructure Plan (NIP) details the Government's view of the challenges and priorities for infrastructure. The 2015 NIP describes the view to 2045. The aim is that New Zealand has a modern, integrated, and efficient infrastructure system which underpins a prosperous and inclusive society with high-quality state services and a healthy and sustainable natural environment. Economic performance is strong with infrastructure that supports international connectedness, increased productivity, movement up the global value chain, and more exports and growth. It helps enable all New Zealanders to reach their full potential and play a meaningful role in the economy and society.
National Policy Statements	The National Policy Statement (NPS) for Freshwater Management sets out the objectives and policies for freshwater management under the Resource Management Act 1991. This NPS directs Regional Councils to establish objectives and set limits for freshwater in their regional plans. In the Manawatū-Whanganui region, this is achieved through the Horizons One Plan.
National Environmental Standards	The Ministry for the Environment (MfE) has produced National Environmental Standards (NESs) to protect the New Zealand environment, and work towards a consistent approach to environmental management across the country. These are regulations issued under Sections 43 and 44 of the Resource Management Act 1991 (RMA).

Horizons One Plan	The One Plan is the plan for resource management in the Manawatū-Whanganui Region. It focuses on the big four issues facing resource management in the Region. This document, and the rules contained within, has a major impact on the water, wastewater and stormwater services that Manawatū District Council provides. Horizons determines the quantity of water we can abstract from bores or streams in the Region. They also determine the quality and quantity of wastewater or stormwater that we can discharge to the environment.
Manawatū-Whanganui Civil Defence Emergency Management Group Plan	The CDEM Group Plan defines the riskscape of the region with respect to natural hazards. It also discusses the 4 R's of Civil Defence: Reduction, Readiness, Response and Recovery. Asset Management Planning plays a vital role in Reduction - reducing the exposure of our assets and the community to risks from natural hazards. Water Supply and Wastewater are considered lifeline utilities, and stormwater networks can reduce the impact of flood events, so all three are vital to the successful implementation of the Group Plan.
Health and Safety at Work Act 2015	New Zealand's key work health and safety legislation is the Health and Safety at Work Act 2015 (HSWA) and regulations made under that Act. All work and workplaces are covered by HSWA unless specifically excluded.
Manawatū River Accord	Manawatū District Council is a member of the Manawatū River Leaders' Accord. This group is committed to actions that improve the quality of the Manawatū River, which in our District means improving the quality of its tributary, the Ōroua River. Improvements to the Feilding WWTP have the most impact on meeting our commitments to the Accord.

3.3.3.Internal Documents

There are a number of key documents that underpin Council activities, including three waters. The following table gives a summary of key points within these documents:

Document	Key Points
Manawatū District Long Term Plan	The Long Term Plan details the Council's Plans for the next ten years including how Council intends to fund its ongoing programmes and capital works.
Significant and Engagement Policy	Indicates criteria for determining significance, work, and engagement level.
Infrastructure Strategy	Discusses overall trends Council needs to be aware of in planning for sustainable infrastructure in the District.
Operational Guidelines	Explains the operation direction for each activity, and informs levels of service.
Engineering Standards for Land Development	Provides specific requirements, guidelines and minimum engineering standards for subdivision and developments with the Manawatū District.
District Plan	This provides zoning throughout the district. Certain activities that are permitted in one zone may not be permitted in another. The different types of resource consents are land use and subdivision. Activities that need resource consent are classified as controlled restricted discretionary, discretionary and non-complying.
Feilding Urban Growth Framework	The Feilding Framework Plan presents the results of a strategic analysis of the needs and challenges for Feilding urban growth and development
Council Bylaws	Contain legislative mechanisms and guidelines for management for the Three Waters, and other, activities
Resource Consents	If the construction of an asset does not meet the development controls outlined in the District Plan or relates to an activity that has the potential to result in adverse effects on the environment, beyond those contemplated by the District Plan provisions, resource consent may be required. An Assessment of Environmental Effects (AEE) is required to support any resource consent applications to the respective Councils when seeking approval to construct, alter or vary the use of a facility or building that is not permitted by the relevant plan.

3.4 Customer Levels of Service

3.4.1 The Levels of Service Framework

The Local Government Amendment Act 2010 provides that the Secretary of Local Government will introduce standard performance measures that are applicable to local authorities so that the public may compare the levels of service provided in relation to a group of activities by different local authorities. The measures apply to the mandatory groups of activities as specified in the Act, namely:

- Water supply
- Sewerage and the treatment and disposal of sewage
- Stormwater drainage
- Flood protection and control works.

Section 4 of Schedule 10 of the Amendment Act 2010, specifies the information to be provided in the Long Term Plan as part of the statement of service provision. As well as performance measures for the mandatory Groups of Activities, the Act also requires that each local authority provides information on:

- The performance measures that the Local Authority considers will enable the public to assess the levels of service for major aspects of groups of activities for which performance measures have not been specified as mandatory measures
- The performance targets set by the local authority for each performance measure.

3.4.2 Developing Levels of Service

The process for development and monitoring of levels of service can be summarised as:

- Identify the customers of the service and other parties with an interest
- Define the current levels of service the organisation delivers
- Design and carry out consultation to define the desired service level
- Establish service targets and service achieved over a long period
- Measure and report to community on level of service achieved
- Review levels of service with stakeholders at regular intervals to check desirability and affordability of level of service provided.

The Asset Management Plan aims to document each of these steps for the activity, identify any issues such as adequacy of consultation, suitability of standards, or service gaps, and describe plans to address or improve them.

It is common for customers to demand a continual improvement in service, and while the Council will strive to deliver improvements, the level of service is constrained by cost considerations. It is therefore important that when Council consults with the community over levels of service, cost information is provided in order for the price/quality trade -off to be established. The main mechanism for consultation on levels of service is via the Long Term Plan.

The Council owns water, wastewater and stormwater assets in order to deliver services to the community.

Defining and understanding our levels of service (LOS) is essential for good practice in Asset Management. This section of the Asset Management Plan discusses the drivers for our levels of service, community expectations, our current levels of service, and the desired levels of service MDC will work towards.

There are several drivers behind the levels of service MDC provide for water, wastewater and stormwater within the Manawatū District. These include:

- Customer service expectations
- Councils vision and priorities as stated in our Long Term Plan
- Legislative requirements, including DIA requirements for mandatory performance measures
- Resource consents performance conditions.

3.4.3 Reporting

Reporting against the performance measures is tracked quarterly, and reported in the Annual Report. The most recent information from this reporting mechanism is set out in Table 5 as the baselines for the 2018-2028 LTP.

3.4.4 Customer Profile

The identified customers who use the services provided by the three waters activity include the following:

- Residents – These people live in the district
- Ratepayers – This includes people who own properties in the district but may/not reside in the district
- Local users – They are the users of the services provided by this activity on an occasional or regular basis, including housing tenants
- Businesses – Individuals or organisations who carry out their business in the district, including schools
- Other Stakeholders – Individuals or organisations that have interest or are affected by the services that are undertaken by the Council. They include neighbouring Local authorities, Horizons Regional Council, Ministry of Health, NZTA and other public service providers, Community Boards and Committees, Local Iwi, local contractors.

3.4.5 How we engage with Customers

The Council undertakes both customer surveys and assessments of the complaints/service request records to obtain information on the delivery of levels of service to customers.

Council Complaints/Service Request Database

The Council Database has the facility to record information pertaining to a particular item and a facility to request services. It provides Council with a monitoring facility for response times to requests from Customers.

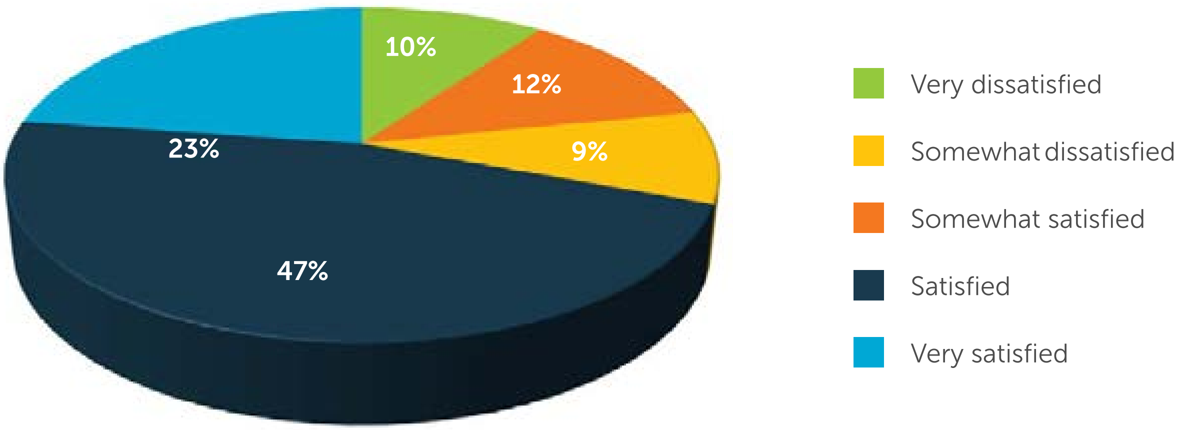
Residents Surveys

Monitoring of performance is also undertaken via residents surveys. The annual survey of residents conducted by Key Research in June 2019 found that:

Water

79% of residents were satisfied with overall water management and 22% of residents were dissatisfied. This survey found that the water clarity, water pressure, reliability, taste and odour is very satisfactory across the district.

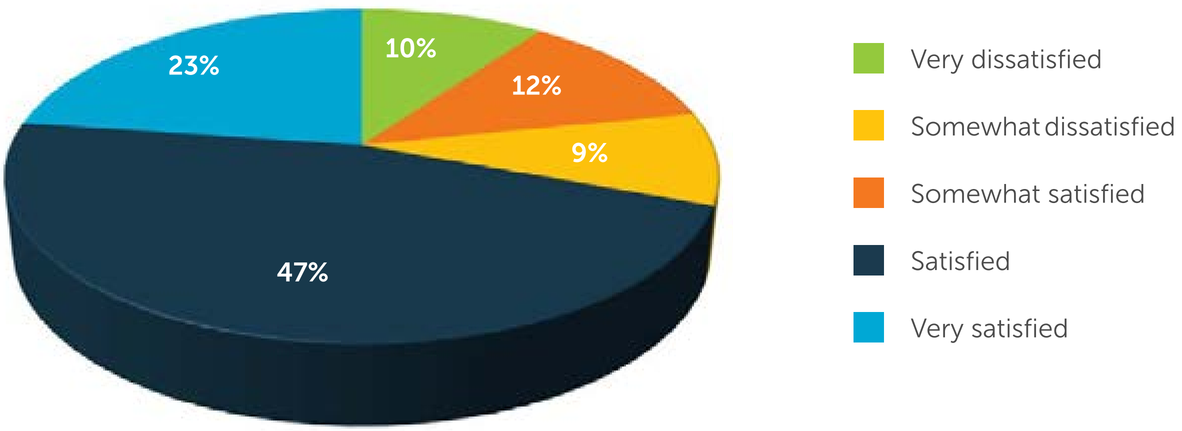
Overall satisfation of water management - Town supply and rural water schemes



Wastewater

Residents are very satisfied with the reliability of the sewage system (79%) and 90% were satisfied with how the Council treat and dispose of sewage. Over 95% of residents were satisfied with the reliability of the Council sewage system.

Wastewater management - Town sewage scheme



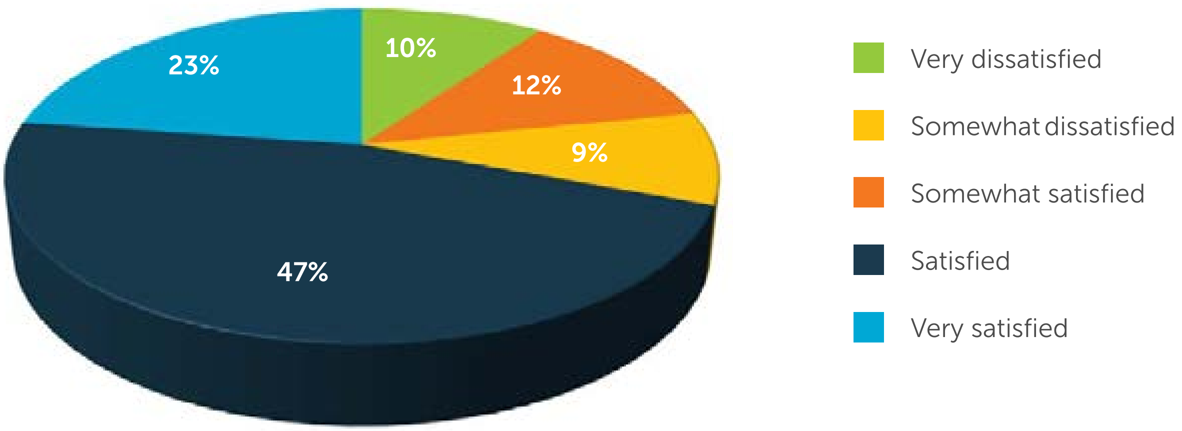
Stormwater

Overall management of stormwater is satisfactory, with 23% of residents very satisfied with stormwater management.

There were however residents that were dissatisfied with Council's management of stormwater with respect to keeping road and footpaths free of flooding (26% dissatisfied) and protecting their property from flooding (25% dissatisfied).

Part of the stormwater management plan is the use of the roading network as a secondary overland flow path to help protect dwellings from inundation. This approach does not always meet resident's expectations that roads remain free from stormwater at all times.

Overall satisfaction with Council stormwater



3.4.6 Performance Measures

A robust system for measuring, recording and reporting performance is essential to tracking whether Council is achieving its objectives and delivering the agreed levels of service. In general this can be achieved using existing systems but will require development of new processes to cover the range of measures effectively. Measurement and recording of performance will require involvement of other parties outside of the Asset Management team e.g. customer services and field staff. Buy-in from all staff involved will be essential to successful performance reporting.

Regular performance reviews of targeted improvement areas will be required and annual performance reporting is intended. Future AMPs will report on the current level of performance that has been achieved and this will contribute to the identification of further improvement actions that may be required.

Within Council there is monthly financial reporting and the progress of projects is reported quarterly to Council's management team, while level of service achievement reporting is prepared for the Annual Report. The Annual Plan and the LTP detail the reporting directly to the community. Public reporting via the Annual Plan will continue to be the key reporting tool for Council. The level of achievement of the levels of service is reported to an extent that is regarded as appropriate for the wider community. More detailed reporting will be undertaken to underpin the public reporting and assist with the prudent management of the schemes.

The key drivers of the levels of service for stormwater are community outcomes. In line with Council's strategic priorities, the provision of this activity provides the basic infrastructure which enables the District to attract and retain people and businesses. Recent rainfall patterns have called into question historic design parameters and may mean that the capacity and capability of the existing system to provide protection to the levels normally expected by a community is exceeded. It is likely that stormwater management methods will be required to meet increasingly higher standards.

The process of setting levels of service is included under our consultation on each Long Term Plan. The Long Term Plan is a 10-year planning document that is reviewed by Council every 3 years. It is a statutory requirement under the Local Government Act 2002. Residents and ratepayers of the Manawatū District are consulted on this document, and have the opportunity to comment on issues including Council's levels of service. The following table provides a summary of Council's current levels of service, along with the measures MDC use to track our performance against these.

3.5 Gap Analysis

This section analyses the results given above against performance measures, to determine where gaps exist and what can be done to close those gaps.

3.5.1 Water Supply

3.5.1.1 Safety of Drinking Water

Water quality, and compliance with the Drinking Water Standards, is a top priority for Council. The two key parts to the Standards are bacteriological compliance and protozoal compliance. Bacteriological compliance assesses the ability of a water supply to protect against harmful bacteria. Protozoal compliance assesses the ability of a water supply to ensure that protozoa, which are multi-cellular organisms that can include Giardia and Cryptosporidium species, are absent from drinking water.

Improvements at Almadale WTP in Feilding are ongoing to ensure that protozoal compliance can be demonstrated consistently. For the 2019/2020 year there has been 100% compliance with the New Zealand Drinking Water Standards criteria for protozoa. The bulk of these improvements are focused on reporting of compliance for the UV disinfection system.

Sanson has a new water supply and Hīmatangi Beach and Rongotea have now been successfully granted renewal of their secure bore status, meaning protozoal compliance can be achieved going forward.

Achieving protozoal compliance for the Stanway-Halcombe Rural Water Supply could be achieved by installing treatment for the entire supply to protozoal standards

Investigations are underway into the best option for Stanway-Halcombe Rural Water Supply.

Note: Following the Havelock North drinking water inquiry it is most likely that there will be changes to the regulatory environment, the drinking water standards and the interpretation of these.

3.5.1.2 Response Times

4 of the 4 relevant targets for response were met in the 2019/2020 compliance year. The median time taken to attend urgent call-outs was .53 hours, 1.47 hours less than the 2 hour performance measure.

3.5.1.3 Emerging Issues

The following issues are emerging for the water assets that will require further consideration.

- Unaccounted for water (UAW) assessment and reporting rather than the 'leakage' measure currently used
- Definition of critical assets and reporting on the management, operational , and maintenance needs of these as opposed to non-critical assets
- The carbon emissions and environmental impacts of the water activity.

3.5.2 Wastewater

3.5.2.1 Dry Weather Overflows

Mains renewals and capacity upgrades are planned for the Feilding wastewater network. These will contribute to the performance of the network, and help to ensure that wastewater flows through the system in the correct manner without overflows occurring.

3.5.2.2 Emerging Issues

The following issues are emerging for the water assets that will require further consideration.

- Inflow and Infiltration (I/I) assessment and reporting
- Definition of critical assets and reporting on the management, operational , and maintenance needs of these as opposed to non-critical assets
- The carbon emissions and environmental impacts of the water activity.

3.5.3 Stormwater

3.5.3.1 Village Schemes

Council has existing assets that have not been managed under the stormwater activity. It is now intended to treat all stormwater systems in the outlying villages as one scheme with Feilding.

3.5.3.2 Emerging Issues

The following issues are emerging for the water assets that will require further consideration.

- Better definition and reporting on 'stormwater' issues rather than 'flooding' as these responsibilities are now distinct in the legislation.

Table 5

Water Supply Activity Statement Summry				
What We Do	Undertake water treatment to ensure that it is safe to drink and also ensure there is enough water for supply.			
How We Do It	• Providing water supplies to meet residential, industrial/commercial and fire-fighting needs via Council's four urban drinking water schemes: Feilding, Hīmatangi Beach, Sanson and Rongotea; • Providing rural water schemes in Stanway-Halcombe and Waituna West to meet residential and agricultural needs; • Maintaining and repairing water treatment plants and water storage facilities; • Maintaining and repairing Council's reticulation network system; • Monitoring and managing the demand for water; • Administering the following two rural supply schemes that are community operated: o Kiwitea ; and o Ōroua No.1 • Ensuring that all Council water schemes meet the appropriate standards.			
Level of Service Statement	**Performance Measure**	**Baseline**	**Target for Years 1-3**	**Target for Years 4-10**
You can expect that the potable water we supply is safe to drink	We will measure this by the extent to which Council's drinking water supply complies with: • Part 4 of the drinking-water standards (bacteria compliance criteria), and • Part 5 of the drinking-water standards (protozoal compliance criteria). Note: The drinking water standards referred to in the targets are the Drinking Water Standards for New Zealand 2005 (revised 2008).	• Bacterial Compliance 2019-2020: All samples taken showed that the water was safe i.e.no positive E coli. However, a positive E.coli sample was detected at the Sanson Treatment Plant, Three follow up samples indicated that the water was safe to consume. Re-testing confirmed that this was a false positive. • Protozoal Compliance: 2019-2020: There has been 100% compliance with the New Zealand Drinking Water Standards criteria for protozoa. Stanway-Halcombe Rural Water Supply has been excluded from this compliance measure.	• No public health risk with substantiated positive E-coli detected in the water supply • 100% New Zealand Drinking Water Standard Compliance Criteria for protozoa are met, with the exception of the Stanway-Halcombe Rural Water Supply	• No public health risk with substantiated positive E-coli detected in the water supply • 100% New Zealand Drinking Water Standard Compliance Criteria for protozoa are met, with the exception of the Stanway-Halcombe Rural Water Supply
You can expect the water reticulation network to be well maintained	We will measure this by the percentage of real water loss from Council's networked reticulation system. This will be calculated for each water supply scheme using Method 1 - Water Balance as per the Department of Internal Affairs guidelines.	Water loss in Feilding and villages was calculated at less than 34% in 2019-2020. Water losses at Hīmatangi Beach could not be measured in due to seasonal fluctuation in population. This figure does not include rural water schemes.	• Estimated real water loss < 35% percent per water supply scheme	• Estimated real water loss < 35% percent per water supply scheme

Level of Service Statement	Performance Measure	Baseline	Target for Years 1-3	Target for Years 4-10
You can expect faults to be responded to and resolved in a timely manner	We will measure this by measuring the median response time for call-outs to a fault or unplanned interruption to Council's networked reticulation system: • Attendance time for urgent call-outs from the time the Council receives notification to the time that service personnel reach the site • Resolution time of urgent call-outs from the time that Council receives notification to the time that service personnel confirm that the water supply has been reinstated. • Attendance time for non-urgent call-outs from the time that Council receives notification to the time that service personnel reach the site • Resolution time for non-urgent call-outs from the time that Council receives notification to the time that service personnel confirm resolution of the fault or interruption. Note: An "urgent" call-out is one in which there is a complete loss of water.	There were 62 urgent requests in 2019-2020, with a median response time of .53 hours and a median resolution time of 1.67 hours. In 2019-2020 there were 385 non-urgent request, with a median response time of 24 hours and a median resolution time of 24 hours.	• Median attendance time within 2 hours (urgent). • Median resolution time within 9 hours (urgent) • Median attendance time within 5 working days (non-urgent) • Median resolution time within a further 5 working days (non-urgent)	• Median attendance time within 2 hours (urgent). • Median resolution time within 9 hours (urgent) • Median attendance time within 5 working days (non-urgent) • Median resolution time within a further 5 working days (non-urgent)
You can expect satisfaction with our service	We will measure this by monitoring the total number of complaints received by Council about any of the following: • Drinking water clarity • Drinking water taste • Drinking water odour • Drinking water pressure or flow • Continuity of supply • The local authority's response to any of these issues Expressed per 1,000 connections to the Council's networked reticulation system.	In 2019-2020 there were 125 complaints were received. This represent 17.09 complaints per 1,000 connections	• <20 complaints received in total per 1,000 connections per annum	• <20 complaints received in total per 1,000 connections per annum
You can expect us to manage the demand for domestic water supply	We will measure this by the average consumption of drinking water per day, per resident within Council's authority area.	In 2019-2020 water consumption for Feilding and villages (including all water used by industrial and commercial customers) was 404 litres per person per day. If metered water is excluded this reduces to 249 litres per person per day. This figure does not include rural schemes.	• 250 litres/person/day for domestic supply only	• 250 litres/person/day for domestic supply only

Wastewater Activity Statement Summary

What We Do	Collect, treat and dispose of wastewater including domestic, commercial and industrial waste.
How We Do It	• Maintaining reticulated wastewater systems in Feilding, Awahuri, Cheltenham, Halcombe, Kimbolton, Rongotea, Sanson and Hīmatangi Beach; • Ensuring that we meet resource consent requirements for the discharge of treated wastewater to either land or water from the District's Wastewater Treatment Plants; and • Ensuring that we meet statutory obligations under the Local Government Act 2002, Health Act 1956 and Resource Management Act 1991.
Contribution to Community Outcomes	The activity of providing of a safe and effective wastewater service is one of Council's core functions. Council seeks to protect the environment, minimise risk and health hazards from sewerage overflows by having a service that is cost-effective, compliant and operated in a social and culturally acceptable manner. Council understands that there are many community and economic benefits attached to the provision of adequate systems for the safe collection, treatment and disposal of wastewater. The Wastewater Activity will focus on the following to achieve the Community Outcomes: • Work to renew and/or upgrade assets so that they meet desired level of service; Carry out works required to cater for projected future growth, development and demand; and • Monitor quantity and quality of treated wastewater discharges in each scheme.

Level of Service Statement	Performance Measure	Baseline	Target for Years 1-3	Target for Years 4-10
You can expect us to adequately manage our wastewater system	We will measure this by monitoring the number of dry weather sewerage overflows from Council's sewerage system, expressed per 1000 sewerage connections.	In 2019-2020 there were 4 dry weather overflows in Feilding. From a district wide perspective this represents .57 overflows per 1,000 connections across the district.	< 6 dry weather overflows per 1000 connections	< 6 dry weather overflows per 1000 connections
You can expect discharge compliance	We will measure this by compliance with the Council's resource consents for discharge from its sewerage system measured by the number of: • Abatement notices • Infringement notices • Enforcement orders; and • Convictions received by Council in relation to those resource consents	One abatement notice was received for the Sanson WWTP. No infringement notices, enforcement order or convictions were received by Council in 2019-2020.	• < 2 abatement notices advising breaches of resource consent conditions per scheme • Zero infringement notices, enforcement order or convictions advising breaches of resource consent conditions per scheme	• < 2 abatement notices advising breaches of resource consent conditions per scheme • Zero infringement notices, enforcement order or convictions advising breaches of resource consent conditions per scheme
You can expect faults to be responded to and resolved in a timely manner	We will measure this by measuring the following median response times where Council attends to a sewerage overflows resulting from a blockage or other fault in Council's sewerage system: • Attendance time: From time the Council receives notification to the time that service personnel reach the site • Resolution time: From the time Council receive notification to the time service personnel confirm resolution of the blockage or other fault.	In 2019-2020 there were 4 overflows, as follows: • 4 dry weather overflows in Feilding • 0 wet weather overflows in Feilding The median response time was 0.64 hours. The median resolution time to the 4 overflows above was 1.16 hours.	• Median attendance time within 2 hours • Median resolution time within 5 hours	• Median attendance time within 2 hours • Median resolution time within 5 hours

You can expect satisfaction with our service	We will measure this by monitoring the total number of complaints received by Council about the following: • Sewage odour • Sewerage system faults • Sewerage system blockages • Council's response to issues with its sewerage system Expressed per 1000 connections to the council sewerage system.	In 2019-2020 there were 31 complaints received. This represents 4.43 complaints per 1,000 connections (the overall target for all categories is less than 20 per 1,000 connections) • 9 relating to odour (1.29 per 1,000 connections) • 2 relating to system faults (.29 per 1,000 connections) • 20 relating to blockages (2.86 per 1,000 connections) • 0 relating to the level of response (0.0 per 1,000 connections)	<20 complaints in total per 1,000 connections per annum	20 complaints in total per 1,000 connections per annum

Stormwater Activity Statement Summary	
What We Do	Provide a network of stormwater systems throughout the District.
How We Do It	• Maintaining reticulated stormwater systems in Feilding, Rongotea and Sanson including inlets, pipes, open drains and outlets to receiving environments. • Maintaining stormwater assets in Hīmatangi Beach, Halcombe, Tangimoana and Cheltenham (Post adoption of the 2018-2028 LTP) • Carrying out ongoing maintenance to the four rural drainage schemes: Bainesse, Maire, Makowhai and Ōroua Downs.
Contribution to Community Outcomes	The activity of providing of an effective stormwater service and drainage infrastructure is one of Council's core functions. Council seeks to protect the environment, people's property and roadways from flooding during heavy rain events by having a service that is sustainably managed, compliant, adequately deals with flows, is cost effective and operated in a social and culturally acceptable manner. Council understands that there are many community and economic benefits attached to the provision of adequate systems for the safe collection and disposal of stormwater Effective stormwater and drainage infrastructure ensures that the built environment – roadways, culverts and other infrastructure either associated with flood protection or in danger of flooding – is safe, reliable and attractive. The Stormwater Activity will focus on the following activities to achieve the Community Outcomes: • Work to renew or upgrade assets so that flows are diverted away from buildings at risk of flooding; • Upgrades are carried out when and where needed to reduce the risk of stormwater flows capturing contaminants and to meet resource consent and compliance standards; • Carry out works required to cater for projected growth, development and demand so as not to increase the effects of stormwater flows on downstream properties; • Work with private property owners and developers to deal with stormwater onsite; and • Work with Horizons to help manage stormwater risks within the Manawatū District.

Level of Service Statement	Performance Measure	Baseline	Target for Years 1-3	Target for Years 4-10
You can expect stormwater system adequacy	We will measure this by the number of flooding event that occur in the district. For each flooding event, the number of habitable floors affected (Expressed per 1000 properties connected to Council's stormwater system)	No flooding of habitable floors was reported in 2019-2020.	<10 habitable floors per 1000 properties affected by flooding per flooding event that occurred in the District	<10 habitable floors per 1000 properties affected by flooding per flooding event that occurred in the District
You can expect us to complete with discharge consent conditions	We will measure this by compliance with Council's resource consents for discharge from its stormwater system measured by the number of: • Abatement notices • Infringement notices • Enforcement orders; and • Convictions received by Council in relation to resource consents	No abatement notices, infringement notices, enforcement order or conviction were received by Council in 2019-2020.	• <Two abatement notices advising breaches of resource consent conditions per scheme • Zero infringement notices, enforcement orders or convictions advising breaches of resource consent conditions per scheme	• <Two abatement notices advising breaches of resource consent conditions per scheme • Zero infringement notices, enforcement orders or convictions advising breaches of resource consent conditions per scheme
You can expect us to respond to flooding events in a timely manner	We will measure this by measuring the median repose times to attend a flooding event, measured from the time that Council receives notification to the time that service personnel reach the site.	No flooding events occurred during 2019-2020.	Median response time within 2 hours.	Median response time within 2 hours.
You can expect satisfaction with our service	We will measure this by the number of complaints received by Council about the performance of its stormwater system (expressed per 1,000 properties connected to Council's stormwater system)	Council received 34 complaints relating the stormwater service in 2019-2020. This represents 4.93 complaints per 1,000 property connections.	<Six complaints per 1,000 property connections per annum	<Six complaints per 1,000 property connections per annum

4. FUTURE DEMAND

4.1 Demand Drivers

Drivers affecting demand include things such as population change, regulations, changes in demographics, changing technologies, economic factors, land use change, changing legislative requirements, changing regional and district planning requirements and climate change. The present position and projections for demand drivers that may impact future service delivery and use of assets have been identified and documented.

4.2 Demand Impact and Demand Management Plan

Demand for new services will be managed through a combination of managing existing assets, upgrading of existing assets and providing new assets to meet demand and demand management. Demand management practices can include non-asset solutions, insuring against risks and managing failures.

Increasing demand for services over time generates a requirement for the development of additional infrastructure. Expenditure programmes need to be planned to fund the capital works and associated on-going operational expenditure. Alternately, it may be possible to manage demand within the existing system capacity.

Where a reduced demand is forecast it may be appropriate to renew assets with a lesser capacity, operational expenses may decrease or an asset may become surplus to requirements.

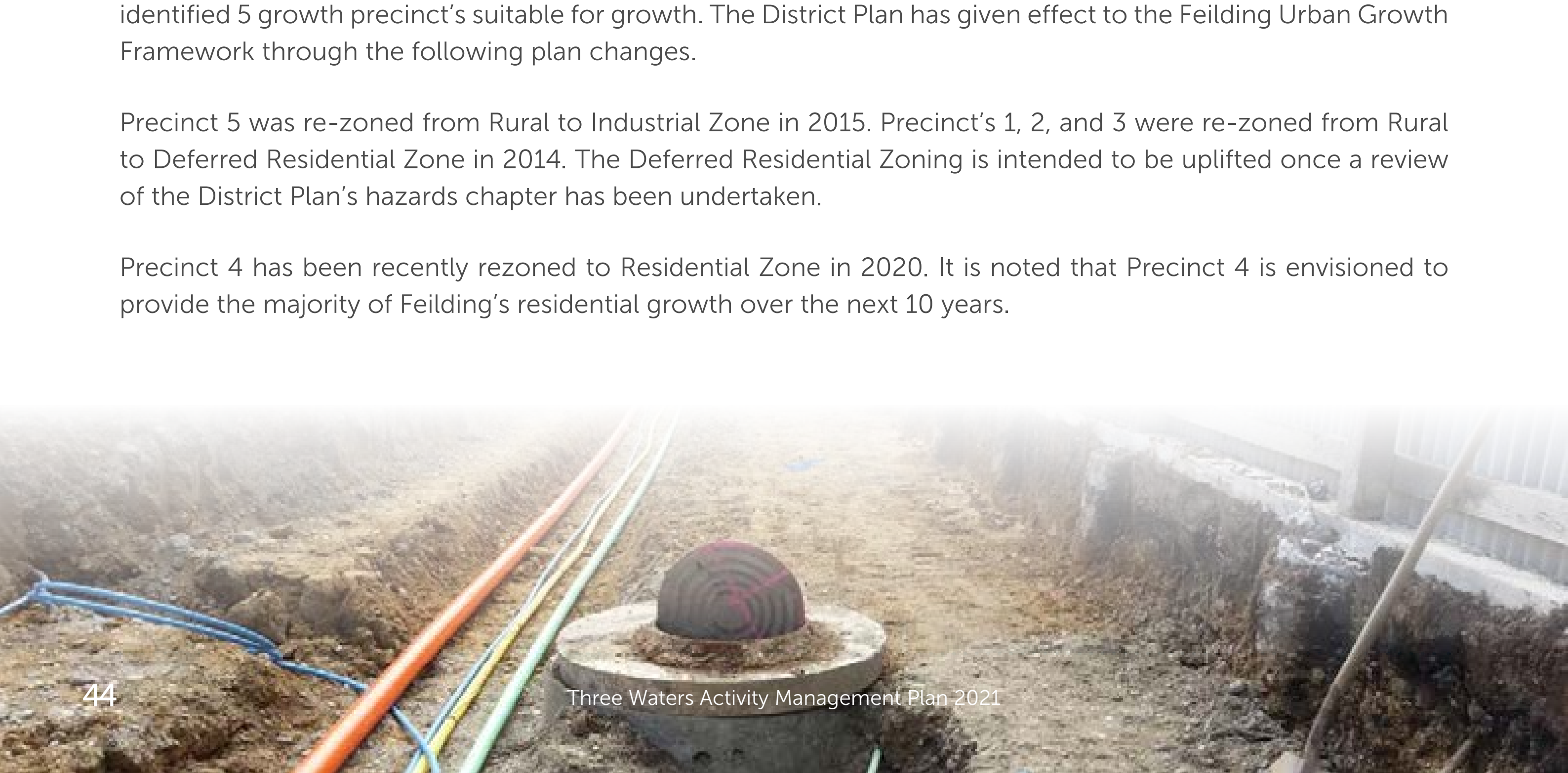
Increase in population: The development and population growth are factors influencing future three waters demand but the influence is not immediate. The main driver is the levels of service changes required to meet resource consents.

Changes in land use: Landuse change can result in changes to water services patterns and demand. Dwellings with higher demand can collectively have a high impact on the network capacity. Likewise, development increases impermeable services, which can impact on the wastewater and stormwater networks. Changes in zoning from rural to residential can increase demand on the three water services.

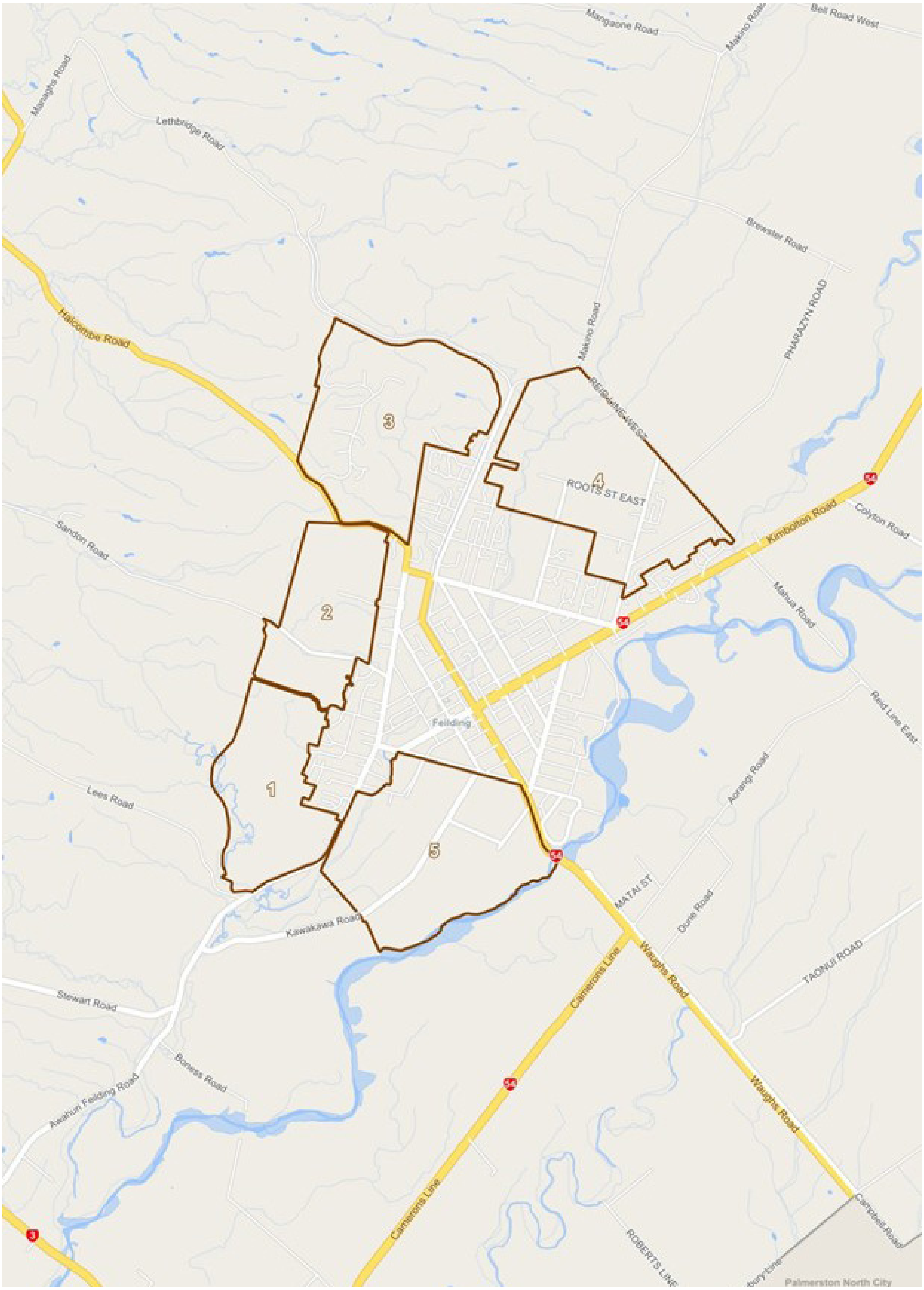
Residential and Industrial Growth in Feilding: Manawatū District Council undertook the Feilding Urban Growth Framework Study in 2013 to identify where Feilding could grow into the future, the urban growth framework identified 5 growth precinct's suitable for growth. The District Plan has given effect to the Feilding Urban Growth Framework through the following plan changes.

Precinct 5 was re-zoned from Rural to Industrial Zone in 2015. Precinct's 1, 2, and 3 were re-zoned from Rural to Deferred Residential Zone in 2014. The Deferred Residential Zoning is intended to be uplifted once a review of the District Plan's hazards chapter has been undertaken.

Precinct 4 has been recently rezoned to Residential Zone in 2020. It is noted that Precinct 4 is envisioned to provide the majority of Feilding's residential growth over the next 10 years.



Map 1: Growth Precincts Around Feilding. Feilding Urban Growth Framework Study 2013



Residential Growth in Hīmatangi Beach: Oasis Properties Ltd has lodged a consent application (in May 2019) to subdivide a 18.6066 hectare property on Sandown Road in six stages to create 77 residential lots and a balance lot. The site is zoned Village, meaning that this type of development is provided for in the District Plan. A future link road to connect Sandown Avenue with Hīmatangi Beach Road is proposed as part of the development. All lots exceed the minimum site area of 500m2 (Resource Consent Report for Consent Number 3700). Council is still working through the processing requirements for this application. However, if granted, this would constitute a significant development within this Village.

A further subdivision application in Hīmatangi Beach, known as "Western Sands" has lapsed. The applicant visited Council in late 2017, but no application has been received to date (Reid, N. Pers. Comm. 24/10/19).

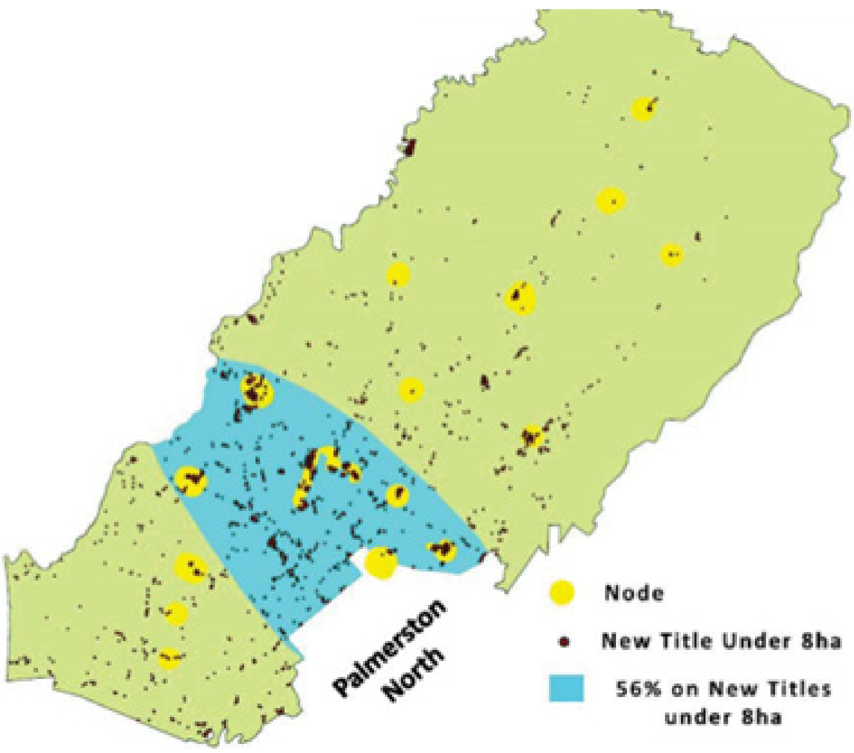
The existing urban water supply and wastewater networks (and possibly the stormwater network) would need to be extended however there is capacity within the networks to accommodate this subdivision.

Subdivision and Development in Rural Areas and Villages: Rural landscapes and pastoral farmland are significant in our district for our local economy. Maintaining and protecting the productive capacity of rural land is imperative for the Manawatū District. One of the biggest threats to the future of farming is the subdivision of land to a size that is unsuitable for productive activities.

The Operative Manawatū District Plan seeks to concentrate rural subdivision for 'lifestyle' sections to a 1km node around Feilding and existing Villages and other community focal points by providing for smaller lot subdivision within nodal areas. However, a review of subdivision and building consent data has found that a greater percentage of subdivision is occurring outside of the node overlays than within the existing nodes. As illustrated in Figure 2 below, the Feilding node had the most growth, followed by Hiwinui. Halcombe, Sanson, Kimbolton and Pōhangina in the 10 year period between 2005 and 2015. Colyton also experienced a modest increase in new building consents between 2005 and 2015.

The District Plan is currently being reviewed. Plan changes are being progressed for the Rural, Residential and Village zones.

Figure 2



4.2.1 Factors Influencing Demand

The issues that influence demand forecasting and the associated development improvements include:

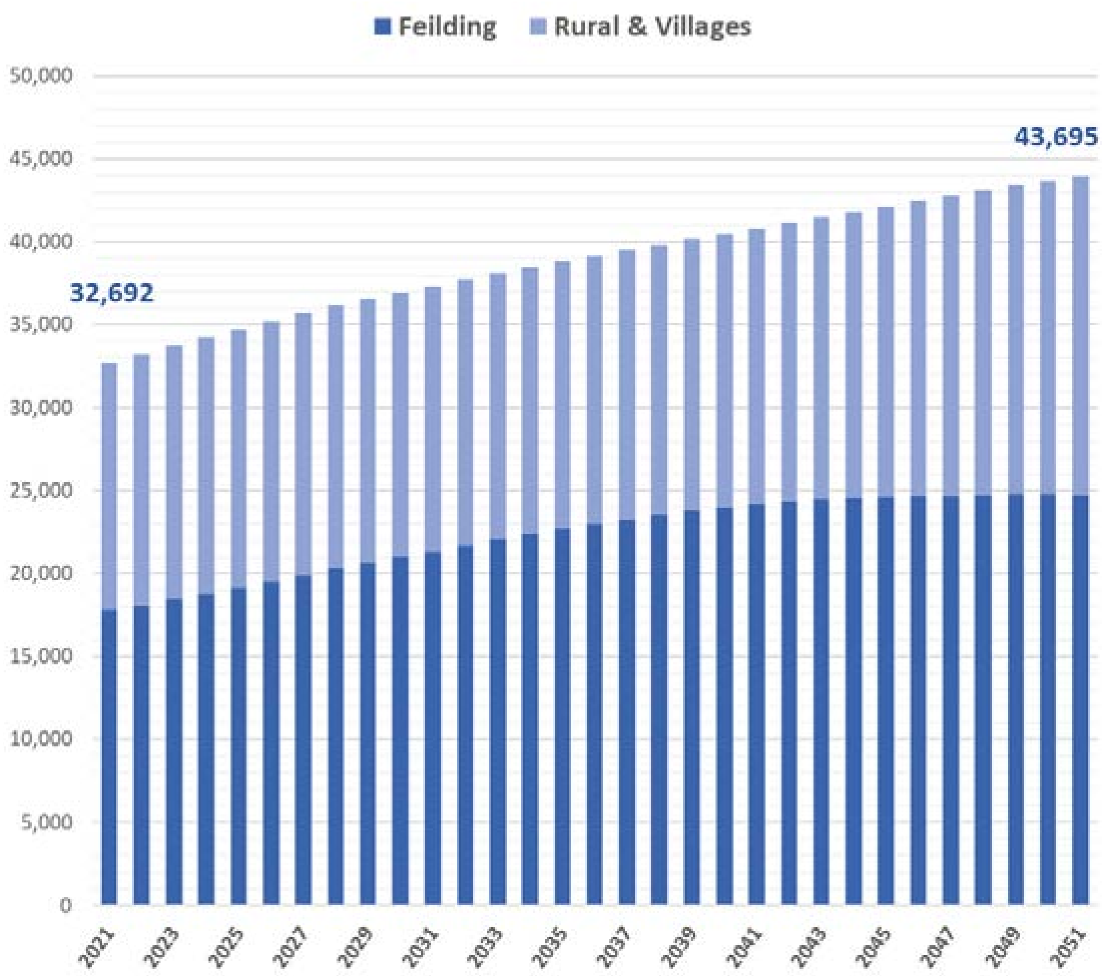
- Local population trends
- Accuracy of predicted future populations
- Local economic trends and the diversity of industries
- Changing technology
- Changing legislation requirements
- Changing community service requirements
- Particular trends that have a significant impact on the road asset
- Growth of Feilding township, with new and infill development.

4.3 Demand Forecasts

4.3.1 Population Growth

Assumption: That the population of the Manawatū District will increase from 32,692 residents in 2021 to 43,695 in 2051, as illustrated in Figure 3 below.

Figure 1: Population Growth 2021 to 2051



Alternative 1: That the resident population of the Manawatū District will increase more rapidly than forecast in Figure 3.

Impact	**Moderate** Significantly higher population growth may impact negatively on levels of service as infrastructure has insufficient capacity to meet demand. Infrastructure may need to be extended or new infrastructure installed earlier than planned to accommodate additional growth.
Likelihood	**Possible** Population forecasts are based on the medium growth scenario published by Infometrics (August 2020). These forecasts have considered anticipated changes in international migration as a result of COVID-19 in addition to projected labour force growth, and infrastructure and construction investment flowing into the district and wider region. Favourable conditions for our food producers in addition to high levels of investment and strong jobs growth in the region are expected to support levels of net migration to the District over the 10 Year Plan period. This is supported by the availability of land and a greater range of lifestyle choices in the District relative to neighbouring Palmerston North. The expansion of Ōhakea Air Force Base and the relocation of an estimated 280 families from Whenuapai to the region is further expected to drive population growth in the district to 2031. The above factors are reflected in the population growth scenario adopted as a basis for the 2021-31 10 Year Plan. While the projections are based on the best information available, uncertainty is elevated due to the closure of national and international borders, a lack of certainty on when borders will reopen, and how migration trends will change in response to the impacts of COVID-19.
Overall Risk	**Guarded (6)**
Reasons & Financial Effect of Uncertainty	Significantly higher population growth than expected will put pressure on existing infrastructure and services. Council may need to find ways of raising the extra revenue required, or consider lower levels of service. Higher than expected population growth will also mean that Council receives more development contributions. This will help to partially offset higher expenditure on servicing this growth.
Mitigating Factors (if applicable)	Council regularly reviews population growth and development trends through the following processes: 1. Monitoring and reporting under the National Policy Statement – Urban Development (NPS-UD); 2. Annual Estimated Resident Population (ERP) from Statistics New Zealand; 3. 10 Year Plan process Major projects and significant changes to levels of service are assessed against affordability through the Annual Plan Process. In addition, subdivision and building consent data is used for annual updates to the schedule of works contained within Council's Development Contributions Policy. Through the above processes, actual growth will be assessed against projected growth enabling review of the need for, and timing of capital expenditure over the 10 Year Plan period. Growth projects may be brought forward due to excess demand or reducing capacity in existing infrastructure networks.

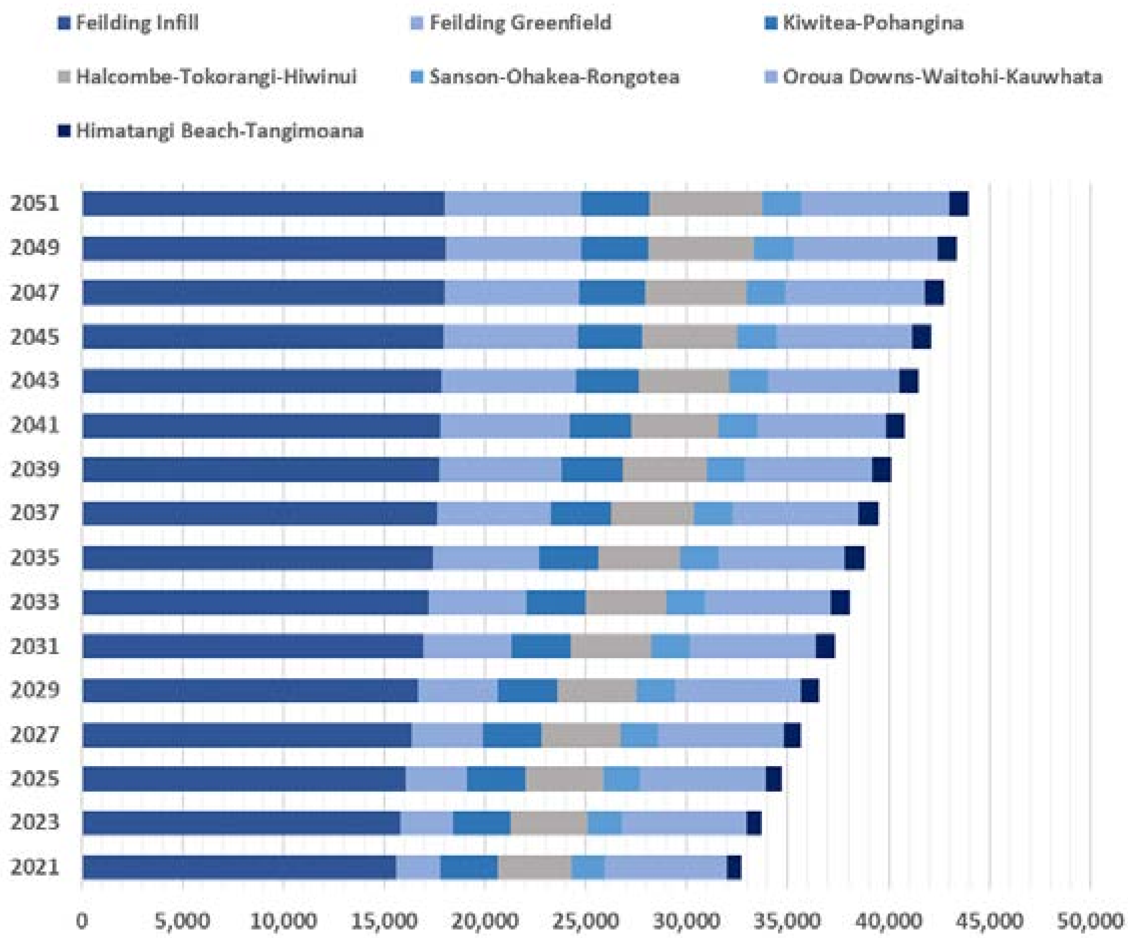
Alternative 2: That the resident population of the Manawatū District will increase more slowly than forecast in Figure 3.

Impact	**Minor** Significantly lower population growth than forecast will mean that Council's revenue from rates and development contributions will be less than forecast. This may mean that planned infrastructure investment is deferred. Decreased rates revenue may also increase costs for current ratepayers to fund capital projects and service delivery.
Likelihood	**Possible** Population forecasts are based on the medium growth scenario published by Infometrics in August 2020. These forecasts have considered anticipated changes in net international migration driven by COVID-19 alongside projected growth in the labour force, and infrastructure and construction investment flowing into the district and wider region. While the projections are based on the best information currently available, uncertainty is elevated due to the closure of national and international borders, a lack of certainty on when borders will reopen, and how migration trends will change in response to COVID-19. The additional layer of uncertainty imposed by COVID-19 has increased the likelihood of lower than forecast population growth from unlikely to possible.
Overall Risk	**Guarded (3)**
Reasons & Financial Effect of Uncertainty	Lower rates of population growth could increase the costs per property of delivering agreed levels of service. Lower than expected population growth will also mean that Council collects less revenue through development contributions. This will require Council to revisit the need for, and timing of capital projects to support growth.
Mitigating Factors (if applicable)	Council regularly reviews population growth and development trends through the following processes: 1. Monitoring and reporting under the National Policy Statement – Urban Development (NPS-UD); 2. Annual Estimated Resident Population (ERP) from Statistics New Zealand; 3. 10 Year Plan process Major projects and significant changes to levels of service are assessed against affordability through the Annual Plan Process. In addition, subdivision and building consent data is used for annual updates to the schedule of works contained within Council's Development Contributions Policy. Through the above processes, actual growth will be assessed against projected growth enabling review of the need for, and timing of capital expenditure over the 10 Year Plan period. Growth projects may be delayed due to the availability of supply or capacity in existing infrastructure networks.

4.3.2 Population Distribution

That population distribution across the Manawatū District will occur as illustrated in figure 3.

Figure 3: Population Distribution



Alternative 1: That population distribution across the Manawatū District will differ substantially from forecast population distribution.

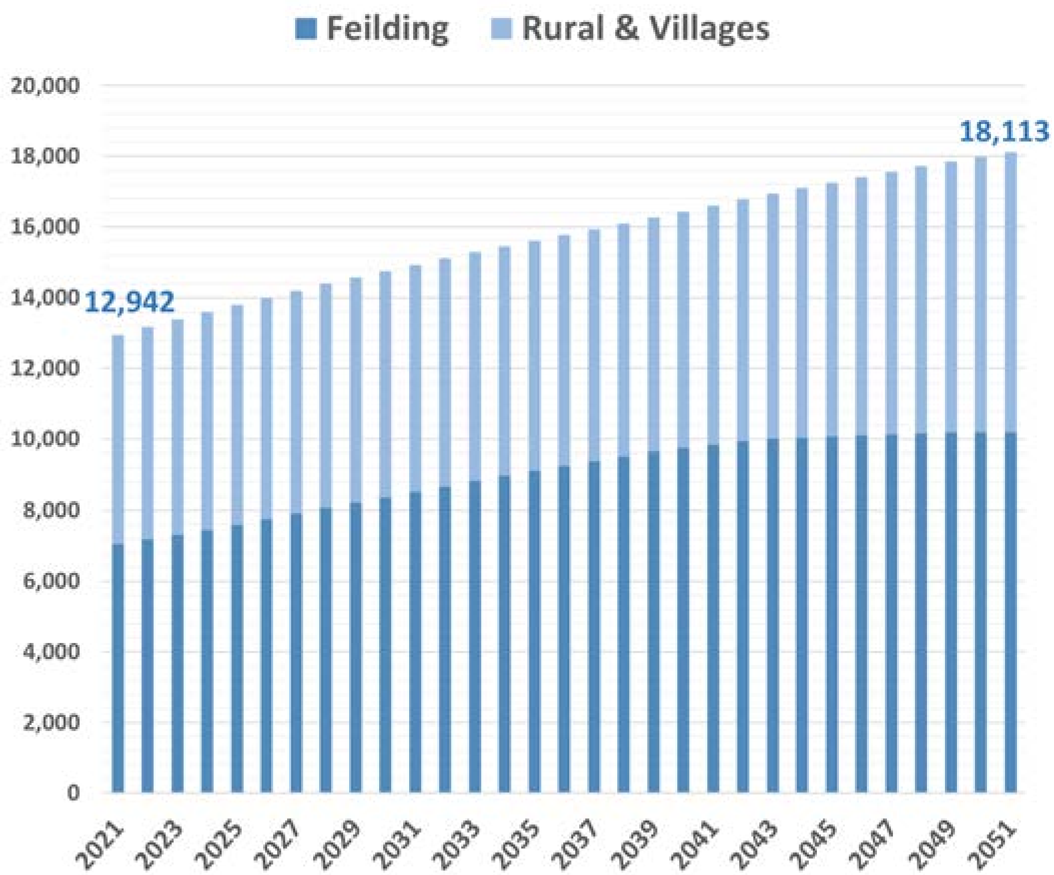
Impact	Minor The pattern of residential development across the Manawatū District is relevant when considering the nature and location of land supply to service growth, the types of services required, the timing of capital investment and the installation of infrastructure to support growth. Should actual patterns of population distribution differ substantially from forecast, this would impact on the location and delivery of services, and the timing and scale of capital projects.
Likelihood	Possible Patterns of population distribution are driven by a range of factors including labour demand, net migration, central government legislation, Regional and District Plan regulations, market conditions, land supply, housing affordability and levels of investment. While the most up-to-date information has been used to develop the population distribution model, it is likely that some factors will change. These changes may influence the overall pattern of development across the district over time.
Overall Risk	Guarded (3)

Reasons & Financial Effect of Uncertainty	If the actual pattern of development differs considerably from forecast development, the timing and scale of growth projects will need to be revisited. Where investment occurs in areas where growth is not realized, this will impact on the affordability of service delivery and the ability of Council to recover growth expenditure from development contributions.
Mitigating Factors (if applicable)	Council regularly reviews population growth and development trends through the following processes: 1. Monitoring and reporting under the National Policy Statement – Urban Development (NPS-UD); 2. Annual Estimated Resident Population (ERP) from Statistics New Zealand; 3. 10 Year Plan process Major projects and significant changes to levels of service are assessed against affordability annually through the Annual Plan Process. In addition, subdivision and building consent data is used for annual updates to the schedule of works contained within Council's Development Contributions Policy. Through the above processes, the scale and spatial characteristics of population growth will be assessed against projected growth enabling review of the need for, location of, and timing of capital expenditure over the 10 Year Plan period. Growth projects may be delayed or relocated to meet demand from the pattern of population growth across the district.

4.3.3 Household Growth

Assumption: That the number of households in the Manawatū District will increase from 12,942 in 2021 to 18,113 in 2051 as illustrated in Figure 5 below.

Figure 5: Household Growth



Alternative 1: That the number of households in the Manawatū District in 2051 will be significantly more than forecast in Figure 5.

Impact	**Moderate** Demand for land and infrastructure will be greater than anticipated. This may mean that additional land needs to be rezoned and new infrastructure provided to meet this demand.
Likelihood	**Possible** Household forecasts are based on the medium growth scenario published by Infometrics (August, 2020). These forecasts have considered anticipated changes in net international migration driven by COVID-19 alongside projected infrastructure and construction investment flowing into the district and wider region. Favourable conditions for our food producers in addition to high levels of investment and strong jobs growth in the region are expected to support levels of net migration to the District over the 10 Year Plan period. This is supported by the availability of land and a greater range of lifestyle choices in the District relative to neighbouring Palmerston North. The expansion of Ōhakea Air Force Base and the relocation of an estimated 280 families from Whenuapai to the region is further expected to drive household growth in the district over the life of the 10 Year Plan period. The above factors are reflected in the household growth scenario adopted as a basis for the 2021-31 10 Year Plan. While the projections are based on the best information available, uncertainty is currently elevated due to the closure of national and international borders, a lack of certainty on when borders will reopen, and how migration trends will change in response to the impacts of COVID-19. Recent household growth data and the district's proximity to Palmerston North supports a relatively strong growth scenario versus historical averages.
Overall Risk	**Guarded (6)**
Reasons & Financial Effect of Uncertainty	Household growth generally results in new subdivisions and therefore an increase in the rating base. This spreads the costs of providing Council services, providing no major infrastructure investment is required. Growth in the number of households will increase the number of connections to reticulated water, wastewater and stormwater networks. There will also be increased stormwater runoff to manage from hard surfaces in urban areas. We may not have sufficient land available in the range of locations needed to provide the level of choice demanded by the market.

Mitigating Factors (if applicable)	Council regularly reviews development trends through the following processes: 1. Monitoring and reporting under the National Policy Statement – Urban Development (NPS-UD); 2. Annual Estimated Resident Population (ERP) from Statistics New Zealand; 3. 10 Year Plan process Major projects and significant changes to levels of service are assessed against affordability annually through the Annual Plan Process. In addition, subdivision and building consent data is used for annual updates to the schedule of works contained within Council's Development Contributions Policy. Through the above processes, actual growth in households will be assessed against projected growth enabling review of the need for, and timing of capital expenditure over the 10 Year Plan period. Planned rezoning and investment in growth infrastructure may be brought forward to reflect greater than anticipated demand.

Alternative 2: That the number of households in the Manawatū District in 2051 will be significantly less than forecast in Figure 5.

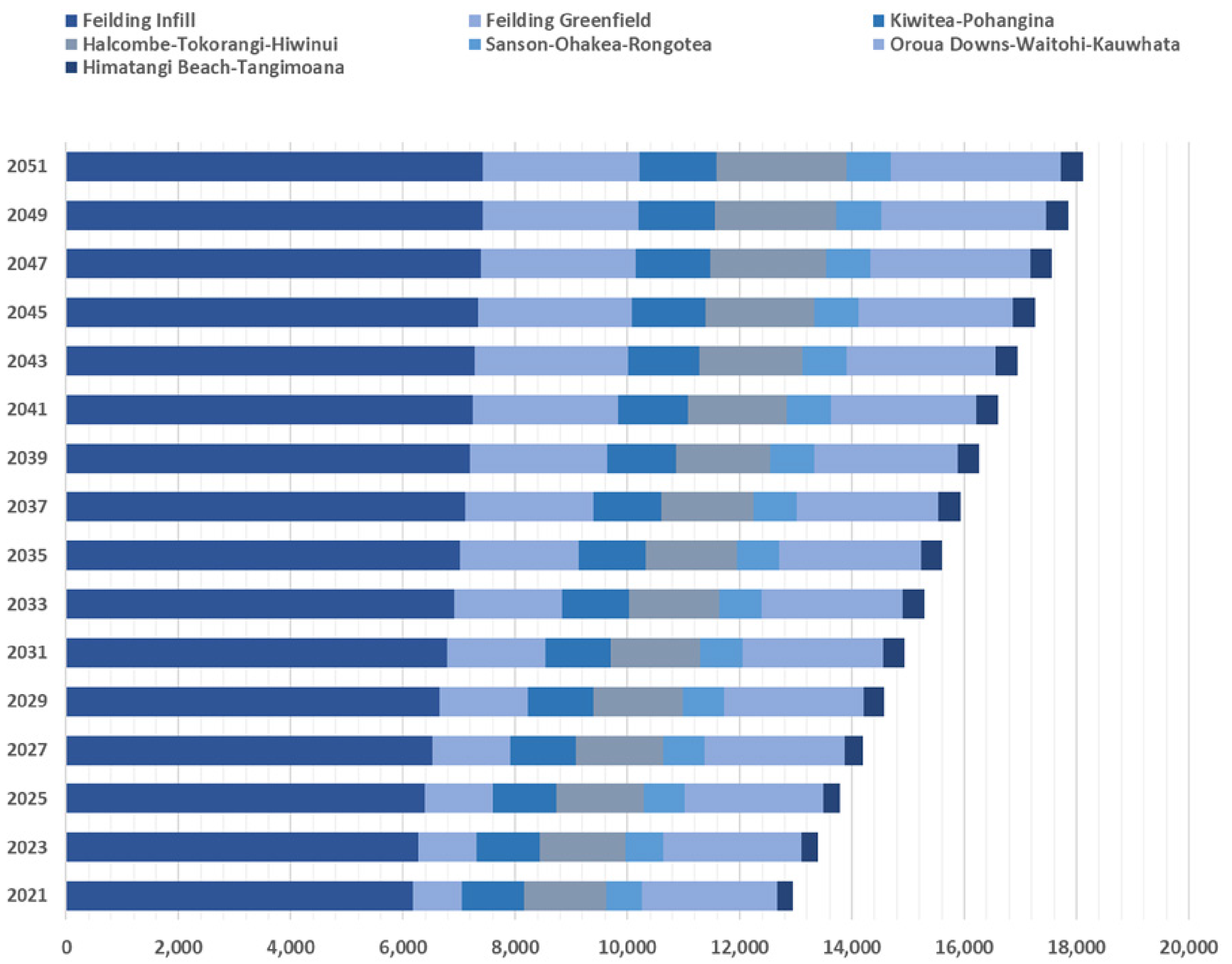
Impact	Minor Demand for land and infrastructure will be less than anticipated. This may mean that additional land has been rezoned and new infrastructure provided well in advance of demand, which could impact on Council's ability to fund levels of service.
Likelihood	Possible Household forecasts are based on the medium growth scenario published by Infometrics (August, 2020). These forecasts have considered anticipated changes in net international migration driven by COVID-19 alongside projected infrastructure and construction investment flowing into the district and wider region. While the projections are based on the best information available, uncertainty is currently elevated due to the closure of national and international borders, a lack of certainty on when borders will reopen, and how migration trends will change in response to the impacts of COVID-19. If population growth is significantly less than forecast or if the average household occupancy rate is higher than forecast, the number of new households is likely to be lower than forecast.
Overall Risk	Guarded (3)
Reasons & Financial Effect of Uncertainty	If the number of households in the urban areas do not increase as forecast, then there will be limited increases in the rating base. This will mean that the costs of providing the planned levels of service for network infrastructure will be higher per connection and there will be more rating pressure on existing households and businesses.

Mitigating Factors (if applicable)	Council regularly reviews development trends through the following processes: 1. Monitoring and reporting under the National Policy Statement – Urban Development (NPS-UD); 2. Annual Estimated Resident Population (ERP) from Statistics New Zealand; 3. 10 Year Plan process Major projects and significant changes to levels of service are assessed against affordability annually through the Annual Plan Process. In addition, subdivision and building consent data is used for annual updates to the schedule of works contained within Council's Development Contributions Policy. Through the above processes, actual growth in households will be assessed against projected growth enabling review of the need for, and timing of capital expenditure over the 10 Year Plan period. Reduced development pressure will mean that available land is not exhausted as quickly. Planned rezoning and new infrastructure may be delayed until such time as demand warrants the expenditure.

4.3.4 Household Distribution

Assumption: That residential development in the Manawatū District will occur as illustrated in figure 6.

Figure 4: Residential development



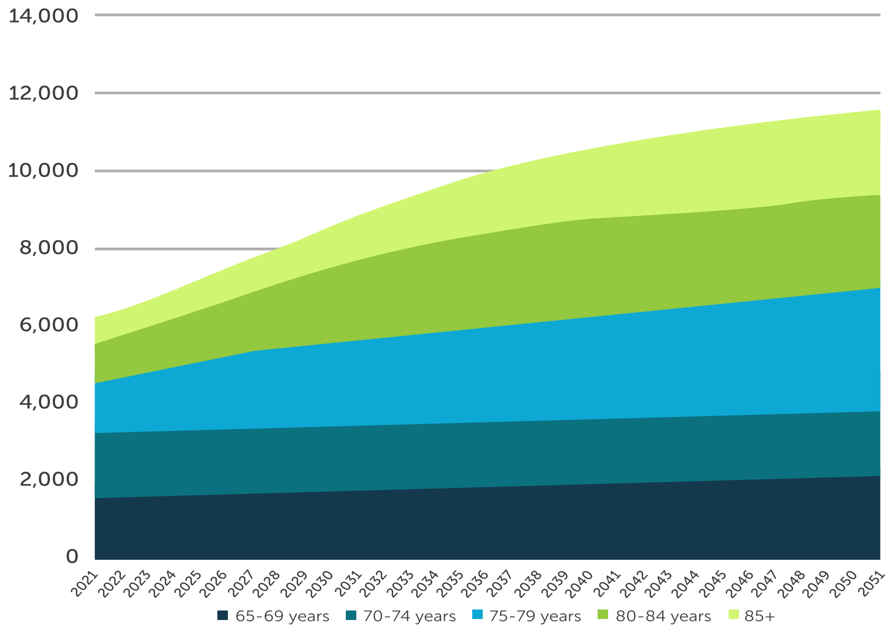
Alternative: That residential development in the Manawatū District will differ substantially from forecast development.

Impact	**Minor** The pattern of residential development across the Manawatū District is relevant when considering the nature and location of land supply to service growth, the types of services required, the timing of capital investment and the installation of infrastructure to support growth. Should actual patterns of household growth differ substantially from forecast, this would impact on the location of, and delivery of services, and the timing and scale of capital projects.
Likelihood	**Possible** Patterns of household distribution are driven by a range of factors including labour demand, net migration, central government legislation, Regional and District Plan regulations, market conditions, land supply, housing affordability and levels of investment. While the most up-to-date information has been used to develop the household distribution model, it is likely that some factors will change over time. These changes may influence the overall pattern of development across the district over time.
Overall Risk	**Guarded (3)**
Reasons & Financial Effect of Uncertainty	If the actual pattern of development differs considerably from what is forecast, the timing and scale of growth projects will need to be revisited. Where investment occurs in areas where growth is not realized, this will impact on the affordability of service delivery and the ability to recover the costs of growth expenditure from development contributions.
Mitigating Factors (if applicable)	Council regularly reviews population growth and development trends through the following processes: 1. Monitoring and reporting under the National Policy Statement – Urban Development (NPS-UD); 2. Annual Estimated Resident Population (ERP) from Statistics New Zealand; 3. 10 Year Plan process Major projects and significant changes to levels of service are assessed against affordability annually through the Annual Plan Process. In addition, subdivision and building consent data is used for annual updates to the schedule of works contained within Council's Development Contributions Policy. Through the above processes, the scale and spatial characteristics of household growth will be assessed against projected growth enabling review of the need for, location of, and timing of capital expenditure over the 10 Year Plan period. Growth projects may be delayed, brought forward, or relocated to meet demand from the pattern of household growth across the district.

4.3.5 Ageing Population

Assumption: That the number of residents aged 65 and over will increase from 6,208 (19.1% of the total population) in 2021 to 11,595 by 2051, as described in Figure 3 below.

Figure 7 Population aged over 65



Alternative 1: That the number and proportion of residents aged 65 years and over in the Manawatū District will be significantly more than forecast in Figure 7.

Impact	**Moderate** A major shift towards older people is likely to change the mix of services demanded from Council, and the ability to pay for those services. Council will come under increasing pressure to limit rate increases.
Likelihood	**Unlikely** An older population overall is reasonably certain. The actual outcomes are highly dependent on the age mix of the migration trends, natural increase, and employment prospects both in the District and wider Region.
Overall Risk	**Guarded (4)**
Reasons & Financial Effect of Uncertainty	Council may need to alter the mix of services delivered over time. This is **Unlikely** to result in new activities, but rather the types of services and facilities. This would include recreation assets and services, roading design and footpaths. Affordability of rates will increase in importance as a greater proportion of ratepayers will be on fixed incomes. Affordability is a key factor considered in setting rates limits in the Financial Strategy. Increased focus on wellbeing will require Councils to allocate additional resources to the delivery of services to support an ageing population.

Mitigating Factors (if applicable)	Council reviews demographic trends based on census data every five years and based on estimated resident population data from Statistics NZ every 12 months to June. Council's overall strategic direction with respect to changes in population demographics is reviewed every three years as part of each 10 Year Plan process. Quarterly monitoring and reporting to Council provides interim trends on matters that impact upon population wellbeing, including housing availability and affordability. Major projects and significant changes to levels of service are assessed against affordability annually through the Annual Plan process. Changes in demands for Council services is not new and is part of the political process. The range of Council services utilised by older people is not significantly different from younger people. While the need for organised active team sports as traditionally catered for may decline, there will still be a demand for open spaces, walkways, pools, halls etc.

Alternative 2: That the number and proportion of residents aged 65 years and over in the Manawatū District will be significantly less than forecast in Figure 7.

Impact	**Minor** A smaller than predicted demographic shift towards older people will mean that there is less pressure on Council to alter levels of service or the types of services and activities delivered.
Likelihood	**Unlikely** An older population overall is reasonably certain. The actual outcomes are highly dependent on the age mix of the migration trends, natural increase, and employment prospects both in the District and wider Region.
Overall Risk	**Low (2)**
Reasons & Financial Effect of Uncertainty	A lower than forecast demographic shift towards older people will mean less demand to alter current services and facilities in the short-term.
Mitigating Factors (if applicable)	Council reviews demographic trends based on census data every five years and based on estimated resident population data from Statistics NZ every 12 months to June. Council's overall strategic direction with respect to changes in population demographics is reviewed every three years as part of each 10 Year Plan process. Quarterly monitoring and reporting to Council provides interim trends on matters that impact upon population wellbeing, including housing availability and affordability. Major projects and significant changes to levels of service are assessed against affordability annually through the Annual Plan process.

4.3.6 Land supply – NPS-UD

Assumption: That to support choice, competitiveness and affordability in housing and business land markets, Council will enable the supply of land for development as recommended by the National Policy Statement – Urban Development (NPS-UD).

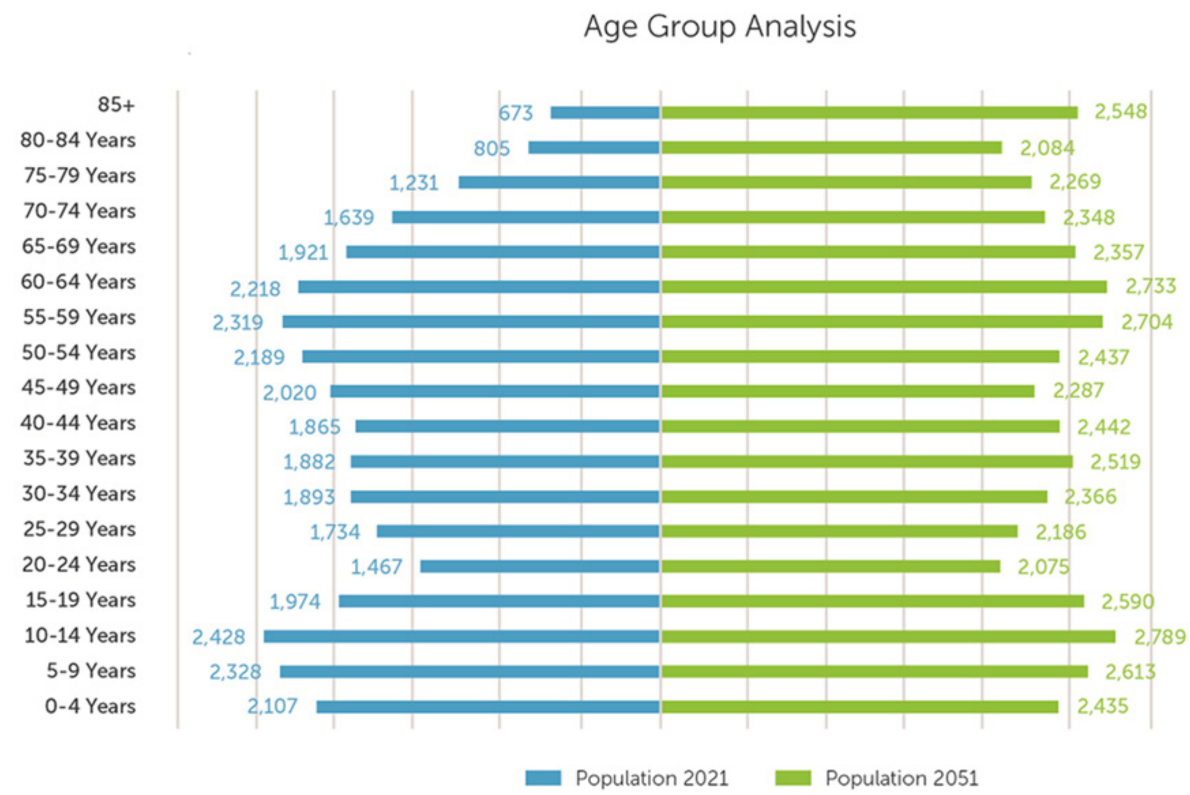
Alternative 1: That development will progress at a much slower rate than forecast by Council's household growth projections.

Impact	**Major** The NPS-UD came into effect 20 August, 2020 and sets out objectives and policies for urban development under the RMA 1991. Council is required to give effect to these national objectives and policies by ensuring enough land is zoned for development to support choice and competitiveness of land markets. This requires enabling the development of 20% more land than assumed by forecast household growth over the short to medium term and 15% over the longer term. Residential development is based on a number of factors including land availability, infrastructural capacity, the influence of central and regional government legislation, anticipated demographic change, economic conditions and anticipated District Plan changes. Any of the above factors may be significantly different from forecast, affecting patterns and timing of development across the district. Planning for growth under the NPD-UD requires Council to zone land for development and invest in infrastructure prior to development occurring. There will be financial implications for Council of servicing land for development in advance of demand; and in particular where actual growth or the location of growth differs substantially from forecast growth.
Likelihood	**Unlikely** Council is required to monitor and report on patterns of development across the district; increasing Council's ability to adjust projects and budgets to respond to a decline in the scale and location of development.
Overall Risk	**Moderate (8)**
Reasons & Financial Effect of Uncertainty	Should development fall short or differ substantially from the forecast pattern of development, there may be financial implications for Council. This would include the potential for under-collection of development contributions and the smaller than anticipated rating base potentially impacting on the affordability of service delivery and/or rates affordability.
Mitigating Factors (if applicable)	Council is required to undertake quarterly monitoring and annual reporting of development trends under the provisions of the NPS-UD. Through this process, the location and scale of household growth will be assessed against projected growth enabling review of the need for, location of, and timing of district plan changes and growth expenditure over the 10 Year Plan period. Growth projects may be delayed or relocated to meet demand from the actual pattern of household growth across the district.
Information sources	Infometrics Medium Population Forecasts, 18 August 2020, the Roading Activity Management Plan and the 3-Waters Asset Management Plan.

4.3.7 Demographic Change

Assumption: That the demographics of the Manawatū District will follow the Infometrics medium growth scenario (August 2020) over the period 2021 to 2051 as described in Figure 5 below.

Figure 8: Demographic change



Alternative: That the demographics of the Manawatū District will differ significantly from the Infometrics medium age group projections (August 2020) to 2051 as described in Figure 5.

Impact	**Minor** The forecast demographics of the Manawatū District Community is relevant when considering the types of services, projects and activities delivered by Council. If the actual demographics differ significantly from forecasts, this will influence demand for Council facilities, including parks, reserves and sports facilities. Greater than forecast growth in the young adult to middle age brackets could place pressure on housing availability and the delivery of services to support young families. Greater than forecast shifts towards older demographics could change the mix of services demanded from Council, and the ability to pay for those services.

Likelihood	**Possible** The demographic forecasts from Infometrics medium series indicates increases in the total number of residents across all age brackets. However, increases as a percentage of the total District Population are predominantly forecast in the 70+ age groups. The forecast increase in older residents is relatively certain and is supported by analysis of trends and generational characteristics. In the middle age brackets, demographic forecasts show the proportion of total residents aged between 35 and 39 years increasing between 2021 and 2033 and the proportion of residents aged between 40 and 44 years increasing between 2026 and 2040. The forecast increases in these age brackets is supported by trends revealed in the live and work survey (2018 Census). Labour demand to enable the construction and operation of major regional projects such as the Regional Freight Hub, Ōhakea Expansion, the Rural Ring Road and the demand for new housing is expected to further drive population growth in the middle age brackets. Given the number of factors that contribute to population demographics it is not possible for Council to have a high level of certainty around these forecasts. However, as the demographic forecasts from Infometrics take into consideration anticipated growth based on known regional projects, the likelihood that these forecasts prove false is considered "possible."
Overall Risk	**Guarded (3)**
Reasons & Financial Effect of Uncertainty	Uncertainty in the future demographic characteristics of the Manawatū District impacts on the ability to plan for the needs of future communities and the priority that Council places on certain projects and services in its future planning.
Mitigating Factors (if applicable)	Council reviews demographic trends based on census data every five years and estimated resident population data from Statistics NZ every 12 months to June. Council's overall strategic direction with respect to changes in population demographics is reviewed every three years as part of each 10 Year Plan process. Quarterly monitoring and reporting to Council provides interim trends on matters that impact upon population wellbeing, including housing availability and affordability. In addition, major projects and significant changes to levels of service are assessed against affordability annually through the Annual Plan process. The above processes will enable Council to respond to changes in the demographic characteristics of the district over time, including the prioritisation of projects and service delivery to meet the needs of the community.

4.3.8 Land Use Change

Assumption: On the basis of current and anticipated Government Legislation, current land uses will not change significantly over the next 3 years. However, some changes in land use are anticipated between years 4 and 10 of the 10 Year Plan, and significant land use change is expected in the District between 2032 and 2051.

The types of land use changes anticipated in the medium to long term include:

- Some diversification of land use from agricultural activities towards forestry and other low emissions land uses and innovation and technology to reduce on farm emissions from livestock farming to meet our obligations under the Zero Carbon Act, the Paris Agreement and for carbon credits
- Constraints on expansion of agricultural activities due to more stringent discharge requirements in the One Plan and Governments freshwater reforms, including the National Policy Statement – Freshwater Management

- Highly versatile land will be retained for productive uses, including land conversions for food production on suitable land, as growers relocate from neighbouring Districts including the Horowhenua due to inability to meet the discharge requirements of the One Plan
- Land use change from rural to industrial between Feilding and Palmerston North as the Palmerston North City Council's North East Industrial Zone develops as a freight and industrial hub following construction of the Regional Freight Hub, the rural ring road and the Manawatū Gorge replacement road
- Areas of native vegetation will be protected from development and areas of land within urban areas will be set aside for revegetation to meet the requirements of the National Policy Statement for Indigenous Biodiversity and the Regional Biodiversity Strategy
- Changes in housing preferences including the shifting rental/ownership split, different forms of housing in recognition of rising housing costs, and more mixed-use activity.

Alternative 1: That current land use in the District will change more rapidly, or in different locations or ways than anticipated.

Impact	**Moderate** Rapid changes in land use could result in unanticipated demand for new reticulated services and the need to undertake additional road maintenance or improvement works. New activities can generate additional employment that can increase the rate of population and household growth and stimulate economic activity. If additional rural land needs to be rezoned to accommodate residential or industrial development this would impact on the District Plan Review Programme and may alter priorities for infrastructural investment.
Likelihood	**Unlikely for years 1 – 3, Possible for years 4 to 10 and Likely for years 11 to 30** The interplay between new legislation, National Policy Statements under the Resource Management Act 1991 and Horizons One Plan mean that land use change in the moderate to long term is inevitable, but there is a high level of uncertainty about where, how and when that land use change will take place. The level of uncertainty increases over time as new targets are set in legislation and through National Policy Statements and plans. Certain changes in land use are undesirable for our District, such as shifts from agricultural use to forestry or carbon farming. Council may therefore introduce controls through the District Plan or other mechanisms to slow or restrict land use change to certain types or locations. The rate of land uptake for residential and industrial development is dependent on several factors including population growth, household growth, migration patterns, inward investment and economic prosperity. Significant changes in any of these factors will affect when additional land needs to be rezoned. While Council is aware of current land use trends, including rural land being used more intensively than it was in the past, these trends may slow or reverse as new requirements are introduced to the District Plan and to the One Plan to ensure compliance with legislative requirements. Council is also aware that large areas of forestry in the District will reach harvestable age between 2021-2030.
Overall Risk	**Guarded for years 1 to 10 (4-6) and Moderate for years 11 to 30 (8)**

Reasons & Financial Effect of Uncertainty	Significant changes in land use will likely impact on the roading network, particularly in rural areas. Additional expenditure may be required to ensure that roads are fit for purpose. Significant changes in land use may also impact on Council's investment and priorities for infrastructural investment, particularly in relation to extensions to reticulated networks. The attraction of new industrial activities to the District may place increased demand on water, wastewater and stormwater networks, including the capacity of the Feilding Wastewater Treatment Plant to treat trade waste.
Mitigating Factors (if applicable)	Council monitors land use change through the monitoring and reporting requirements of the NPS-UD. This includes monitoring of land use, subdivision and building consents. The zoning of land and the activities permitted on land is managed through the District Plan Review, informed by expert advice and investigations. New infrastructure and roading needed to support residential and industrial growth are controlled through Structure Plans that have been incorporated into the District Plan through the Plan Change process and will be funded by development contributions. A new growth strategy is proposed to be developed in Year 3 of the 10 Year Plan. This will help to guide future rezoning and give effect to new legislative requirements, including the National Policy Statements for Highly Productive Land, Urban Development and Indigenous Biodiversity. The cost for new services to support new residential, industrial or commercial areas will be partially funded by development contributions. Rural land is largely self-serviced so changes in land use will not alter demand for reticulated networks, but may impact on roading. Council has already anticipated increased pressure on the rural roading network, with increasing numbers of heavy vehicles to service intensive farming and forestry harvest. As a result, additional funding has been set aside for road maintenance and renewals in the Roading Activity Management Plan. Council monitors, reports and submits on new legislative requirements as they are notified by Government. Additional budget has been included within the 10 Year Plan in anticipation of the new responsibilities and resource implications of new legislative requirements.

Alternative 2: That current land use in the District will persist or that land use change will occur at a much slower rate or in fewer locations or ways than forecast.

Impact	**Minor** Less significant land use change will mean less demand for new reticulated services and road maintenance or improvement works. Continuation of current land uses, or a more gradual change in land use than anticipated will mean greater stability in economic and social performance due to our capability and capacity being maintained within established industries. Slower land use change in our District compared to neighbouring territorial authorities may mean that our District is slower in adapting to climate change and other legislative requirements. It may also mean that the District has not capitalised on regional projects and developments or new and emerging industries and may therefore be comparatively disadvantaged.

Likelihood	**Unlikely for years 1 to 30** As a lot of the forecast land use change is as a result of new legislative requirements, it is unlikely that there would be little or no land use change over the life of this 10 Year Plan and the 30-year period of the Infrastructure Strategy. However, given the number of different factors that influence land use change, it is possible that the rate of change, and the location and nature of change is different and less significant than forecast. For land use change to occur at a slower rate than forecast, a significant shift in central government policy direction would be required.
Overall Risk	**Low (2) for years 1 to 30**
Reasons & Financial Effect of Uncertainty	Slower or less significant land use change will mean less demand on the roading network and other Council-owned infrastructure. Investment to facilitate or manage land use change may need to be deferred.
Mitigating Factors (if applicable)	Council monitors land use change through monitoring and reporting requirements under the NPS-UD. This includes monitoring of landuse, subdivision and building consents. The zoning of land and the activities permitted on land is managed through the District Plan Review, informed by expert advice and investigations. Funding within the 10 Year Plan that is intended to service land use change and new legislative requirements can be reduced through subsequent Annual Plans and 10 Year Plans if it is not required.

4.3.9 Climate Change

Assumption: That the intensity and frequency of extreme weather events, such as flooding, drought or heavy snowfall, will increase as a result of climate change, in line with projections released by NIWA following the IPCC Fifth Assessment Report.

Alternative 1 That climatic changes in the Manawatū District, including the intensity and frequency of extreme weather events, are more extreme than predicted by NIWA based on the IPCC Fifth Assessment Report.

Impact	**Major** Any significant climatic changes would affect demand for Council services and could adversely affect infrastructure. Effects of climate change that are a concern for Council are primarily increased incidences of extreme weather. Risks include more frequent or costlier storm damage from flooding, and that stormwater standards will not be met. This would increase costs from repair works, and also possibly lead to demand for increased levels of service. Other risks include impacts on the economic and social wellbeing of our communities through more frequent or severe flooding, drought and/or heavy snowfall. Such events also cost Council in terms of infrastructure repair, Civil Defence and emergency management response to events, and community assistance (such as provision of a supplementary water supply).

Likelihood	**Unlikely** Ministry for the Environment and NIWA reports have predicted change in weather patterns including wind, rainfall, drought and snowfall. There is more certainty that weather patterns in the short term due to climate change will have predictable impacts that can be provided for through our Asset Management Plans and Activity Management Plans. There is less certainty about impacts of weather patterns in the long term as predictions are less reliable.
Overall Risk	**Moderate (8)**
Reasons & Financial Effect of Uncertainty	Significant impacts are not expected to be frequent in the next few decades. Council has a policy of holding depreciation renewal reserves. Insurance claims from damages associated with extreme weather are likely to rise as the incidence of these events increases in the future. This is expected to increase the costs of insurance cover. Operating programmes to mitigate impacts of climate change such as reducing peak demand for Water and leak detection in Wastewater are already underway and are built into the operating budgets of Council.
Mitigating Factors (if applicable)	Financial impacts will be mitigated by ensuring adequate insurance cover and appropriate maintenance is undertaken as a preventative measure. Major flood protection works (stopbanks) have been completed for the lower Manawatū, the Kiwitea Stream and Ōroua River flood control scheme. These stopbanks are designed to withstand the current 1% Annual Exceedance Probability (AEP) flood event, 1 in 100-year flood. Technology is always changing and it is likely that new and cost effective plant and materials will be available to meet some of the challenges in the future.

Alternative 2 That climatic changes in the Manawatū District, including the intensity and frequency of extreme weather events, are less extreme than predicted by NIWA based on the IPCC Fifth Assessment Report.

Impact	**Minor** If climatic changes are less extreme than predicted, expenditure on infrastructure repairs and maintenance will be lower.
Likelihood	**Unlikely** Ministry for the Environment reports have predicted change in weather patterns including wind, rainfall, drought and snowfall. There is more certainty that weather patterns in the short term due to climate change will have predictable impacts that can be provided for through our Asset Management Plans and Activity Management Plans. There is less certainty about impacts of weather patterns in the long term as predictions are less reliable.
Overall Risk	**Low (2)**
Reasons & Financial Effect of Uncertainty	Fewer significant weather events such as flooding, droughts or heavy snowfall, means that expenditure on infrastructure repairs and maintenance and insurance claims from weather events will be lower. Renewal reserves will need to be retained to address climate change impacts in the longer term.
Mitigating Factors (if applicable)	Financial impacts will be mitigated by ensuring adequate insurance cover and appropriate maintenance is undertaken as a preventative measure.

4.3.10 Emergency Events

Assumption: The Manawatū District Council is prepared to respond to emergency events over the life of the 10 Year Plan. However, a catastrophic event, such as a major earthquake, will exceed Council's financial provision to respond.

Alternative: That an emergency event occurs that exceeds Council's financial ability to respond.

Impact	**Major to Severe** Manawatū District Council and other businesses in the district could be subject to a break in business continuity in the event of a catastrophic emergency event. Council services including water (treatment, drinking), the road network and wastewater networks and treatment could be disrupted for considerable periods of time. Depending on the severity or timing of emergency events, Council may not have enough staff to manage recovery and response. A series of emergency disasters may exhaust Council reserves and prudent borrowing ability. There is a risk that Council may not have access to Government support in the future. Emergency events elsewhere in New Zealand and across the world may mean that there are periods of time where insurance cover is unavailable, or unavailable for certain types of event. The repair or renewal of lower priority infrastructure may be delayed due to a lack of borrowing ability and the need to focus resources on high priority projects.
Likelihood	**Unlikely** The top 10 hazards for the Manawatū District, in order of priority, are severe earthquake, river flood, tsunami, drought, landslide (widespread hill country), human pandemic, animal epidemic, transportation incident (HAZNO spill), rural fire (widespread) and high wind/storm event. The likelihood and consequences of an event is different for each hazard. This complicates efforts to assign a single likelihood score; however, the chances of an emergency event occurring in the District that exceeds Councils ability to respond, such as a strong earthquake, is considered low. Earthquake forecasts from GeoNet in December 2017 provide a best estimate of 30% (unlikely) of a magnitude 7 or higher earthquake occurring within the Central North Island within the next 10 years.
Overall Risk	**Moderate (12) to High (24)**
Reasons & Financial Effect of Uncertainty	A catastrophic emergency event would impact on Council by demanding immediate funding. This would reduce the resilience of the Council for meeting future unforeseen costs. Additional borrowing would impact on future rating levels.
Mitigating Factors (if applicable)	The Council is preparing a detailed business continuity plan, which outlines both crisis response and recovery. Civil Defence emergency planning is in alignment with business continuity preparedness. The Council also continues to be part of the Manawatū-Wanganui Civil Defence and Emergency Management Group working to ensure preparedness for any emergency event, co-ordinate a response and support recovery. Council has a $5 million buffer between our financial strategy and the Borrowing Management Policy to ensure we have adequate borrowing facilities in case of emergencies. Catastrophic emergency events are assumed to attract Government and private charitable sector support.

4.3.11 Legislative Change

Assumption: That the Manawatū District Council is prepared to respond to signalled legislative change. However, there will be resource implications as Council will need to increase its capacity to meet the requirements of additional central government legislation and legislative instruments.

Alternative: That the Manawatū District Council will be unable to meet the requirements under new legislation and legislative instruments due to insufficient capacity.

Impact	**Major** The impact of Council being unable to meet its obligations under new legislation and legislative instruments due to insufficient capacity and/or capability is dependent on what penalties are imposed by Government for non-compliance. If all or most Councils are unable to meet new obligations, this will likely lesson the response from Central Government and may result in a reconsideration of the timeframes or scope of new legislation or legislative instruments. However, if the Manawatū District Council is alone in its inability to meet its obligations, the worst-case scenario is that Government will appoint commissioners to take over the governance role of Council.
Likelihood	**Possible** Council is aware of a large number of new obligations and requirements for local government being imposed by Central Government through new legislation or legislative instruments. Some new roles and responsibilities for local government have already been introduced and others are proposed to come into effect when new legislation or legislative instruments are enacted in the second half of 2020, including the following: • NPS – Urban Development • The Climate Change Response (Zero Carbon) Amendment Bill • The Essential Freshwater Programme • Three Waters Reforms • Emissions Trading Scheme Policy • Proposed National Policy Statement (NPS) for Highly Productive Land • Proposed NPS – Indigenous Biodiversity • Road to Zero Strategy for roading • Resource Management Act Reforms. When considering the cumulative cost and resourcing requirements of new legislation and legislative instruments, it is possible that Council will be unable to meet all of its obligations. For example, Council may be unable to attract or retain staff with the necessary skills and experience to meet the requirements of new legislation or legislative instruments. Even if Council has the capability to meet new roles and responsibilities, the cost of doing so may exceed Council's debt cap or makes rates unaffordable.
Overall Risk	**Moderate (12)**

Reasons & Financial Effect of Uncertainty	If Central Government does not provide local government with the financial assistance it needs to meet these new obligations, the costs will fall on ratepayers. The cumulative impact on rates may exceed the Council's debt cap or other financial controls, or exceed ratepayer's ability to pay. Council recognises that there is a national shortage of specialist staff, such as ecologists and planners, that will be needed to meet the new requirements of legislation. The inability to attract the necessary staff could result in more shared arrangements and outsourcing of work to consultants, potentially increasing costs.
Mitigating Factors (if applicable)	Council monitors, reports and submits on new legislative requirements as they are notified by Government. Additional budget has been included within the 10 Year Plan in anticipation of the new responsibilities and resource implications of new legislative requirements.

4.3.12 Infrastructure Capacity

Assumption: That the infrastructure projects outlined in the Infrastructure Strategy are necessary to ensure that there is sufficient capacity to meet forecast population, household and business growth.

Alternative 1: That our infrastructure will have excess capacity due to lower than forecast growth.

Impact	**Minor** Maintenance costs to maintain the current level of service may not be sustainable. This means that levels of service may need to be reduced.
Likelihood	**Unlikely** Population forecasts are based on the Infometrics medium projections published in August 2020. Business growth is based on trends from past and current development and the consideration of current and the expectation of future economic circumstances. Decisions around infrastructure investment are based on past and current development trends and information that Council holds on the capacity of the current networks. Changes in population growth rates, growth demand and the location of growth within the District can all influence what infrastructure projects are needed and when.
Overall Risk	**Low (2)**
Reasons & Financial Effect of Uncertainty	If the number of new households connecting to reticulated infrastructure networks is lower than forecast, the revenue from rates and development contributions will be lower. This means that the costs for maintenance and renewal will be higher per ratepayer.
Mitigating Factors (if applicable)	Any major changes to the growth trend will be identified through processes in place to monitor population growth and patterns of development across the district. As each project needs to be economically justifiable, projects are unlikely to proceed until there is sufficient demand.

Alternative 2: That our infrastructure will have insufficient capacity to meet growth demand.

Impact	**Moderate** Additional investment will be required in new infrastructure if the level of service is not being met. The Three Waters distribution and collection networks and treatment facilities have capacity to meet some increased forecast growth related needs. The networks overall are in good condition.
Likelihood	**Unlikely** Population forecasts are based on the Infometrics medium projections published in August 2020. Business growth is based on trends from past and current development and the consideration of current and the expectation of future economic circumstances. Decisions around infrastructure investment are based on past and current development trends and information that Council holds on the performance of the existing network. Changes in population growth rates, growth demand and the location of growth within the District can all influence what infrastructure projects are needed and when.
Overall Risk	**Guarded (4)**
Reasons & Financial Effect of Uncertainty	Growth significantly above forecast rates will mean that major infrastructure networks will need to be expanded earlier than planned. If infrastructure is not able to keep up with demand, levels of service may suffer, making the District a less attractive place to live.
Mitigating Factors (if applicable)	Funding for growth projects will be partially funded through development contributions. Growth will need to be significantly above forecast levels before additional investment in infrastructure is required. Any major changes to growth trends will be identified through processes in place to monitor development trends across the District. Council have proactively invested in growth related developments, particularly in Precincts 4 and 5

4.3.13 New Zealand Drinking Water Standards

Assumption: That Council can continue to deliver safe and cost effective drinking water supplies to the community in accordance with the Drinking Water Standards of New Zealand (DWSNZv2018). That the Central Government changes to legislation do not fundamentally change the current DWSNZv2018 delivery model. That the DWSNZv2018 does not dramatically change its performance criteria.

Alternative 1: That the DWSNZv2018 and associated national regulations and the delivery model remain unchanged.

Impact	**Minor** All drinking water supplies will be required to comply with the DWSNZv2018. Water supply activities will continue as planned in the 10 Year Plan with no impact on budgets or programmes.
Likelihood	**Unlikely** The expectation is that there will be some form of legislative change to the delivery model as set by Central Government. However, it is uncertain that this will eventuate, and if so, how extensive these changes will be.

Overall Risk	**Low (2)** We are currently well placed to deliver under the current criteria and performance standards.
Reasons & Financial Effect of Uncertainty	Planned upgrades, renewals and maintenance works will continue as set out in the Infrastructure Strategy, the 10 Year Plan and the Forward Works Programme in the Three Waters Asset Management Plan.
Mitigating Factors (if applicable)	Following completion of planned upgrades to water treatment plants, all of Councils reticulated drinking water networks will comply with the current New Zealand Drinking Water Standards.v2018.

Alternative 2: That the changes to the DWSNZv2018 and associated national regulations and the delivery model are greater than anticipated.

Impact	**Moderate** All of Council's water supplies are already chlorinated and all surface water takes have UV treatment. Hence, we are well placed under the DWSNZv2018 and can easily implement minor additional changes to achieve compliance if required. The changes to date have consisted of a more rigorous testing regime to monitor total coliforms and enumeration testing for E.Coli. The changes to the water delivery model however, could be significant as these could fundamentally change how and who is responsible for supplying drinking water. Council's debt profile places Council at financial risk if significant changes are needed, and costs incurred to comply with standards and requirements for drinking water supplies.
Likelihood	**Possible** The Department of Internal Affairs Report on the Havelock North Drinking Water Inquiry: Stage 2, recommended significant changes to be made to the regulatory system for water supplies and to the Drinking Water Standards for New Zealand. The DWSNZv2018 has since been released with relatively minor increases in compliance criteria.
Overall Risk	**Guarded (6)**
Reasons & Financial Effect of Uncertainty	The delivery model is beyond the control of the TA's. Through its lobby group LGNZ, Council has recommended the status quo with respect to the delivery model. This may be amended however to a more regional or national approach delivery model. It is likely that changes will result in additional capital and operational expenses for Council.
Mitigating Factors (if applicable)	Council is already well placed as all urban drinking water supplies are chlorinated. In addition, all surface water takes for water supply networks are UV treated. These mitigation measures were already in place when increased compliance requirements came into force 1 July 2019.

4.3.14 Resource Consents

Assumption: That applications to renew resource consents will be granted but that Council will face additional costs and delays through the application process, particularly in relation to wastewater discharges. Monitoring costs and requirements will be higher for consent renewals due to more stringent conditions.

Alternative 1 That consents will be renewed in a timely manner and issued without any major changes to existing conditions or requirements.

Impact	**Minor** If consents are renewed without major changes to conditions and requirements, there will be no need to increase the budget for consent monitoring and renewal included in the Asset Management Plans. Those that have already been adjusted in anticipation of new requirements, may have a surplus.
Likelihood	**Unlikely** Consents already approved under the One Plan have been subject to more stringent conditions and requirements than those issued under the previous Regional Plans. Given the recent Environment Court decision that ruled against Horizons Regional Council (NZEnvC ENV-2016-WLG-000038), we think it is likely that the trend towards increasing consent costs, delays, and more stringent consent requirements will continue.
Overall Risk	**Guarded (4)**
Reasons & Financial Effect of Uncertainty	Council has a good understanding of its existing consent requirements and monitors expiry dates through Asset Management Plans. However, while Council can advocate to Regional Council, there is limited flexibility in terms of determining consent conditions.
Mitigating Factors(if applicable)	Council has a good working relationship with Horizons and knowledge and understanding of working under the Horizons One Plan. The Council will monitor and work with Horizons to ensure it has sufficient notice of, and is well-placed to manage any consent changes required.

Alternative 2: That existing resource consents are not renewed and/or granted.

Impact	**Severe** If existing consents cannot be renewed and/or granted, our existing treatment facilities would be potentially redundant. For new consents, new works could be delayed, impacting on provision of services. Council would need to develop alternative ways of managing infrastructure to find solutions that are able to be consented.
Likelihood	**Rare** While we are anticipating increased costs and time delays in meeting new consent requirements, we consider it highly unlikely that Council will fail to obtain consent. Council may need to make changes, such as eliminating any water-based treatment of wastewater discharges, but should be able to find solutions that meet the requirements of the One Plan and are supported by iwi, the community and other stakeholders.
Overall Risk	**Moderate (8)**

Reasons & Financial Effect of Uncertainty	If Council continued to operate its treatment facilities and/or discharge without consent, it may face enforcement action and fines. Affordability of services in small communities could become increasingly difficult.
Mitigating Factors (if applicable)	Council has a good working relationship with Horizons and knowledge and understanding of working under Horizons One Plan. The Council will monitor and work with Horizons to ensure it has sufficient notice of and is well-placed to manage any consent changes required. Additional budget has been included in Asset Management Plans to offset the increased costs for consent renewals and to ensure compliance with new consent conditions. Council has applied for and been granted a singular consent to pipe wastewater from the Villages to the Manawatū Wastewater Treatment Plan in Feilding for treatment. This will reduce the number of wastewater discharge consents that need to be renewed, thereby reducing the risk that consents will be declined or that significant upgrades will be required to wastewater treatment plans to meet new consent conditions.

4.3.15 Useful Life of Assets

Assumption: That assets will deliver the required level of service over their documented useful life.

Alternative: That assets will fail earlier than their documented useful life

Impact	**Major** Insufficient renewals would impact on the reliability of service delivery with the increasing likelihood of asset failures. Significant asset failure would require additional funding which would impact on debt levels and rates increases.
Likelihood	**Possible** Various factors can affect when an asset is replaced, including an extraordinary event, increased demand, or an increased rate of deterioration. Council has very few water supply assets dating before 1950 and large numbers of sewer and stormwater reticulation with a default installation date of 1931. This network profile skews the current age based renewals programme. The gaps in the accuracy of asset information impact on the timing of renewals and the reliability of service delivery. This is relevant to assessing the risk and timing of an optimised renewals programme. To address this, CCTV inspections have been conducted in older parts of the network. This information is currently being reviewed along with internal knowledge of fault areas. The information from these investigations will be used to determine a targeted inspections programme which will inform the renewals programme. The targeted renewals programme will reduce the likelihood of asset failure across the network.
Overall Risk	**Moderate (12)** There is little evidence to indicate that large scale asset failures are imminent. The inspection programme will further define this risk to increase certainty and inform risk management practices.

Reasons & Financial Effect of Uncertainty	A renewals programme to match current failure rates has been included in the 10-Year Plan. The funding for this programme has been increased in years 4-10 of the 10-Year Plan to ensure that the risk of bulk failure is minimised.
Mitigating Factors (if applicable)	Council has recognised where there are gaps in asset information and has implemented a maintenance and monitoring programme to inform a targeted renewals programme.

4.3.16 Capital Works Cost

Assumption: Capital works costs will not vary significantly from those budgeted.

Alternative 1: That capital works costs will be significantly more than budgeted.

Impact	**Major** The effect on the community depends on the scale of the variance. Council could face higher than budgeted costs that do not fit within the Financial Strategy limits.
Likelihood	**Unlikely** Financial budgeting is indicative and it is common for projects to incur cost overruns or under-budget results. More time is spent on estimating projects in the first three years of the 10 Year Plan, with generally less confidence given to projects in years 4-10. Greater certainty of conditions during the initial years of the 10 Year Plan reduces the likelihood that actual costs would be significantly more than budgeted.
Overall Risk	**Moderate (8)**
Reasons & Financial Effect of Uncertainty	Significantly higher costs than anticipated could result in increased debt levels and unbudgeted interest repayments, or deferral of programmes.
Mitigating Factors (if applicable)	The following processes reduce the likelihood of costs being significantly higher than forecast, in addition to mitigating impacts of any budget overruns: 1. Project planning and business case processes to increase the accuracy of planned projects; 2. Projects are re-assessed as part of each 10 Year Plan process and costs are updated to reflect the latest costings and technology changes; and, 3. Where needed, levels of service can be revised annually.

Alternative 2: That capital works costs will be significantly less than budgeted.

Impact	**Moderate** Lower than budget capital works costs would have a positive impact on Council budgets.
Likelihood	**Unlikely** Financial budgeting is indicative and it is common for projects to incur cost overruns or under-budget results. More time is spent on estimating projects in the first three years of the 10 Year Plan, with generally less confidence given to projects in years 4-10. Greater certainty of conditions during the initial years of the 10 Year Plan reduces the likelihood that actual costs would be significantly less than budgeted.
Overall Risk	**Guarded (2)**
Reasons & Financial Effect of Uncertainty	If costs are lower, Council could increase levels of service or reduce rate increases.
Mitigating Factors (if applicable)	Lower than anticipated costs result in a net benefit to Council, as this may either releases resources to other projects or provide an opportunity to increase levels of service or reduce rates. The re-assessment of projects through the Annual Plan and 10 Year Plan processes enables regular review of actual costs against forecast, enabling decisions to be made regarding reallocation of budgets.

4.3.17 Valuations

Assumption: The value of infrastructure, land and buildings will increase at the same rate as the relevant inflation category as published by Business and Economic Research Ltd (BERL, September 2020). Council has adopted the Faster rebuild scenario price indices. This scenario is relevant to the Manawatū-Whanganui Region due to a high proportion of employment in agriculture and government with lower reliance on industries hit hardest by COVID-19, such as tourism and retail. The relevant average annual growth rates for infrastructure (three waters and roading), and land and buildings is included below.

Alternative 1: That the value of infrastructure, land and buildings will increase at a higher rate than forecast.

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
Three waters	4.5	3.2	3.2	3.3	3.4	2.6	3.3	3.3	3.3	2.6
Roading	3.3	3.2	3.2	3.2	3.1	3.1	3.1	3.1	3.1	3.0
Land and buildings	3.1	2.8	2.8	2.8	2.8	2.6	2.8	2.8	2.8	2.6

Impact	**Moderate** Increased valuations would require higher than forecast depreciation funding. This would impact on Council's ability to spend in other areas.
Likelihood	**Unlikely** The process for review of valuations will enable depreciation funding to be adjusted regularly throughout the 10 Year Plan process.
Overall Risk	**Guarded (4)**

Reasons & Financial Effect of Uncertainty	Higher valuations could result in higher depreciation requirements that impact on Council level of services and the ability of Council to deliver planned projects within the forecast funding limits.
Mitigating Factors (if applicable)	Infrastructure assets are revalued annually on 1 July by internal staff members in accordance with the District Council's Policy. As accounting standard PBE IPSAS 17 Property, Plant and Equipment no longer requires internal revaluations to be subject to external peer review, the District Council has chosen to obtain an independent peer review every third year rather than annually. A peer review will be undertaken for the revaluation as at 1 July 2022 and three yearly thereafter. This process enables regular adjustments to levels of depreciation funding.
Source	BERL. (2020). Local Government Cost Adjustor Forecasts Three Scenarios. Mahuru, 2020.

Alternative 2: That the value of infrastructure, land and buildings will increase at a lower rate than forecast.

Impact	**Moderate** Lower valuations will require lower than forecast depreciation funding.
Likelihood	**Unlikely** Strong asset price inflation in the district and across New Zealand is expected to continue, reducing the likelihood that the value of assets would increase at a lower rate than forecast.
Overall Risk	**Guarded (4)**
Reasons & Financial Effect of Uncertainty	Council funds for depreciation. If depreciation costs are lower than anticipated, funding could be released to fund increased levels of service or reduce pressure on rates.
Mitigating Factors (if applicable)	Infrastructure revaluations are performed annually to mitigate any large changes to budget.
Source	BERL. (2020). Local Government Cost Adjustor Forecasts Three Scenarios. Mahuru, 2020.

4.3.18 Sources of Funds for Future Replacement of Significant Assets

Assumption: That the depreciation reserves will adequately fund the renewals of assets over the 10 year period and the longer term (to 2051).

Alternative: That the depreciation reserves are insufficient to fund the renewals of assets over the 10 year period and the longer term.

Impact	**Severe** There would be a shortfall in funds available to replace assets. This would require Council to either reduce service levels, increase debt and/or increase rates.
Likelihood	**Possible** The depreciation reserves have been depleted by the level of replacement of assets over the past three years. This recent investment in renewals is expected to reduce the demand on the fund over the early years of the 10 Year Plan, however, it is possible that there will be insufficient depreciation reserves available to fund all renewal projects.
Overall Risk	**High (24)**
Reasons & Financial Effect of Uncertainty	Since 2009 Council has built depreciation reserves to fund the long term renewals of assets, however many assets were nearing the end of their life at that time so recent renewals have depleted the fund.
Mitigating Factors (if applicable)	Council will be carefully considering the demand on depreciation reserves within the 10 Year budget planning process. If required, Council is able to access borrowings to supplement depreciation reserves at levels forecast within the 10 Year Plan.

4.3.19 Technological Change

Assumption: That Council will be able to take advantage of improvements in technology and asset management practices, resulting in continued efficiency gains and longer asset lives.

Alternative: That technology progresses slower than anticipated.

Impact	Minor Advances in digital technology over the past 10 years have enabled more efficient linkages between condition assessments in the field and asset management systems in the Council. If current rates of technological advancement were to slow, Council would continue to manage, maintain, renew and replace assets using current technologies and best practice.
Likelihood	Unlikely Given recent trends in technological advancement it is considered unlikely that there will not be further advancements over the life of the plan (to 2031).
Overall Risk	Low (2)
Reasons & Financial Effect of Uncertainty	Maintenance and renewals programmes are based on current information and best practice and therefore should be able to be completed to budget. Any advances in technology that make projects more or less viable would be considered at the time and taken into account within Council's forecasting of future programmes and budget estimates.
Mitigating Factors (if applicable)	Through their professional memberships and ongoing training, Council officers keep pace with technological advancements that could result in greater efficiencies for Council. It is therefore unlikely that Council will fail to take advantage of new technologies as they become available.

4.3.20 Legislative Changes

Assumption: That the Manawatū District Council is prepared to respond to signalled legislative change. However, there will be impacts on financial and human resources (or "Council will need to increase its capacity and capability to meet…") as a result of Council meeting new requirements/obligations under new legislation and legislative instruments.

Alternative: That the Manawatū District Council will be unable to meet its obligations under new legislation and legislative instruments due to insufficient capability or capacity.

Impact	Major The impact of Council being unable to meet its obligations under new legislation and legislative instruments due to insufficient capacity and/or capability is dependent on what penalties are imposed by Government for non-compliance. If all or most Councils are unable to meet new obligations this will likely lesson the response from Central Government and may result in a reconsideration of the timeframes or scope of the new legislation or legislative instruments. However, if the Manawatū District Council is alone in its ability to meet its obligations the worst case scenario is that Government will appoint commissioners to take over the governance role of Council.

Likelihood	**Possible** Council is aware of a large number of new obligations and requirements for local government being imposed by Central Government through new legislation or legislative instruments. Some new roles and responsibilities for local government have already been introduced and others are proposed to come into effect when new legislation or legislative instruments are enacted in the second half of 2020, including in relation to the following: • The Essential Freshwater Programme • Three Waters Reforms • Emissions Trading Scheme Policy • Proposed National Policy Statement (NPS) for Highly Productive Land • Proposed NPS – Urban Development • Proposed NPS – Indigenous Biodiversity • Road to Zero Strategy for roading • Resource Management Act Reforms • The Climate Change Response (Zero Carbon) Amendment Bill. When considering the cumulative cost and resourcing requirements of all of this new legislation and legislative instruments, it is possible that Council will be unable to meet all of its obligations. For example, Council may be unable to attract or retain staff with the necessary skills and experience to meet the requirements of new legislation or legislative instruments. Even if Council has the capability to meet new roles and responsibilities, the cost of doing so may exceed Council's debt cap or makes rates unaffordable.
Overall Risk	**Moderate**
Reasons & Financial Effect of Uncertainty	If Central Government does not provide local government with the financial assistance is needs to meet these new obligations the cost will fall on rates. The cumulative impact on rates may exceed the Council's debt cap or other financial controls, or exceed ratepayers ability to pay. Council recognises that there is a national shortage of specialist staff, such as ecologists and planners, that will be needed to meet the new requirements of legislation. The inability to attract the necessary staff could result in more shared arrangements and outsourcing of work to consultants, potentially increasing costs.
Mitigating Factors (if applicable)	Council monitors, reports and submits on new legislative requirements as they are notified by Government. Additional budget has been included within the 10 Year Plan in anticipation of the new responsibilities and resource implications of new legislative requirements.

4.3.21 COVID-19

Assumption: There will not be a lockdown or significant community transmission over the life of the 10-Year Plan.

Alternative: That there will be a lockdown or significant community transmission over the life of the 10-Year Plan.

Impact	**Moderate** Council does not anticipate further alert level changes or significant community transmission that would impact on council costs and revenue over the life of the 10-Year Plan. If alert level changes of level 2 or above were to occur over the life of the 10-Year Plan, this would impact on the collection of revenue from council facilities in addition to the potential for additional costs to be incurred from response related costs. The impact on council finances would depend on the magnitude and duration of restrictions but for context, restrictions over the 2019-20 financial year resulted in an estimated reduction in revenue of $70,000 across Council facilities. This includes the period of level 4 restrictions between 26 March and 27 April, Level 3 restrictions which remained in place until 13 May, followed by level 2 restrictions lifted on 8 June 2020. While the Council would experience negative impacts from the imposition of further COVID-19 restrictions, the local economy is insulated from the worst impacts of restrictions due to limited reliance on visitors for the collection of council revenues. Changes to the public and private funding splits also enables an increased share of funding for the Makino Aquatic Centre and the Feilding District Library to be collected from rates, as opposed to user charges. These changes will provide a buffer from the impacts of COVID-19 restrictions should further restrictions be imposed.
Likelihood	**Possible** There is a moderate level of uncertainty when considering the likelihood of further lockdowns, changes to alert levels or significant community transmission of COVID-19. The national response to COVID-19 has been successful at limiting widespread community transmission of the disease. The vaccination rollout has also begun across the country, with border workers and healthcare workers the first groups to be vaccinated. The public rollout is expected to begin in June 2021. While it is possible that there would be further community outbreaks that would result in government restrictions being imposed, the risk of this is declining. It is envisaged that the vaccine rollout in 2021 and improvements in the governments contact tracing capability will drastically reduce the risk of further restrictions or community transmission that would affect the Manawatū District over the life of the 10-Year Plan.
Overall Risk	**Guarded (6)**
Reasons & Financial Effect of Uncertainty	Reduced revenue from community facilities would impact on the level of funding available for delivery of services.

Mitigating Factors (if applicable)	Changes in the funding split between rates and user pays for Council facilities in the 2021/31 10-Year Plan will provide a buffer from the impacts of alert level changes on Council revenues. In the event of a level 3 or above lockdown, costs associated with operating the Makino Aquatic Centre would be reduced as energy and causal/seasonal costs would be avoided. This would offset some of the loss in revenue associated with closure of the pool.

4.3.22 Three Waters

Assumption: That Council anticipates that it will continue to own and manage its three waters assets over the life of the 10 Year Plan.

Alternative: That an alternative entity will take over the three waters assets and delivery of services in the Manawatū District within the 10 Year Plan period.

Impact	**Major** Over the past three years, central and local government have been considering solutions to challenges facing the regulation and delivery of the three water services. This has seen the development of new legislation to create the new Water Services Regulator, Taumata Arowai, to oversee and enforce a new drinking water regulatory framework with an additional oversight role for wastewater and stormwater networks. Several events around the country in the last few years have demonstrated a need to ensure robust regulation, consistent enforcement and address under-investment in relation to three waters infrastructure. As a country, our three waters infrastructure is not in good shape. This is not the case for Manawatū District Council. In the last decade, Council has invested proactively in its three waters assets, and is confident of the resilience of our network to provide safe drinking water and sustainable wastewater and stormwater services for decades to come. There will be significant financial and structural implications for Council If the ownership of three waters assets and the delivery of services is no longer undertaken by Council. For instance, overhead allocations from these services fund parts of back-office services, but there may only be a small reduction in these services if these services are no longer part of the Council. This would increase the overhead allocation for other parts of the Council, and therefore increase the remaining Council activities service delivery costs. The reforms may also require the Council to alter its approach to rating to ensure it continues to comply with the Local Government (Rating) Act 2002, particularly the requirement in section 21 for uniform rates not to exceed 30 per cent of overall rates in addition to recovering for previous upgrades to the three waters infrastructure.

Likelihood	**Possible** There is uncertainty regarding the final form of the proposed three waters reforms. On 24 August 2020, Manawatū District Council signed a Memorandum of Understanding (MoU) with the Crown to work constructively together to explore future service delivery options and identify an approach to service delivery reform that considers how the government might design: • water service delivery entities that are: o big enough to achieve economies of scale over the medium to long-term (most likely multi-regional) o asset-owning entities with financial autonomy, able to access a wider range of funding sources than individual councils o structured as statutory entities with appropriate and relevant commercial disciplines and competency-based boards. • delivery of drinking water and wastewater services as the main priority, with the ability to extend to stormwater service provision only where effective and efficient to do so • water entities that are publicly owned entities, with a preference for collective council ownership • ways to enable communities to provide input in relation to the new entities. It is expected that the legislative framework for Taumata Arowai will be in place by the end of June 2022, with implementation to commence prior to the next local body elections.
Overall Risk	**Moderate (12)**
Reasons & Financial Effect of Uncertainty	The three waters reform process creates a level of uncertainty around how (including by what agency), drinking water, wastewater services and potentially stormwater services, will be delivered to the community in the future, and the scale of the impact on Councils finances and structure.
Mitigating Factors (if applicable)	The release of the cabinet paper 'Progressing the Three Waters Service Delivery Reforms' (14 December 2020) indicates the preference for a voluntary approach to participation in any new service delivery system, including the ability to opt out. This may provide Council with a mechanism to retain the status quo, where the quality of our three waters infrastructure means our community is better off from retaining three waters assets and services within Council. Central government has also signalled substantial investment to meet the costs associated with implementation of the three waters reform programme alongside funding to maintain planned investment and asset quality, and support large-scale three waters asset replacements. The MoU provides Councils with the opportunity to work with the Crown to influence the final form of the three waters reforms.

4.3.23 Achievement of Capital Works Programme

Assumption: That Council will have both the internal and external resources required to achieve 85% to 105% of its annual capital works programme over the life of the 10-year Plan.

Alternative: That Council will not have the resources available to achieve 85% to 105% of its annual capital works programme over the life of the 10-year plan.

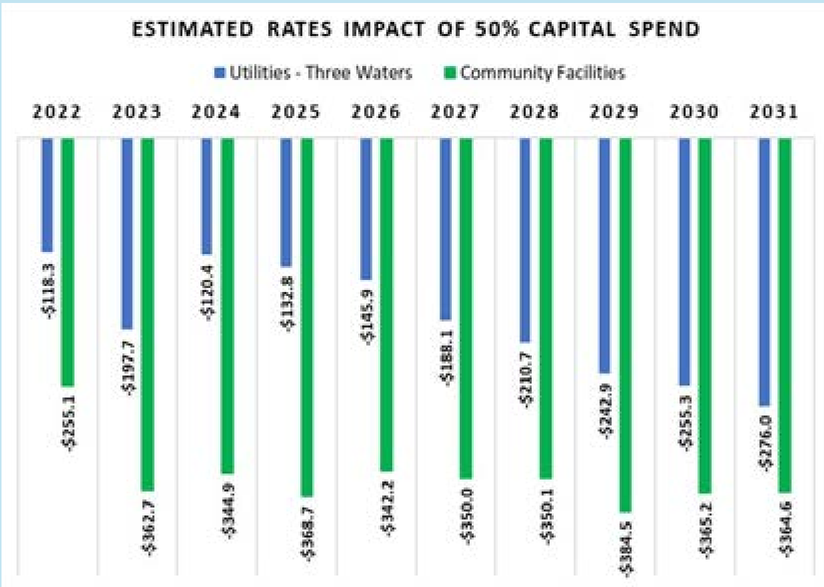
Impact

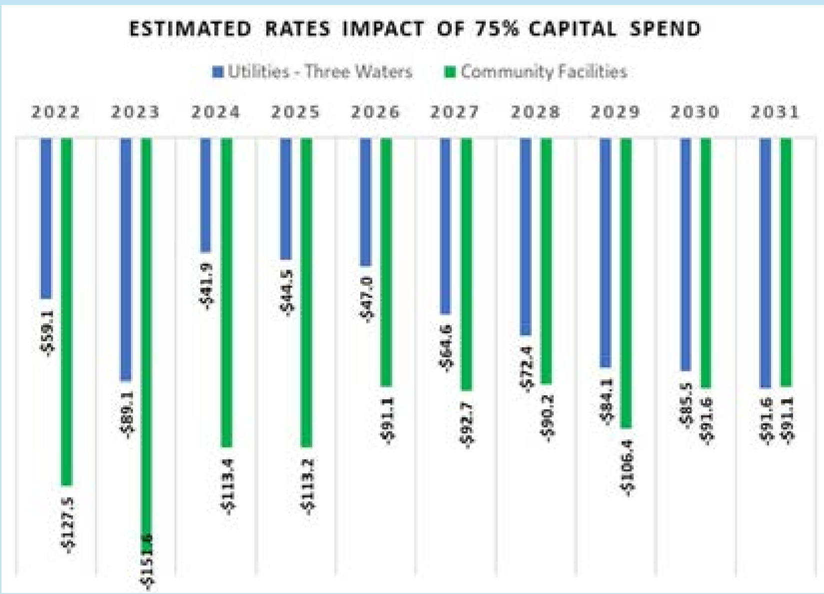
Moderate

Council has adopted the target to complete between 85%-105% of its capital works programme annually. This target in included as a Key Performance Indicator for the Chief Executive.

If Council is unable to meet this target, the cost of capital (interest payments) to service debt on loans for capital works would be minimised. This would have a positive impact on rates but may impact on availability and/or levels of service to the community.

The following graphs indicate the impact on rates resulting from 50% and 75% capital expenditure of utilities and community facilities capex over the life of the 10-Year Plan.





Likelihood	**Likely** While Council is proceeding on the expectation that capital works programme targets will be met, it is acknowledged that average annual capital expenditure of 79% has been completed over the period 2015-2020. To support the completion of the capital works programme, internal resourcing has been boosted with the appointment of an additional Project Manager and Design Engineer, and administration support staff. The additional resources will support staged and integrated project management and procurement practices, with the objective of bundling multiple projects into tenders to attain contractor commitment and ensure delivery. This includes bundling of projects across multiple agencies. Allowances will be made at the time of tender acceptance to add stages to the contracts, and contract completion times may be extended to allows contractors to programme their work effectively. This has been taken into account within projected project milestone and completion dates. Factors that may affect delivery are the availability of additional specialist engineering expertise and external contractors (including prequalification requirements for contractors), the capacity of Regional Council to process resource consent applications within statutory timeframes, and the ability to procure products and equipment from offshore. An additional risk is elevated demand due to the large capital works programmes of both neighbouring Councils and central government in the region. It is expected that the bundling of projects will drive resource efficiency and support completion of capital projects across the region.
Overall Risk	**Moderate (8)** We are currently well resourced to deliver to capital works programme targets however factors outside the control of Council may impact on the achievement of targets.
Reasons & Financial Effect of Uncertainty	Planned upgrades, renewals and maintenance works will continue as set out in the Infrastructure Strategy, the 10 Year Plan and the Forward Works Programme in the Three Waters Asset Management Plan. Any deferral of planned capital works will have a positive impact on rates affordability in that year.
Mitigating Factors (if applicable)	Staging and integrated project management and procurement processes will be employed to support capital works programme delivery. As above, this includes seeking opportunities to bundle capital works projects across the wider region.
Source	MDC. (2021). 3 Waters Asset Management Plan (Draft). 2021-2031. Manawatū District Council. MDC. (2021). Community Facilities Asset Management Plans (Draft). Manawatū District Council.

4.3.24 The Covid – 19 Virus

The combined effects of the global spread of Covid-19 and drought conditions pose a short-term risk to the domestic and local economy.

Over the longer term, the fundamentals of the District and national economy remain solid. However 2020 has brought with it significant challenges to the global economy that will inevitably impact on New Zealand, and in particular on regional economies dependent on tertiary education, tourism, merchandise export trade and imports of inputs to production and consumer goods from China.

In a nutshell, Covid-19 is imposing a simultaneous supply and demand side shock on the global economy, the full impact of which is not currently clear. In terms of agricultural production, the effects of Covid-19 are exacerbated by drought conditions experienced across the region and New Zealand in 2020, imposing restrictions on the ability of farmers to reduce stocking units due to the sharp slowdown of meat and meat product manufacturing. The impacts of the drought are also likely to be felt later in the year when dairy supply volumes are affected.

China is our largest market making up 27.9% of our merchandise export trade to December 2019. China is currently operating at approximately 30 per cent of normal capacity, meaning supply chains are significantly disrupted and demand for food products are constrained. As China recovers from the Covid-19 outbreak, we are likely to see a considerable recovery in demand for meat products. The risk is that the spread of Covid-19 to other parts of the globe will trigger a global recession, placing medium-term downward pressure on the incomes of our largest trading partners and reducing demand for New Zealand products over a longer period of time.

For 2020 however, we expect to see no or low growth in the economy in particular in regional economies that are dependent on tourism, international education, export trade and manufacturing. Due to the structure of the Manawatū District economy, we expect a downturn in 2020 with recovery in the second half of 2020 or 2021 driven by the recovery of global supply chains and international demand for our products alongside strong levels of central government investment flowing into the district and wider region. Maintaining capacity and capability, therefore sustaining household incomes, consumption activity and protecting jobs, will largely depend on the actions of central government and financial institutions. Central government will need to implement fiscal policy that maintains levels of employment and incomes. Measures could include changes to taxation policy settings, while financial institutions will need to implement flexibility in repayment schedules in particular in heavily indebted industries. Along with carefully constructed fiscal policy, monetary policy will need to be responsive to a downturn in consumption to support jobs and disposable incomes in the domestic economy.

4.4 Demand Impact on Assets

4.4.1 Water Supply

The availability of water is closely associated with development. Industrial, agricultural, business and residential development all depend on the availability, quantity and quality of water. Development in one sector ultimately has a flow on effect onto the other sectors. Therefore, the District's future development will rely heavily on the availability of water and the responsible management, distribution and protection of water sources. Demand for water in Manawatū can be broadly categorised into:

- Residential
- Industrial/commercial
- Agricultural.

Each of these in turn has its own influencing factors. In addition, requirements such as firefighting capability must be considered.

Residential demand is mostly influenced by population, but is also influenced by trends in consumption. In recent history, the installation of appliances such as dishwashers and garbage disposals has increased water consumption in the home. Conversely, actions that people take to conserve water (such as installing water-efficient appliances and fittings, or changing habits) can reduce residential water consumption.

Industrial demand is applicable mostly in Feilding, where there are large industries that use significant amounts of water. The water supply as a whole is then influenced heavily by what happens within these industries. If their production increases, their water use could be expected to increase. On the other hand, water-saving practices within the industries could achieve significant reductions in consumption.

On a large scale, these could significantly improve the ability of these water supplies to meet overall demand; at the same time, however, it could have an impact on funds collected by Council to pay for water services. Agricultural demand is an important consideration for Manawatū, particularly on our rural water supplies. Similarly to the other demand categories, on-farm practices can have an impact on demand, as can development. Our planning needs to take into consideration growth or decline in the agricultural sector within the District, as well as trends in water usage on farms. For instance, the dairy industry is becoming increasingly stringent when it comes to product quality. This has prompted some dairy farmers to invest in automated wash-down facilities for milking sheds that provide a high standard of cleanliness, but use significantly more water than older sheds.

The supply of water for stock watering purposes is also a key factor to increase on-farm production within the District. The economic benefits of centralised stock watering supply systems are positive, and may be eligible for part funding from central government. Therefore there exists a significant demand driver for these systems.

Council needs to be aware of these trends, and other potentially similar trends in other farming sectors, in order to forecast for agricultural demand in the future. Demand for water can be managed in a number of ways. A public information campaign on water conservation is an ideal way to get people thinking about saving water, for example with some of the measures mentioned above. The Council can work with industries, businesses and farmers to help them conserve water. Acoustic leak detection can be done proactively to find and repair leaks on the Council system or private property. Pressure management can reduce losses by lowering the water pressure in the reticulation at night when it does not need to be as high.

Metering extraordinary users of water can encourage conservation by linking water use directly to cost. These are all strategies that should form part of Council's overall water demand management programme. Staffing resources have recently increased to manage the increased requirements from compliance and growth.

4.4.1 Wastewater

The MDC Infrastructure Strategy identifies that the forecast development across the District, in particular Feilding, will generate an increased demand with the following potential implications for wastewater levels of service:

- Risk and uncertainty with resource consent renewals
- Contributing to this is the present limitations in land availability for the onsite discharge of treated wastewater, particularly at the Village Wastewater Treatment Plants
- Reticulation and treatment capacity to meet growth demand
- This includes current and future effects of stormwater and groundwater inflow and infiltration into the network
- Management of trade waste customers and demand.

To date, specific demand forecasting has only be completed for Feilding. An overview of demand implications is set out below:

- Planning for growth in Feilding has seen a high level analysis of the trunk network commissioned and undertaken in terms of Precinct 4 and Precinct 5
- Demand forecasting has been completed for the Centralisation project with respect to flow and key water quality parameters in the consent.

4.4.2 Stormwater

One of key changes associated with any urban development is the change in the percentage of impervious area associated with the building and hard stand amenity and parking areas. In new growth areas specifically zoned for residential or commercial development, the additional stormwater runoff generated and the additional stormwater contaminants discharged can be mitigated by specific design and performance requirements. Currently there is no specific mechanism to require such stormwater effects to be mitigated for infill development. Council can and does in some cases require mitigation for larger developments by way of attenuation storage, but there is no planning requirement mandating this.

With continuing on-going infill development, the additional incremental stormwater discharges are eroding the existing level of service and resulting in more frequent overland flow and ponding.

4.5 Demand Management Plan

The Lifecycle Management Plan sets out MDC's proposed infrastructure demand response.

4.6 Asset Programs to Meet Demand

4.6.1 Customer Demand Management

Plan Changes

Plan change 45 provided the rezoning of rural land to residential in the growth area in the north eastern part of Feilding. Plan change 52 provided for industrial zoning between the Ōroua River and Kawakawa Road. Structure Plans have been developed for inclusion into the District Plan as part of these plan change process. These seek from the outset to achieve good urban design and sustainable outcomes by establishing how each block will be spatially developed across all infrastructural assets, and how these developments will link to existing and other new areas.

Subdivision Commitments

The nature of subdivision developments, and the corresponding needs for subdivision commitment expenditure, can be difficult to define and predict over a 10-year programme period. This is also comes about from the large differences in lead times between receipt of proposals for major developments and their practical completion.

Subdivision commitments can only be determined on a case-by-case basis once applications are lodged and approved. Consent conditions, under the Resource Management Act 1991, requiring financial contributions for infrastructure upgrade conditions can be contested by the developer. The time taken to work through these processes can present a problem in forecasting the works and finance required to meet them. The approach taken in this Plan to address this problem is to:

- Programme specific works when they are confirmed and quantified
- Programme indicative finance where specific works or projects are not yet identified or quantified
- Base financial projections on constant-dollar historical expenditures on subdivision commitment works, tempered by consideration of the Council's accepted growth predictions for the various towns and localities within the district.

Assumptions

It is reasonable to assume that the Council will need to fund a share of subdivision infrastructure works related to development in about the same proportions as present. However despite the uncertainty surrounding prediction of subdivision commitments discussed above, some of the commitments in the immediate years (years 1 to 2 and possibly 3) of the programme are known, because of the lead-times between receipt of proposals for major developments and their practical completion. These known projects will be programmed as specific items in the forward programme while retaining a lesser provision for currently unknown commitments.

Development Contributions

Development contributions are contributions required from developers to help offset the effects of growth they have induced on the network. They are levied under the Local Government Act 2002 and Council's Development Contribution Policy.

Financial contributions are amounts or works required of developers to avoid, remedy or mitigate the adverse effects of their developments on the environment, built or natural. They are levied under the Resource Management Act 1991.

Works that include a growth component can be considered for a development contribution – based on the cost of providing additional capacity for growth. Providing additional capacity for an enhanced level of service as well, may still attract a growth component but it will be of a lesser proportion.

At the time of writing of this Plan, there are no financial or development contributions for growth related work outside the immediate environs of proposed development.

Financial Contributions are levied for specific works that need to be carried out on infrastructure adjacent to new developments, where the standard is inadequate for the development. The costs of these works are shared with the Council, based on projected traffic volumes.

Subdivision Approvals and Commitments

Three waters because of their fundamental role in providing services to and from, and often within, properties, are directly affected by changes in land use and subdivisions. Some of these affects may be very minor and some can be significant either locally or at a network level.

Subdivisions reflect the underlying land use zoning. If the zoning status of land changes, through the Manawatū District Plan or private plan changes, this can result in areas being subdivided and developed for residential, rural residential, business/commercial and industrial purposes. This can drive the requirement for existing services to be upgraded and new infrastructure to be constructed and vested in the Council.

Developers usually pay the full cost of services and development works within new subdivisions. However, when the Council anticipates that services will have wider use in network, it will contribute towards the incremental cost of any additional size.

New three waters assets are vested in the Council upon completion of the subdivision and the issuing of titles to the new lots. The Council, as ultimate owner and operator of these assets, specifies minimum design criteria and checks construction at critical stages.

This process requires developers inter alia to obtain engineering approval for the proposed works from Council staff prior to construction. This includes providing fully detailed plans and specifications for the approval. Not until approval is obtained can physical construction work, including roading, street lighting, and utilities installation and construction, proceed.

The Developer must have all completed works inspected and approved by the Council before a Section 224(c) Certificate is issued. When the certificate is issued the new assets are vested in Council.

For each development, the Council considers the need for three water services directly associated with the subdivision and, where improvements are justified; engineering staff seek to have appropriate conditions inserted in the relevant consents. These can be established and applied through either the Resource Management Act 1991 (to avoid, remedy or mitigate the adverse effects of a particular development) as Financial Contributions. The Council prefers to utilise its development contribution policy, introduced in the 2006 LTP, for establishing upgrading contributions for any improvements remote from the subdivision.

Under the provisions of these Acts, and case law, the Council is often not able to require a developer to pay the full cost of an upgrade to existing infrastructure, and is required to share the cost of the works. In some cases the Council will apportion costs, however generally a minimum 50% contribution is sought as it would inappropriate for the Council to commit itself to significant expenditure on the basis of a low contribution.

Three water services are upgraded as a result of new subdivisions or changes in land use if the additional demand generated is significant enough to warrant a contribution being imposed on the developer to mitigate its adverse effects on the network.

Until recently, the nature of subdivision development was that the Council had little, if any, control over the timing or implementation of any project. Recent strategic planning initiatives such as the greater Feilding Urban Growth Framework are attempting to control the amount and staging of growth ensure that it, and the supply of supporting infrastructure, is sustainable and achievable.

The development of Structure Plans have provide greater certainty in the urban form likely to develop and deemed appropriate. This enables coordinated planning to occur and opportunities for lead infrastructure to be provided by Council and funded by development contributions.

Significant Land Use Changes

Council is currently undertaking a review of the District Plan. One of the initial parts of the review has involved consideration of urban growth requirements around Feilding. A total of four residential growth precincts and one industrial growth precinct were identified in the Feilding Urban Growth Framework Plan.

Precincts 1, 2, 3 and 4 from the framework plan have been through the public plan change process under the Resource Management Act (1991). These areas are located to the west of Feilding and detailed structure plans have been prepared. Precinct 5 – industrial growth area has also been adopted by Council.

These areas will provide an additional yield of 1600 residential lots and an additional 97ha for future industrial land use. The areas identified for deferred zoning that will remain rural and be rezoned to residential as demand requires.

Planned Upgrades

Council also has a focus on economic development, and on ensuring the associated infrastructure capacity is available for commercial / industrial land and residential growth in Feilding. Plans for growth areas were developed through the Feilding Urban Growth Framework Plan and an ongoing review of the District Plan.

Summary

Council has the following long term strategy:

- Ensure rural townships are vibrant and thriving by providing affordable infrastructure with some spare capacity that meets current relevant mandatory and resource consent standards for quality and security of supply
- Meet new resource consent standards for Feilding and meet Manawatū River Accord commitments for all urban areas
- Plan for the renewal of all assets as set out in the AMPs
- The current upgrade programme and the identified Feilding growth precincts will cater for forecast growth over the next 30 plus years
- Funding for the forecast expenditure and loans will fit within the Financial Strategy rating and debt limits for the first 10 years, and will be consistent with the Financial Strategy funding strategies for years 11 to 30.

5. LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how the Council plans to manage and operate the assets at the agreed levels of service while managing life cycle costs.

To provide context, detail is first provided on:

- Existing assets on a per scheme basis; and
- Condition and Performance of existing assets.

This is followed by MDC's asset lifecycle strategies (development, operations and maintenance, renewal, and disposal)

5.1 Assets Overview

The tables below give a summary of the key information for Councils water, wastewater and stormwater schemes including main lengths in metres and the asset age. Plans showing the properties contained within the scheme billing areas and the extent of extent of the network are also provided.

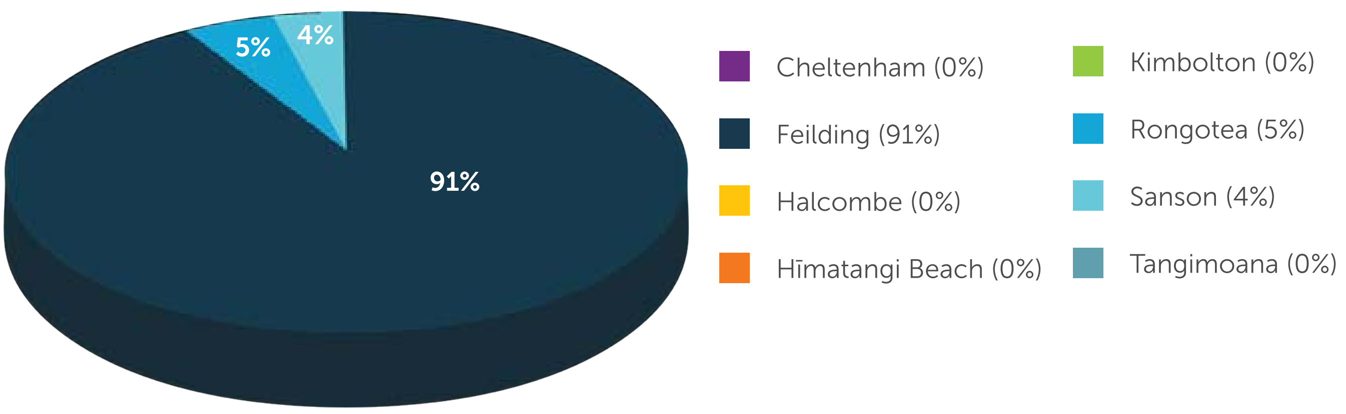
5.2 Stormwater

This section covers the Manawatū District Council's stormwater assets in Feilding, Hīmatangi Beach, Rongotea, Sanson, Cheltenham, Kimbolton, Tangimoana and Halcombe. This section outlines the amount of stormwater mains in metres for the stormwater schemes and the age profile of assets on Council's urban networks is displayed on the below.

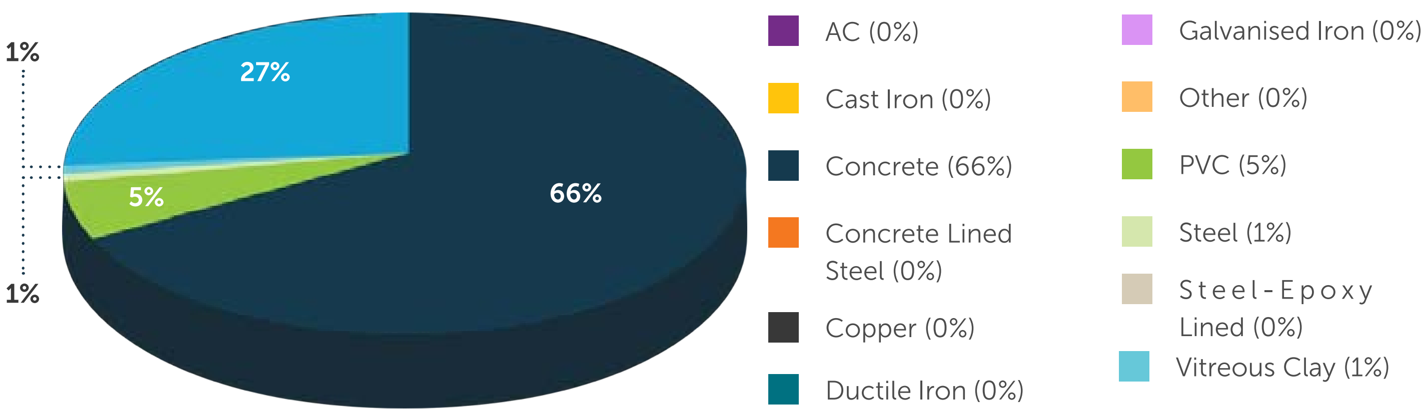
Stormwater Main lengths

Stormwater	Length of Mains (m)
Feilding	78940.75
Hīmatangi Beach	172.73
Rongotea	4191.70
Sanson	3419.98
Cheltenham	299.87
Kimbolton	85.03
Tangimoana	37.20
Halcombe	190.46
Total	87337.72

Stormwater Main Location by length (metres)

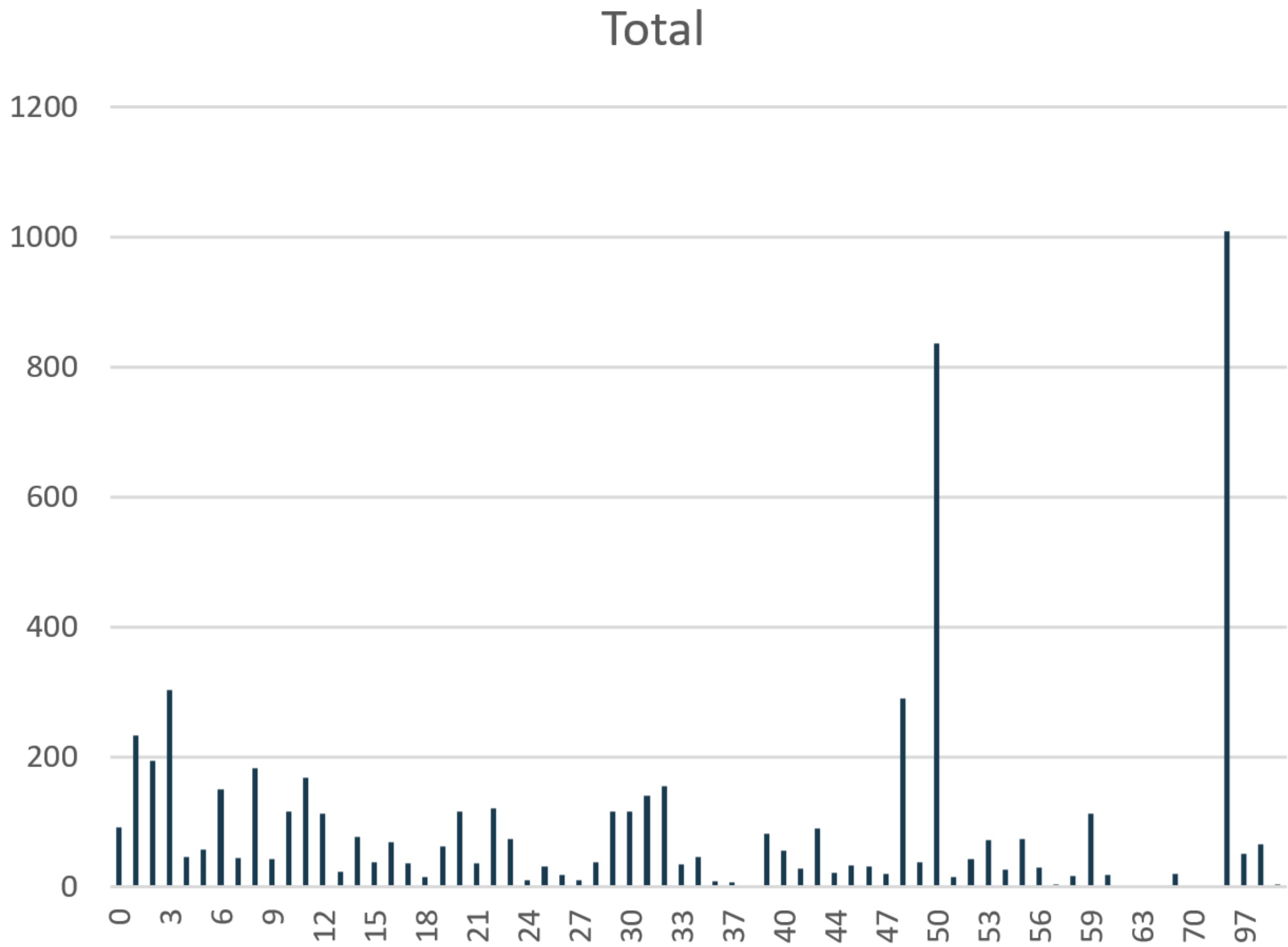


Summary of pipe materials used in Council's stormwater network



The age profile of assets on Council's urban networks is displayed on the chart below.

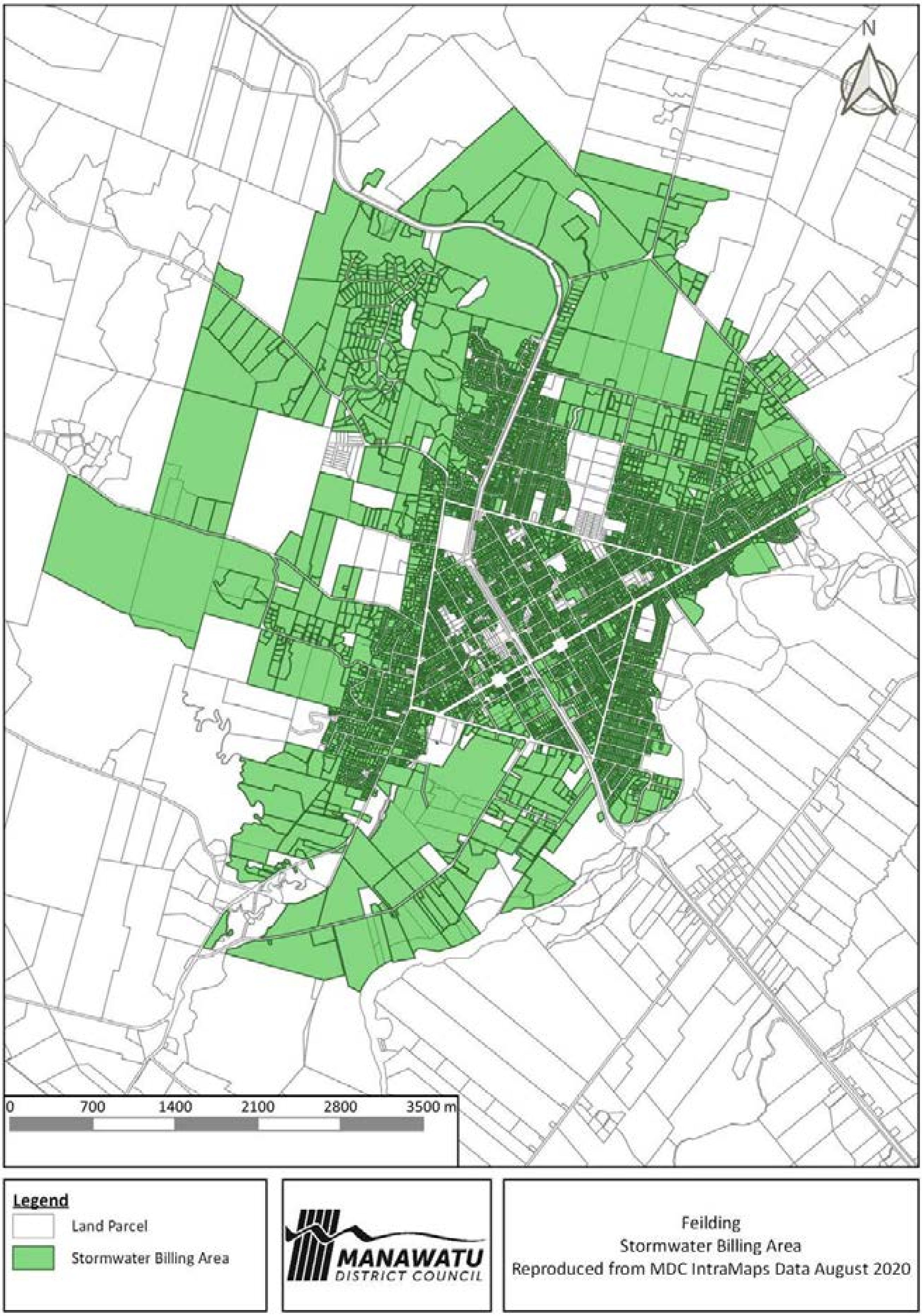
Age Profile - Stormwater



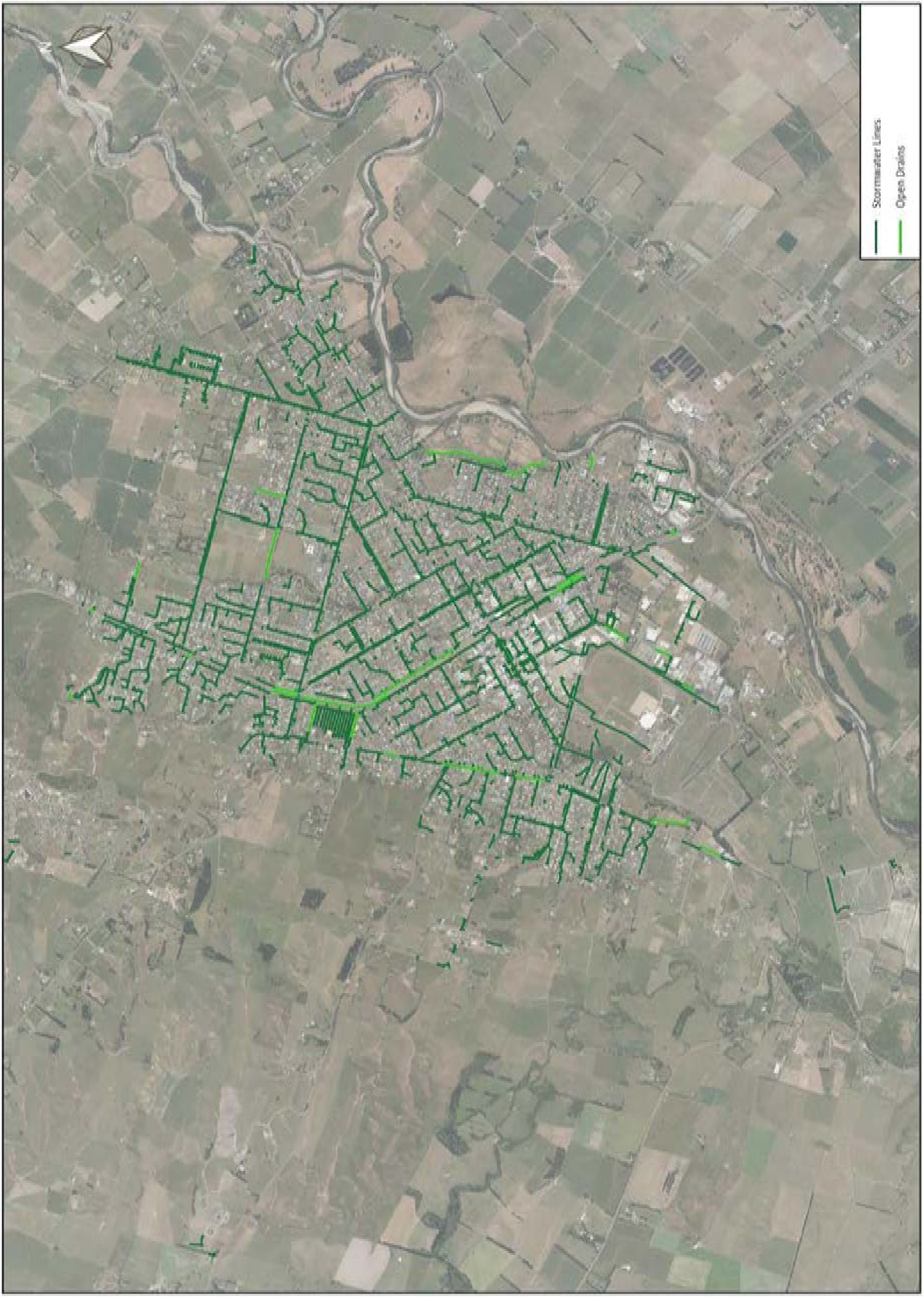
Feilding –Stormwater Scheme Overview

Description		Quantity/comment	
Overview	Description	Well Developed, urban stormwater network	
	Pre 2018-208 LTP	Targeted stormwater rate	
	Post 2018-2028 LTP Adoption	Harmonised stormwater rate	
Scheme Coverage (MDC Intramaps, June 2020)	No# Properties Within Billing Area	6,478	
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$56,713,828
		Open Drains	$236,014
		Total	**$56,949,842**
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$28,557,498
		Open Drains	$236,014
		Total	**$28,793,512**
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$580,307
		Open Drains	$0
		Total	**$580,307**

Feilding Stormwater Billing area plan



Feilding Stormwater Network Plan



Rongotea – Stormwater Scheme Overview

Description		Quantity/comment	
Overview	Description	Formal, village stormwater network	
	Pre 2018-208 LTP	Targeted stormwater rate	
	Post 2018-2028 LTP Adoption	Harmonised stormwater rate	
Scheme Coverage (MDC Intramaps, June 2020)	No# Properties Within Billing Area	282	
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$2,100,512
		Pump station	$5,741
		Open Drains	$957
		Total	**$2,07,210**
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$1,494,885
		Pump station	$3,114
		Open Drains	$957
		Total	**$1,498,956**
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$21,632
		Pump station	$38
		Open Drains	$0
		Total	**$21,670**

Rongotea - Stomwater Billing Area Plan

Rongotea - Stomwater Network Plan

Sanson Stormwater – Scheme Overview

Description		Quantity/comment	
Overview	Description	Formal, village stormwater network	
	Pre 2018-208 LTP	Targeted stormwater rate	
	Post 2018-2028 LTP Adoption	Harmonised stormwater rate	
Scheme Coverage (MDC Intramaps, June 2017)	No# Properties Within Billing Area	254	
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$1,936,416
		Pump station	$1,936
		Open Drains	$3,291
		Total	**$1,941,639**
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$1,514,886
		Pump station	$1,428
		Open Drains	$3,291
		Total	**$1,519,605**
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$19,697
		Pump station	$129
		Open Drains	$0
		Total	**$19,826**

Sanson - Stomwater Billing Area Plan

Sanson - Stomwater Network Plan

Halcombe Stormwater – Scheme Overview

Description		Quantity/comment	
Overview	Description	Village stormwater service	
	Pre 2018-208 LTP	No service	
	Post 2018-2028 LTP Adoption	Harmonised stormwater rate	
Scheme Coverage (MDC Intramaps, June 2020)	No# Properties Within Billing Area	116	
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$134,467
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$105,654
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$1,371

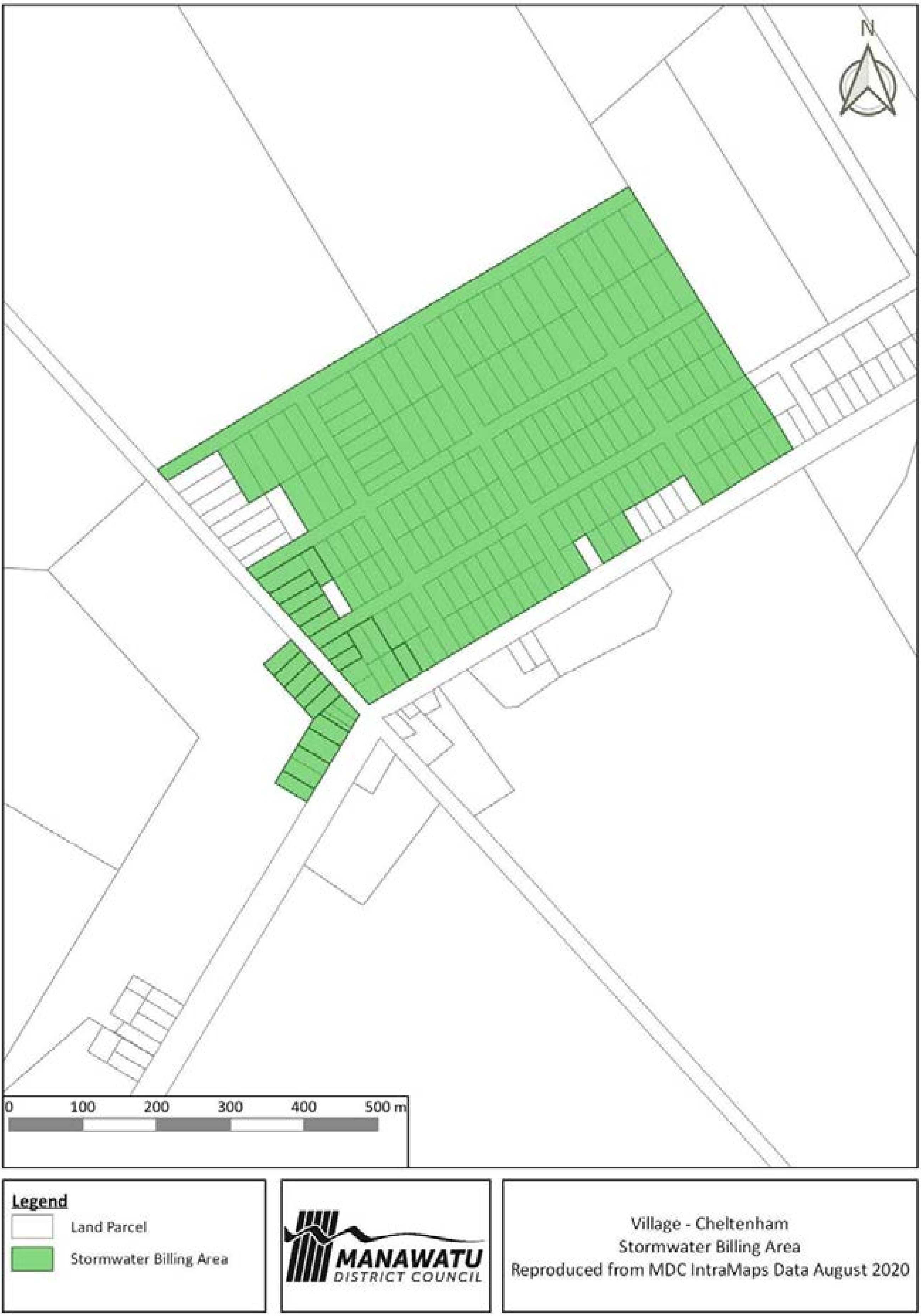
Halcombe - Stomwater Billing Area Plan

Halcombe - Stormwater Network Plan

Cheltenham – Stormwater Scheme Overview

Description		Quantity/comment	
Overview	Description	Village stormwater service	
	Pre 2018-208 LTP	No service	
	Post 2018-2028 LTP Adoption	Harmonised stormwater rate	
Scheme Coverage (MDC Intramaps, June 2020)	No# Properties Within Billing Area	20	
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$197,344
		Open Drains	$2,231
		Total	**$199,575**
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$112,915
		Open Drains	$2,231
		Total	**$115,146**
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$1,977
		Open Drains	$0
		Total	**$1,977**

Cheltenham - Stormwater Billing Area Plan



Cheltenham - Stormwater Network Plan

Hīmatangi Beach Stormwater – Scheme Overview

Description		Quantity/comment	
Overview	Description	Village stormwater service	
	Pre 2018-208 LTP	No service	
	Post 2018-2028 LTP Adoption	Harmonised stormwater rate	
Scheme Coverage (MDC Intramaps, June 2020)	No# Properties Within Billing Area	457	
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$39,885
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$30,723
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$456

Hīmatangi Beach - Stormwater Billing Area Plan

Hīmatangi Beach - Stormwater Network Plan

Tangimoana Stormwater– Scheme Overview

Description		Quantity/comment	
Overview	Description	Village stormwater service	
	Pre 2018-208 LTP	No service	
	Post 2018-2028 LTP Adoption	Harmonised stormwater rate	
Scheme Coverage (MDC Intramaps, June 2020)	No# Properties Within Billing Area	211	
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$33,292
		Pump station	$120,220
		Total	**$153,512**
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$31,660
		Pump station	$110,794
		Total	**$142,454**
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$368
		Pump station	$1,437
		Total	**$1,805**

Tangimoana - Stormwater Billing Area Plan

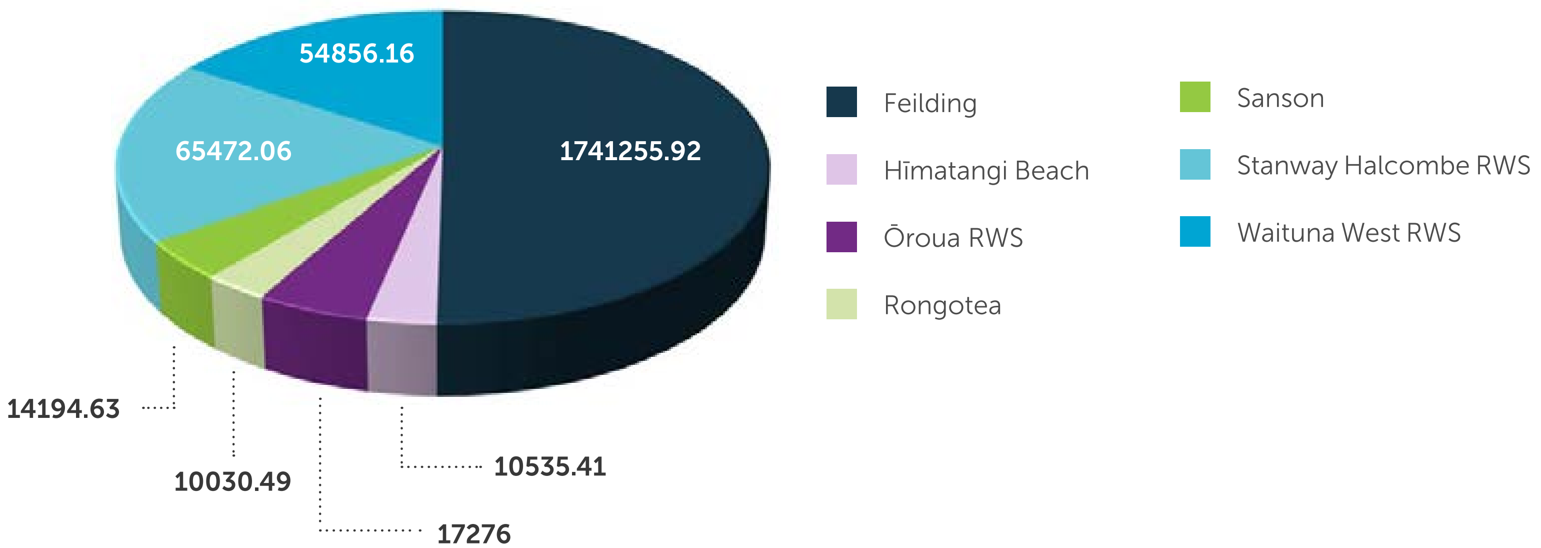
Tangimoana - Stormwater Network Plan

5.3 Water Supply

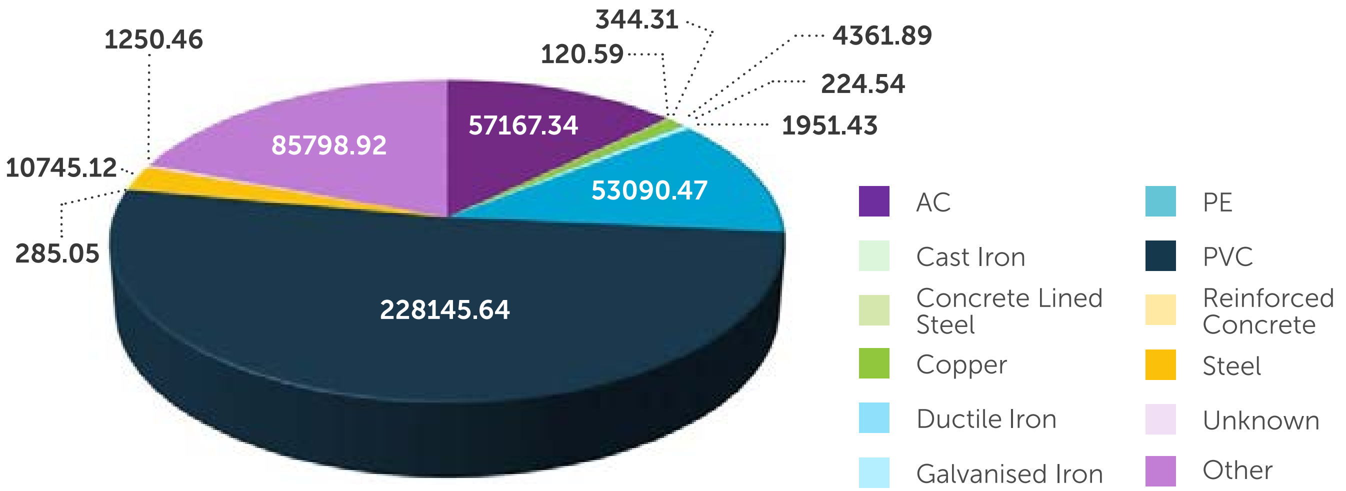
This section covers the Manawatū District Council's water assets in Feilding, Hīmatangi Beach, Rongotea, Sanson, Ōroua Rural Water Scheme, Stanway, Halcombe Rural Water Scheme and Waituna West Rural Water Scheme. This section outlines the amount of stormwater mains in metres for the stormwater schemes and the age profile of assets on Council's urban networks is displayed on the below.

Row Labels	Sum of Quantity Length
Feilding	174125.92
Hīmatangi Beach	10535.41
Ōroua RWS	17276
Rongotea	10030.49
Sanson	14194.63
Stanway Halcombe RWS	65472.06
Waituna West RWS	54856.16
Total	346490.67

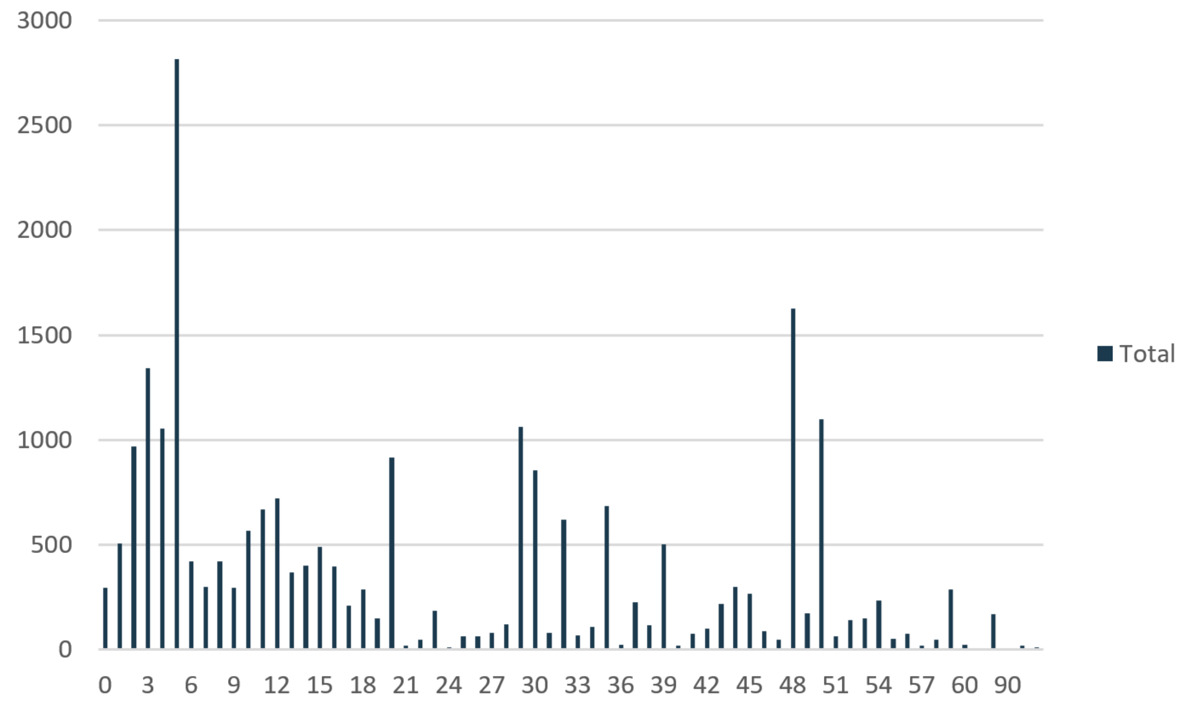
Water Main Location by length (metres)



Summary of Pipe Material used in all Council water networks



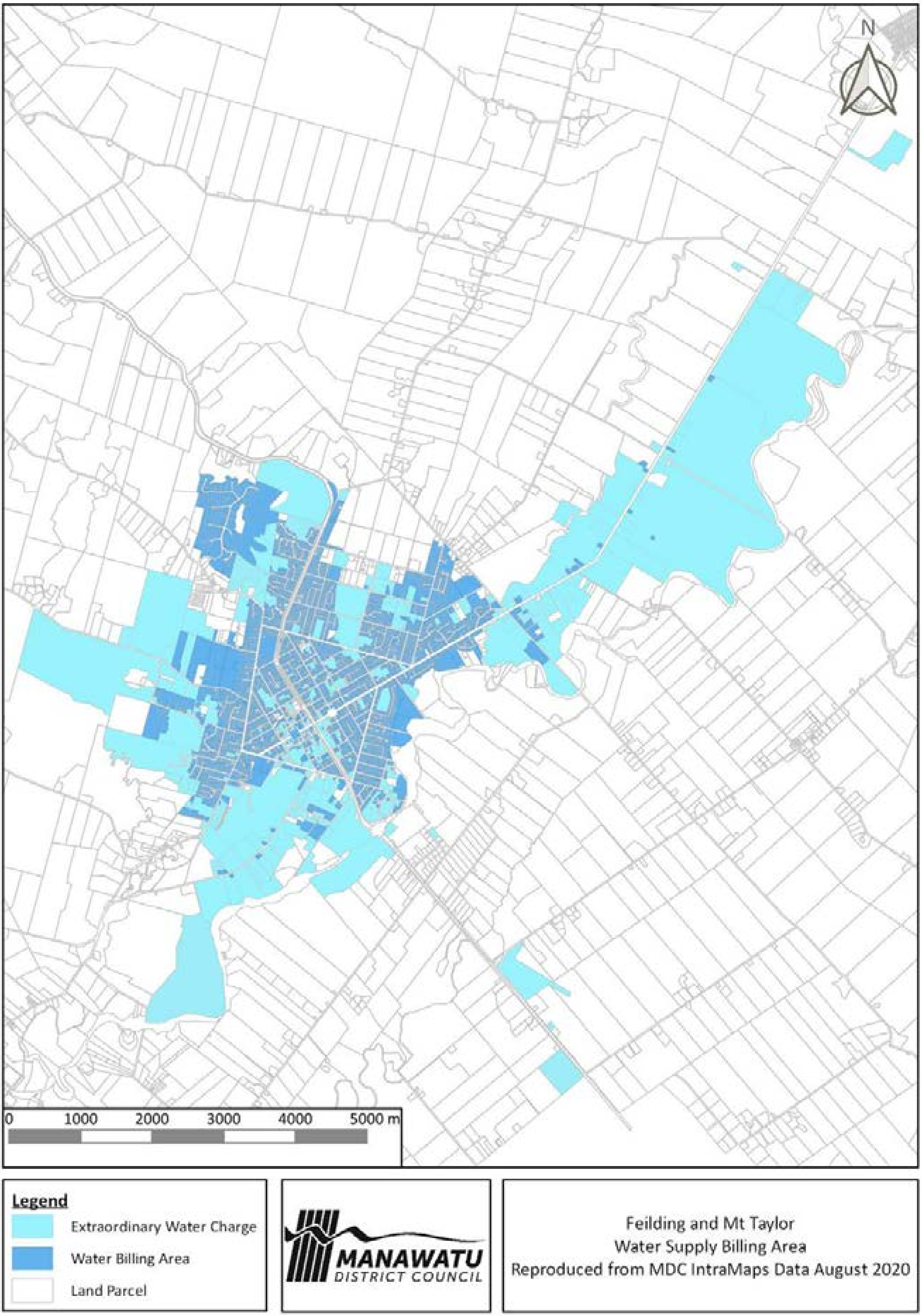
Asset Age Profile –Water



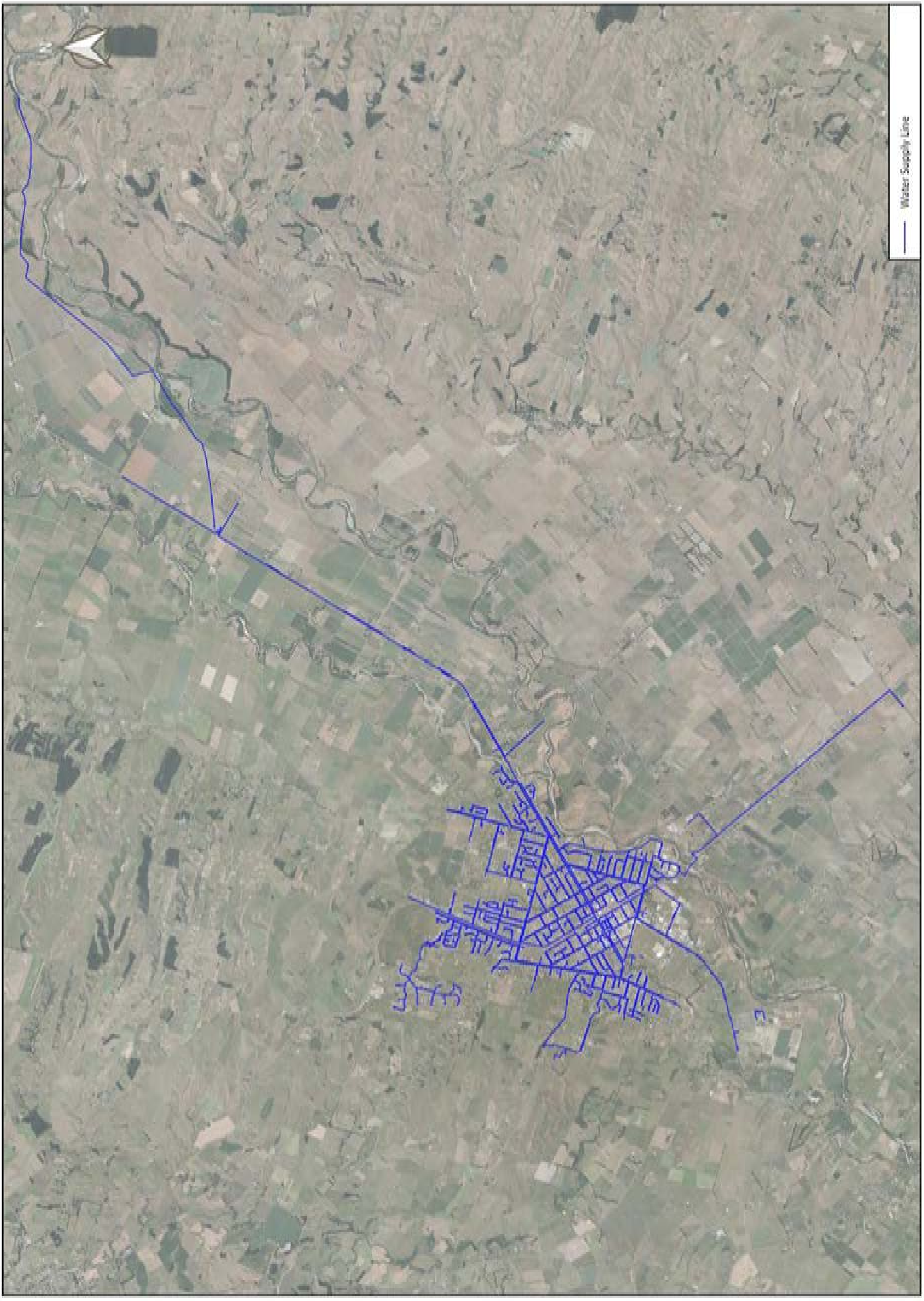
Feilding –Water Supply Asset Overview

Description		Quantity/comment	
Scheme Coverage (MDC Intramaps, June 2020)	No# Properties Within Billing Area	6,539	
	No# Properties Connected	6,367	
	SUIP	6,952	
System Components	Source(s)	Surface water : Ōroua River Groundwater: • Campbell Rd Bore • Newbury Line Bore	
	Treatment	Almadale Treatment Plant – Surface Water Source Awa St Treatment Plant – Groundwater Source	
	Reticulation	Pressure & Flow	On Demand Excluding Mt Taylor which is on a restricted supply
		Storage	Fraser Drive Reservoir
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$76,712,589
		Facilities	$15,292,669
		Total	**$92,005,258**
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$37,563,854
		Facilities	$6,211,214
		Total	**$43,775,068**
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$1,008,104
		Facilities	$247,323
		Total	**$1,255,427**

Feilding - Water Supply Billing Area Plan



Feilding - Water Supply Network Plan



Rongotea Water Supply – Asset Overview

Description		Quantity/comment	
Scheme Coverage (MDC Intramaps, June 2017)	No# Properties Within Billing Area	336	
	No# Properties Connected	93	
	SUIP	336	
System Components	Source(s)	Groundwater	
	Treatment	Rongotea Water Treatment Plant	
	Reticulation	Pressure & Flow	On Demand
		Storage	Reservoir at Water Treatment Plant Site
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$2,640,988
		Facilities	$1,401,624
		Total	**$4,042,612**
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$2,503,075
		Facilities	$1,286,683
		Total	**$3,789,758**
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$31,924
		Facilities	$32,420
		Total	**$64,344**

Rongotea - Water Supply Billing Area Plan

Rongotea - Water Supply Network Plan

Sanson Water Supply – Asset Overview

Description		Quantity/comment	
Scheme Coverage (MDC Intramaps, June 2020)	No# Properties Within Billing Area	260	
	No# Properties Connected	241	
	SUIP	274	
System Components	Source(s)	Present source - Groundwater, secure. Future source – New bore has been developed within the village with associated treatment plant	
	Treatment	Present - Sanson Water Treatment Plant adjacent to new bore	
	Reticulation	Pressure & Flow	Restricted Supply
		Storage	Present – A new reservoir has been constructed in the village.
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$1,626,709
		Facilities	$1,042,708
		Total	**$2,669,417**
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$958,462
		Facilities	$820,493
		Total	**$1,778,955**
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$22,853
		Facilities	$25,216
		Total	**$48,069**

Sanson - Water Supply Billing Area Plan

Legend

- Extraordinary Water Charge
- Water Billing Area
- Land Parcel

MANAWATU DISTRICT COUNCIL

Sanson
Water Supply Billing Area
Reproduced from MDC IntraMaps Data August 2020

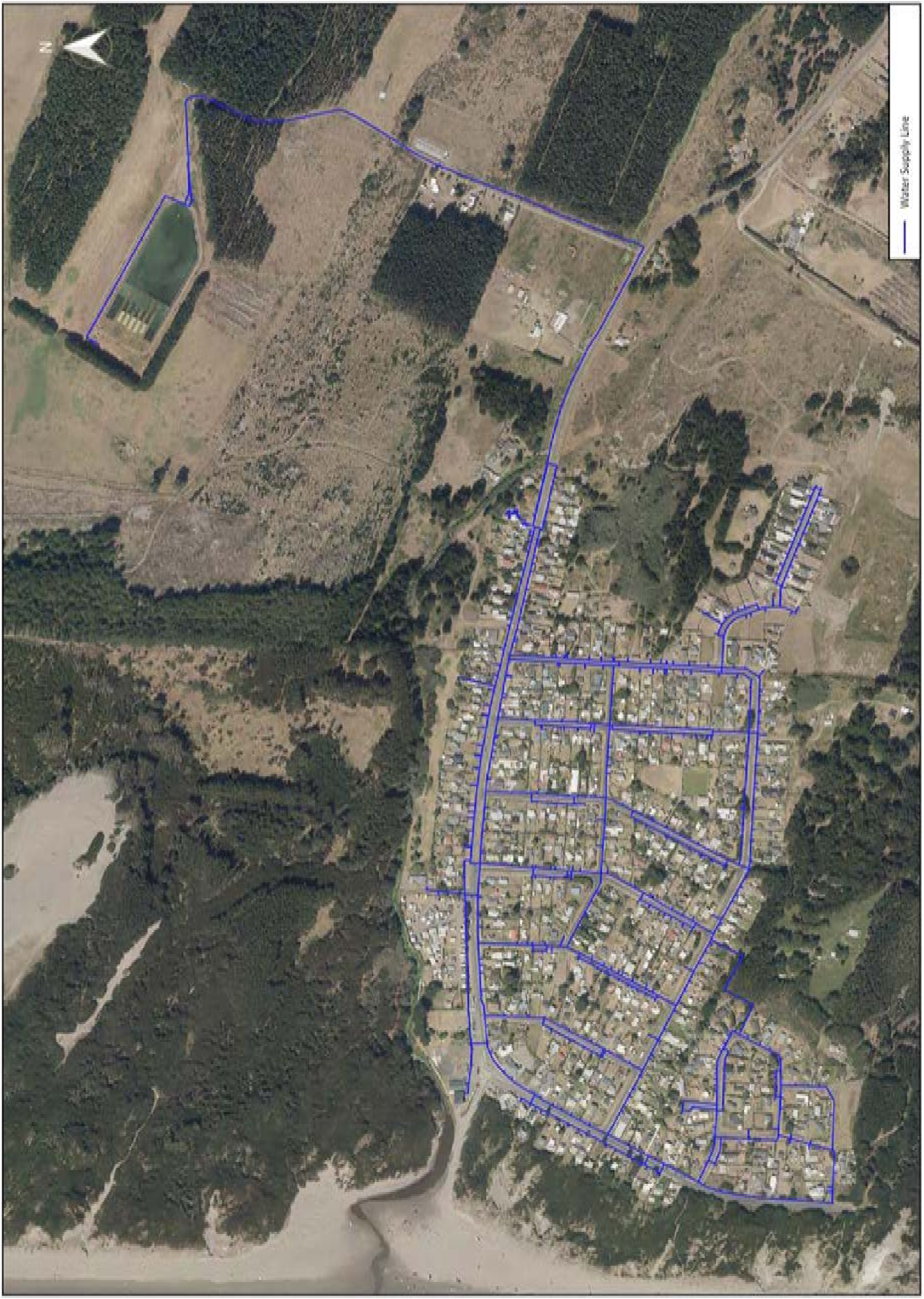
Sanson - Water Supply Network Plan

Hīmatangi Water Supply – Asset Overview

Description		Quantity/comment	
Scheme Coverage (MDC Intramaps, June 2020)	No# Properties Within Billing Area	469	
	No# Properties Connected	438	
	SUIP	471	
System Components	Source(s)	Groundwater - Bore on Koputara Road	
	Treatment	Hīmatangi Beach Water Treatment Plant – Koputara Road.	
	Reticulation	Pressure & Flow	On Demand
		Storage	Reservoirs at Water Treatment Plant Site
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$2,682,054
		Facilities	$1,333,064
		Total	**$4,015,118**
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$1,785,397
		Facilities	$503,989
		Total	**$2,289,386**
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$38,852
		Facilities	$22,654
		Total	**$61,506**

Hīmatangi - Water Supply Billing Area Plan

Hīmatangi - Water Supply Network Plan

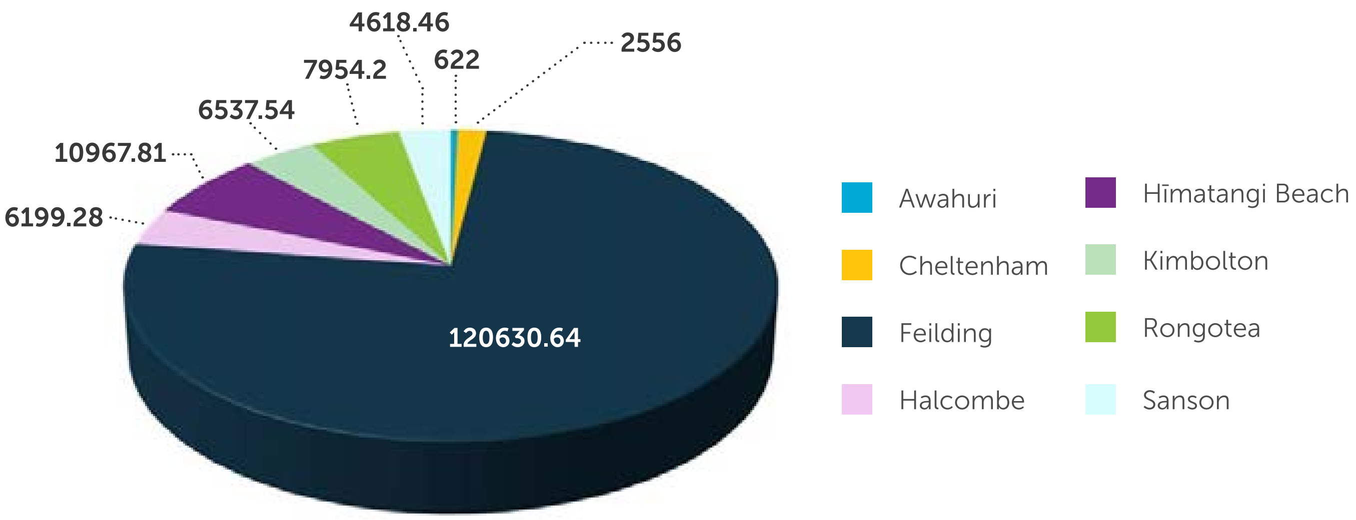


Wastewater

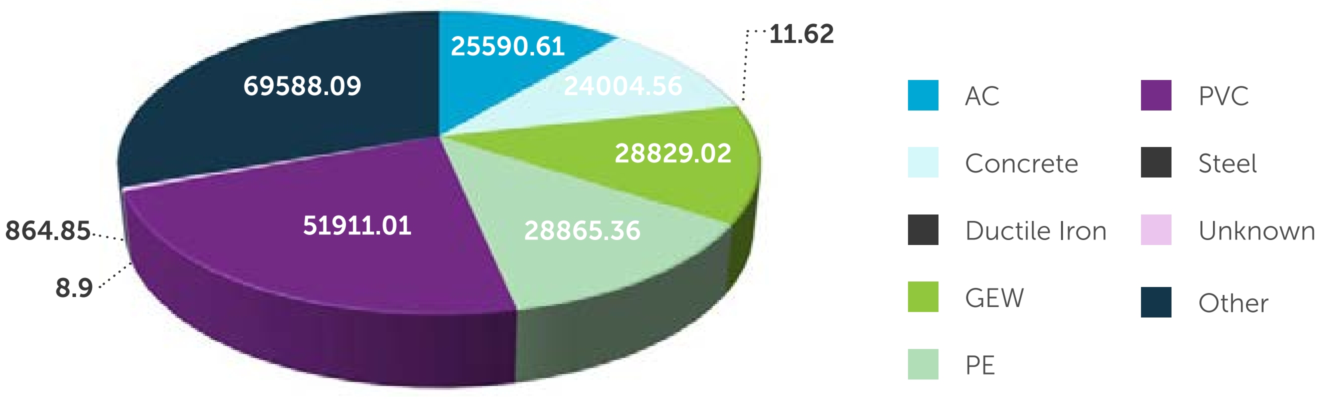
This section covers the Manawatū District Council's water assets in Feilding, Hīmatangi Beach, Rongotea, Sanson, Cheltenham, Kimbolton, Awahuri and Halcombe. This section outlines the amount of wastewater mains in metres for the wastewater schemes and the age profile of assets on Council's wastewater networks is displayed on the below.

Wastewater	Length of Mains (m)
Feilding	120630.64
Hīmatangi Beach	10967.81
Rongotea	7954.20
Sanson	4618.46
Cheltenham	2556.00
Kimbolton	6537.54
Awahuri	622.00
Halcombe	6199.28
Total	160085.93

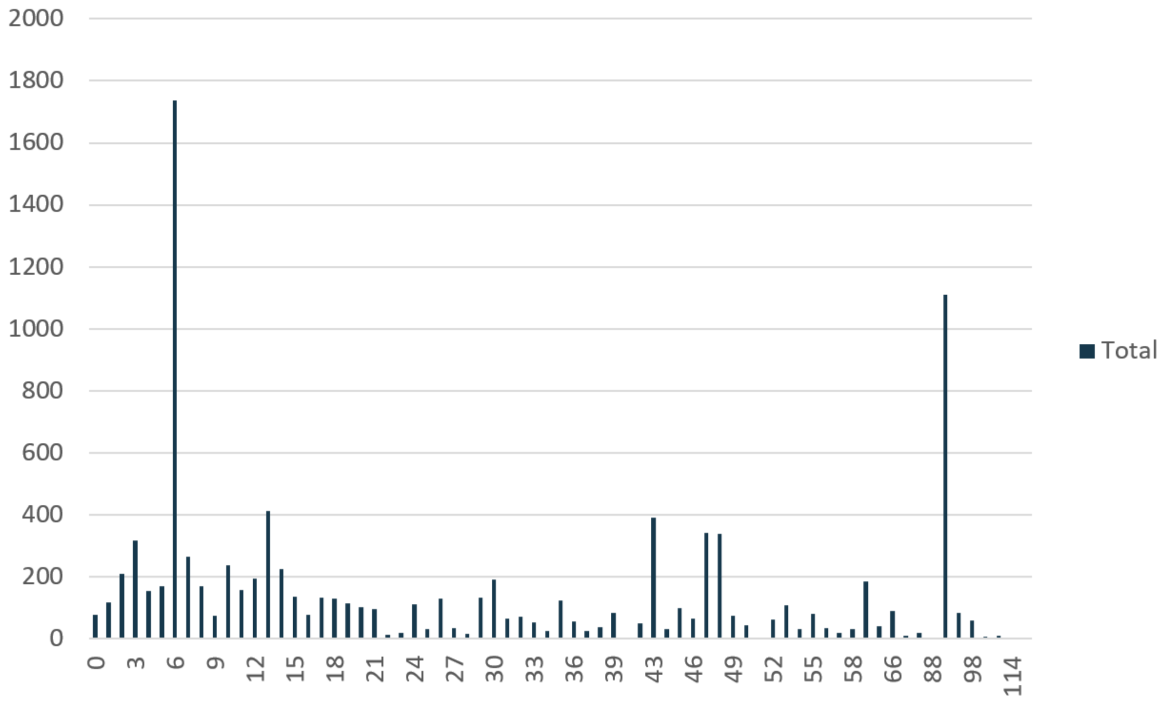
Summary of Wastewater Main Location by length (metres)



Summary of Pipe Material used in all Council wastewater networks



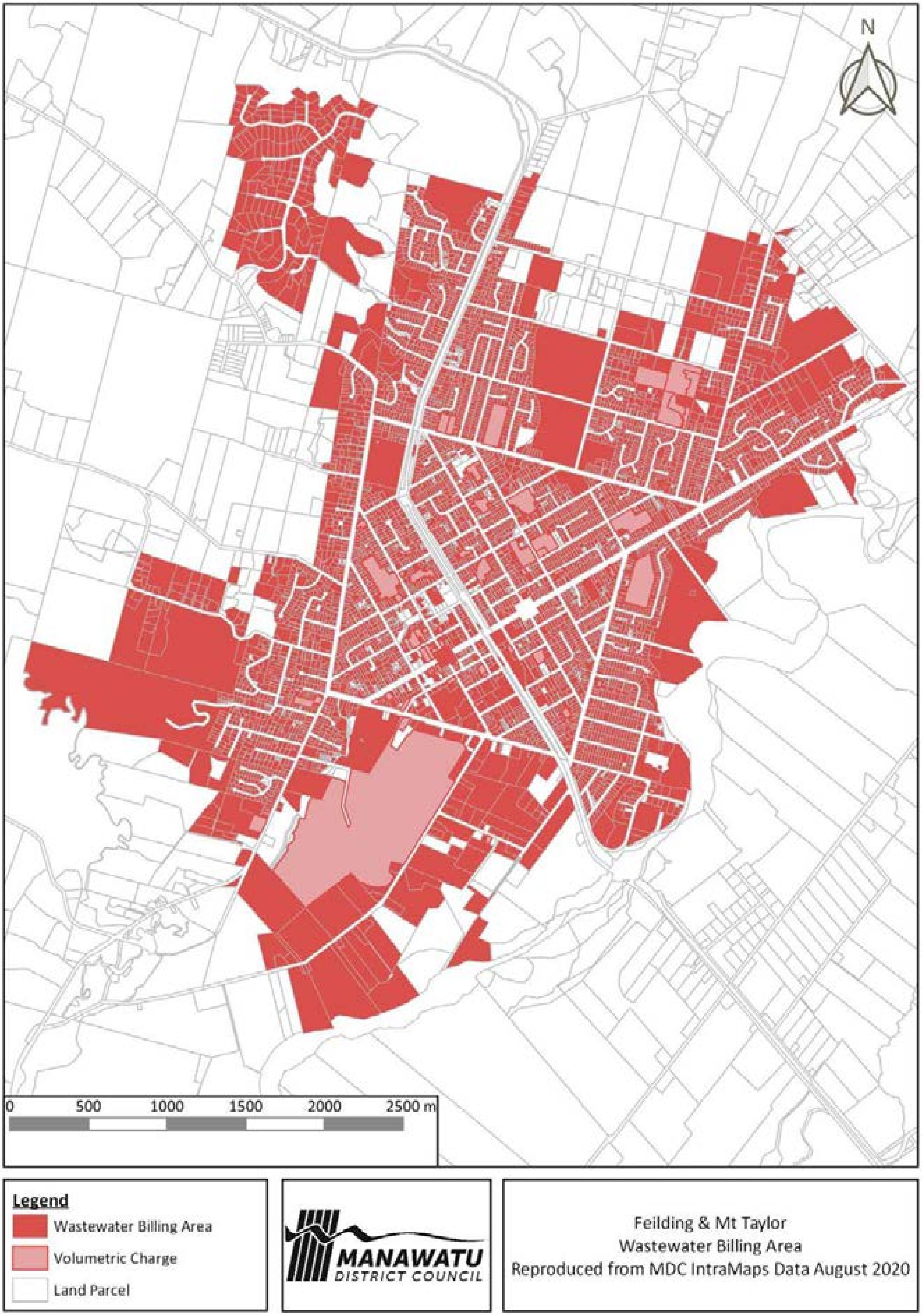
Asset Age Profile - Wastewater



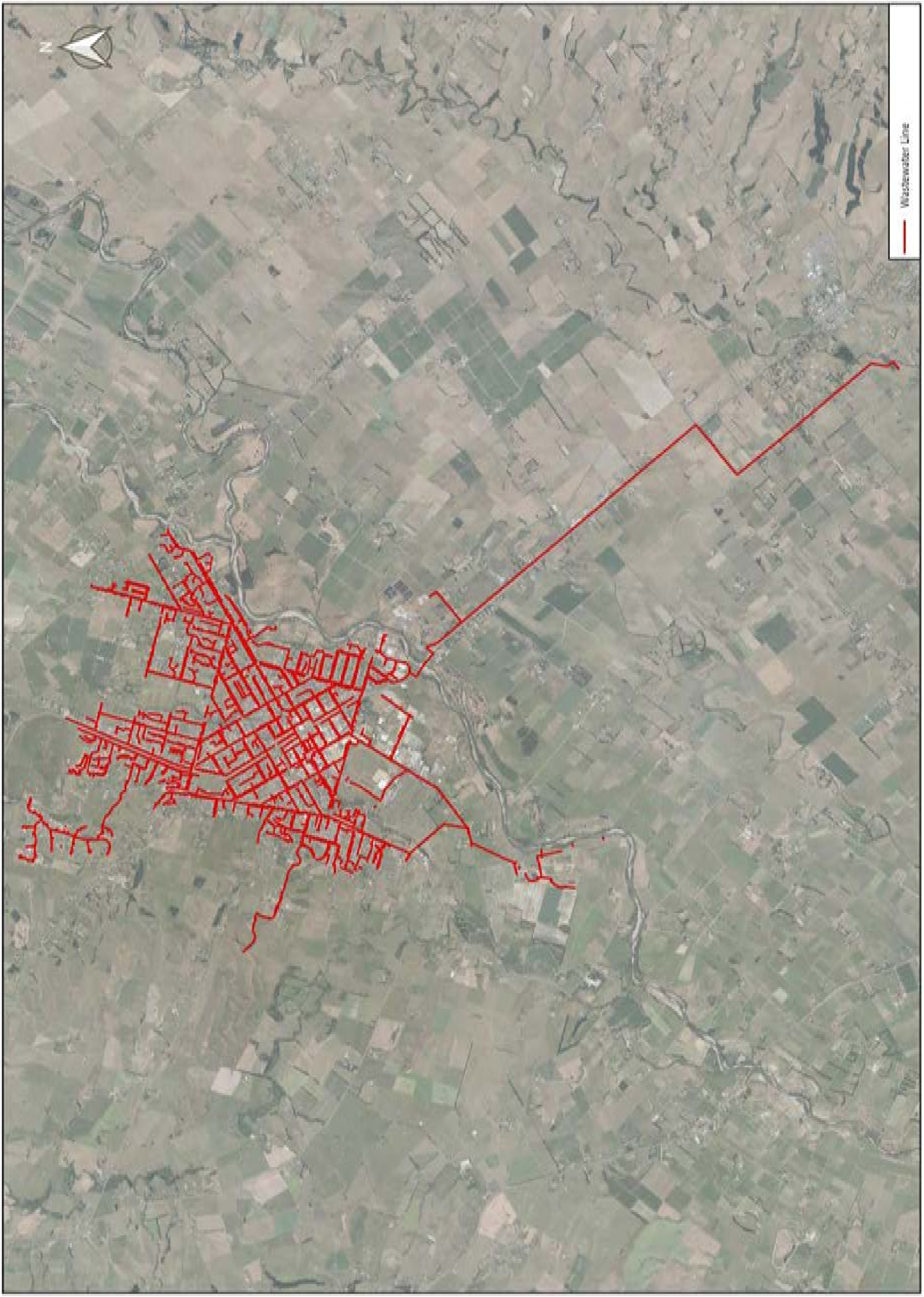
Feilding – Wastewater - Asset Overview

Description		Quantity/comment	
Scheme Coverage (MDC Intramaps, June 2020)	No# Properties Within Billing Area	6,403	
	No# Properties Connected	6,234	
	SUIP	8,294	
System Components	Reticulation	Gravity network (Excluding Mt Taylor which has a pressure system) Pump stations: • South St • Denbigh Square • Fairview Ave • Simon St • Timona Park • Mahinui St • Port St East #060 • Port St East #110	
	Treatment Plant	Feilding Wastewater Treatment Plant. Project underway to implement a dual land/surface water disposal system. Disposal to land via irrigation on MDC property. Surface water discharge to the Ōroua River.	
	Within Centralisation Scope	Yes – Destination Treatment Plant	
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$57,804,362
		Pump stations	$601,760
		Facilities	$37,485,127
		Total	**$95,891,249**
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$32,811,707
		Pump stations	$260,668
		Facilities	$27,762,437
		Total	**$60,834,812**
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$598,587
		Pump stations	$9,346
		Facilities	$878,719
		Total	**$1,486,652**

Feilding Wastewater - Billing Area Plan



Feilding Wastewater - Network Plan



Rongotea Wastewater - Asset Overview

Description		Quantity/comment	
Scheme Coverage (MDC Intramaps, June 2020)	No# Properties Within Billing Area	307	
	No# Properties Connected	292	
	SUIP	344	
System Components	Reticulation	Gravity network Pump stations: • Trent St • Tyne St • Caravan Dump Site	
	Treatment Plant	Rongotea Wastewater Treatment Plant. Currently discharges to surface water. Future: Pumped to Manawatū WWTP as part of centralisation	
Value	Within Centralisation Scope	Yes	
	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$3,585,376
		Pump stations	$320,203
		Facilities	$1,253,395
		Total	**$5,158,974**
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$2,216,431
		Pump stations	$114,793
		Facilities	$721,426
		Total	**$3,052,650**
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$36,581
		Pump stations	$5,307
		Facilities	$30,315
		Total	**$72,203**

Rongotea Wastewater – Billing Area Plan

Rongotea Wastewater – Network Plan

Sanson Wastewater - Asset Overview

Description		Quantity/comment	
Scheme Coverage (MDC Intramaps, June 2020)	No# Properties Within Billing Area	265	
	No# Properties Connected	251	
	SUIP	308	
System Components	Reticulation	Gravity network Pump stations: • Course Lane	
	Treatment Plant	Sanson Wastewater Treatment Plant Currently a dual land/surface water disposal system. Disposal to land via irrigation on MDC property. Surface water discharge to the Piakatutu Stream. Future: pumped to Manawatū WWTP as part of centralisation	
	Within Centralisation Scope	Yes	
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$1,992,512
		Pump stations	$71,489
		Facilities	$870,649
		Total	**$2,934,650**
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$1,098,299
		Pump stations	$17,160
		Facilities	$509,544
		Total	**$1,625,003**
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$20,160
		Pump stations	$1,593
		Facilities	$36,815
		Total	**$58,568**

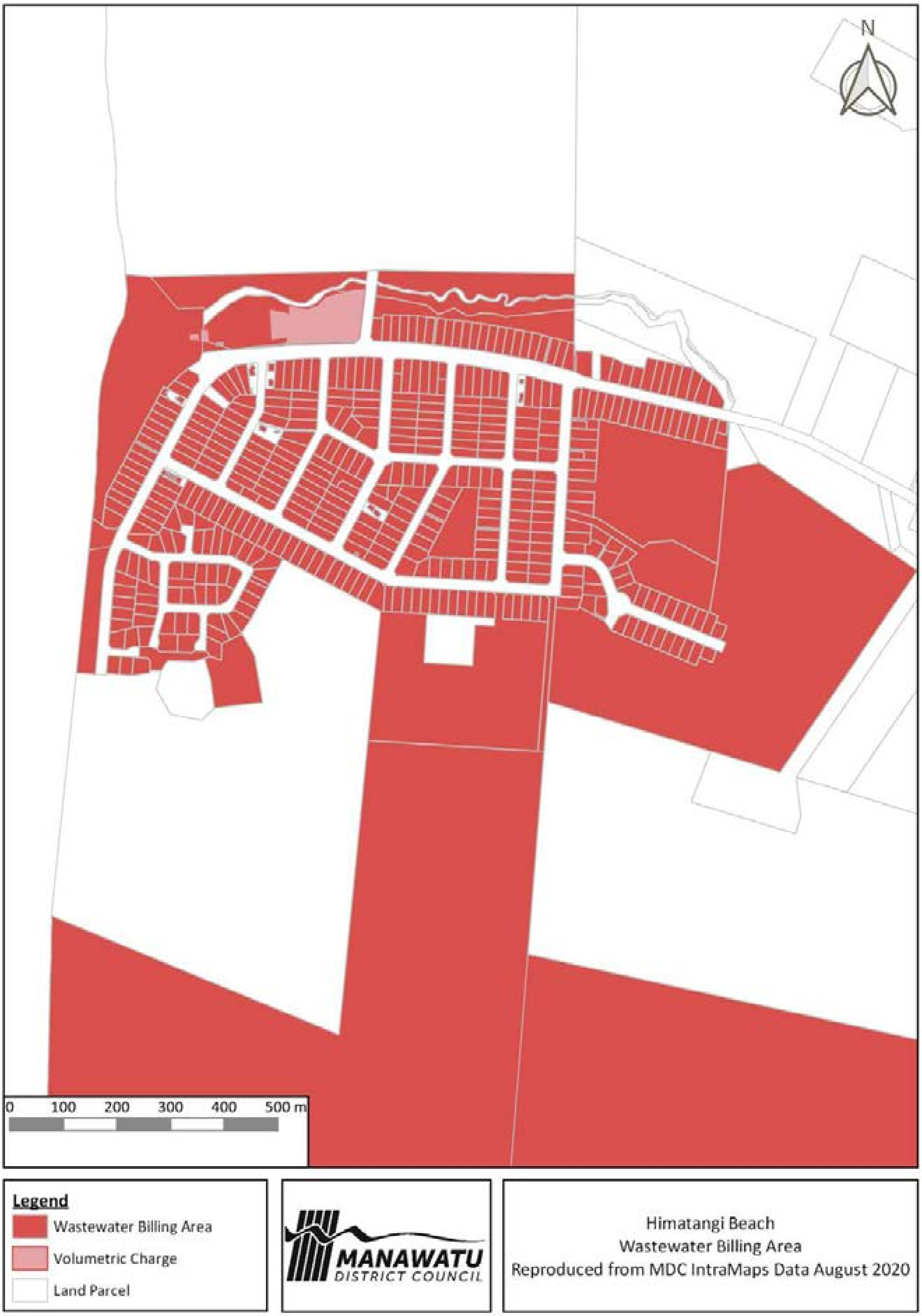
Sanson Wastewater – Billing Area Plan

Sanson Wastewater – Network Plan

Hīmatangi Beach Wastewater – Asset Overview

Description		Quantity/comment	
Scheme Coverage (MDC Intramaps, June 2020)	No# Properties Within Billing Area	472	
	No# Properties Connected	317	
	SUIP	346	
System Components	Reticulation	Pressure system with onsite pump stations.	
	Treatment Plant	Hīmatangi Beach Wastewater Treatment Plant. Currently discharges to land (irrigation).	
	Within Centralisation Scope	No	
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$2,076,039
		Pump stations	$3,071,635
		Facilities	$2,840,989
		Total	**$7,988,663**
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$1,956,958
		Pump stations	$2,744,340
		Facilities	$2,543,451
		Total	**$7,244,749**
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$35,869
		Pump stations	$90,795
		Facilities	$89,573
		Total	**$216,237**

Hīmatangi Beach Wastewater Billing Area Plan



Hīmatangi Beach Wastewater Network Plan

Halcombe Wastewater - Asset Overview

Description		Quantity/comment	
Scheme Coverage	No# Properties Within Billing Area	124	
(MDC Intramaps, June 2020)	No# Properties Connected	108	
	SUIP	163	
System Components	Reticulation	Gravity network	
	Treatment Plant	Halcombe Wastewater Treatment Plant Currently a dual land/surface water disposal system. Disposal to land via irrigation on a eucalyptus plantation (MDC property). Surface water discharge to the Rangitawa Stream. Future: pumped to Manawatū WWTP as part of centralisation.	
	Within Centralisation Scope	Yes	
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$2,058,911
		Pump stations	-
		Facilities	$818,051
		Total	**$2,876,962**
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$1,265,430
		Pump stations	-
		Facilities	$480,923
		Total	**$1,746,353**
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$21,426
		Pump stations	-
		Facilities	$46,808
		Total	**$68,234**

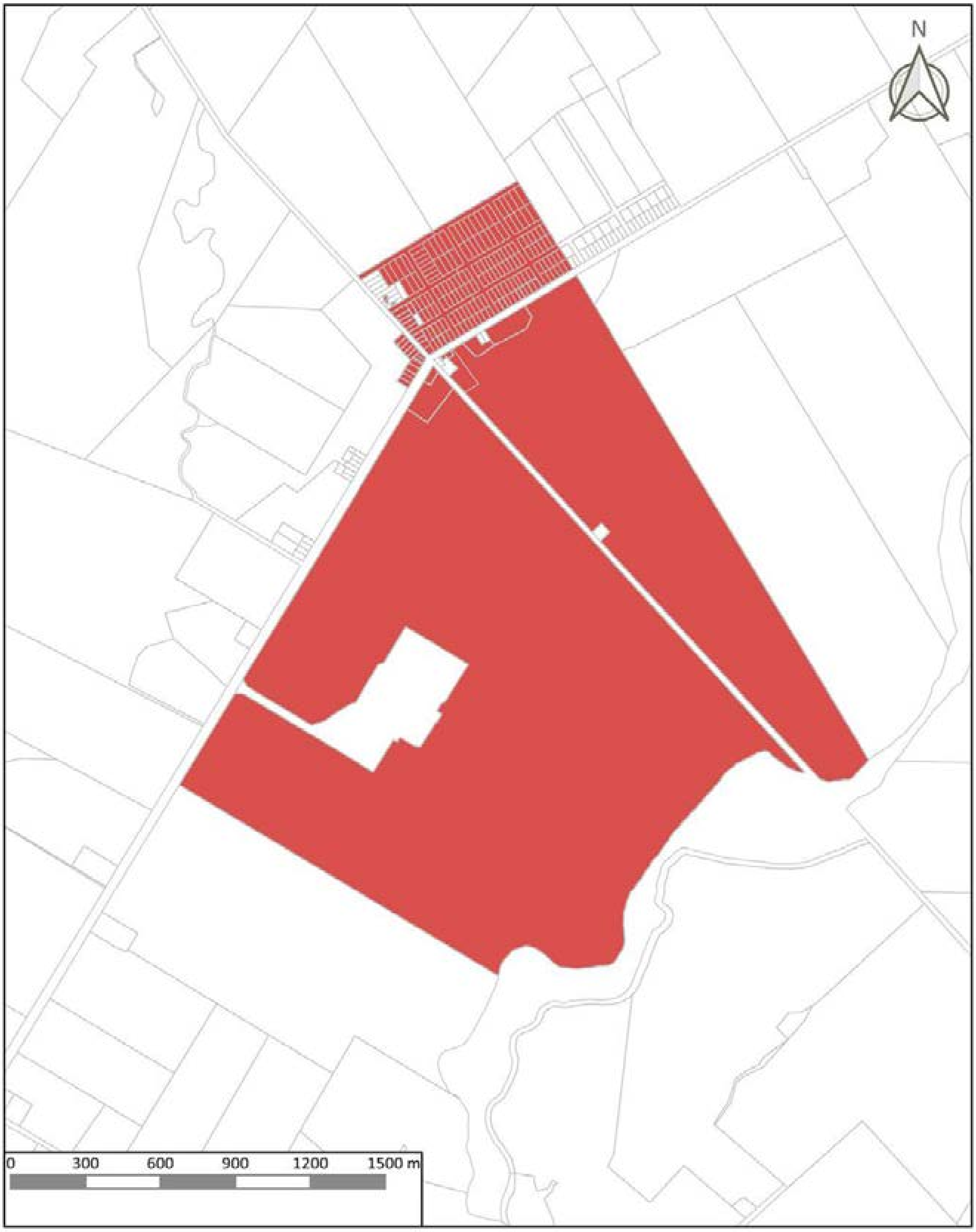
Halcombe Wastewater Billing Area Plan

Halcombe Wastewater Network Plan

Cheltenham Wastewater Supply Asset Overview

Description		Quantity/comment	
Scheme Coverage (MDC Intramaps, June 2020)	No# Properties Within Billing Area	33	
	No# Properties Connected	33	
	SUIP	45	
System Components	Reticulation	Gravity network servicing onsite septic tanks. Pump stations: • Kimbolton Rd	
	Treatment Plant	Cheltenham Wastewater Treatment Plant. Currently discharges to land via a soakage trench. Future: pumped to Manawatū WWTP as part of centralisation.	
	Within Centralisation Scope	Yes	
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$427,358
		Pump stations	$44,292
		Facilities	$81,409
		Total	**$553,059**
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$283,261
		Pump stations	$19,725
		Facilities	$63,570
		Total	**$366,556**
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$4,274
		Pump stations	$1,036
		Facilities	$1,708
		Total	**$7,018**

Cheltenham Wastewater Billing Area Plan



Legend
- Wastewater Billing Area
- Volumetric Charge
- Land Parcel

Cheltenham
Wastewater Billing Area
Reproduced from MDC IntraMaps Data August 2020

Cheltenham Wastewater Network Plan

Kimbolton Wastewater – Asset Overview

Description		Quantity/comment	
Scheme Coverage (MDC Intramaps, June 2020)	No# Properties Within Billing Area	82	
	No# Properties Connected	74	
	SUIP	110	
System Components	Reticulation	Gravity network servicing onsite septic tanks. Pump stations: • Edwards St	
	Treatment Plant	Kimbolton Wastewater Treatment Plant. Currently discharges to surface water. Future: pumped to Manawatū WWTP as part of centralisation.	
	Within Centralisation Scope	Yes	
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$1,010,037
		Pump stations	$79,506
		Facilities	$1,049,355
		Total	**$2,138,898**
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$683,106
		Pump stations	$20,538
		Facilities	$846,490
		Total	**$1,550,134**
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$10,100
		Pump stations	$1,292
		Facilities	$57,647
		Total	**$69,039**

Kimbolton Wastewater Billing Area Plan

Legend
- Wastewater Billing Area
- Volumetric Charge
- Land Parcel

MANAWATU DISTRICT COUNCIL

Kimbolton
Wastewater Billing Area
Reproduced from MDC IntraMaps Data August 2020

Kimbolton Wastewater Network Plan

Awahuri Wastewater– Scheme Overview

Description		Quantity/comment	
Scheme Coverage (MDC Intramaps, June 2020)	No# Properties Within Billing Area	14	
	No# Properties Connected	14	
	SUIP	20	
System Components	Reticulation	Gravity network servicing onsite septic tanks. Pump stations: • Triple R	
	Treatment Plant	Awahuri Wastewater Treatment Plant. Currently discharges to surface water. Future: pumped to Manawatū WWTP as part of centralisation.	
	Within Centralisation Scope	No	
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$132,104
		Pump stations	$131,884
		Facilities	$40,789
		Total	**$304,777**
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$92,029
		Pump stations	$92,676
		Facilities	$29,133
		Total	**$213,838**
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$1,321
		Pump stations	$4,809
		Facilities	$814
		Total	**$6,944**

Awahuri Wastewater Billing Area Plan

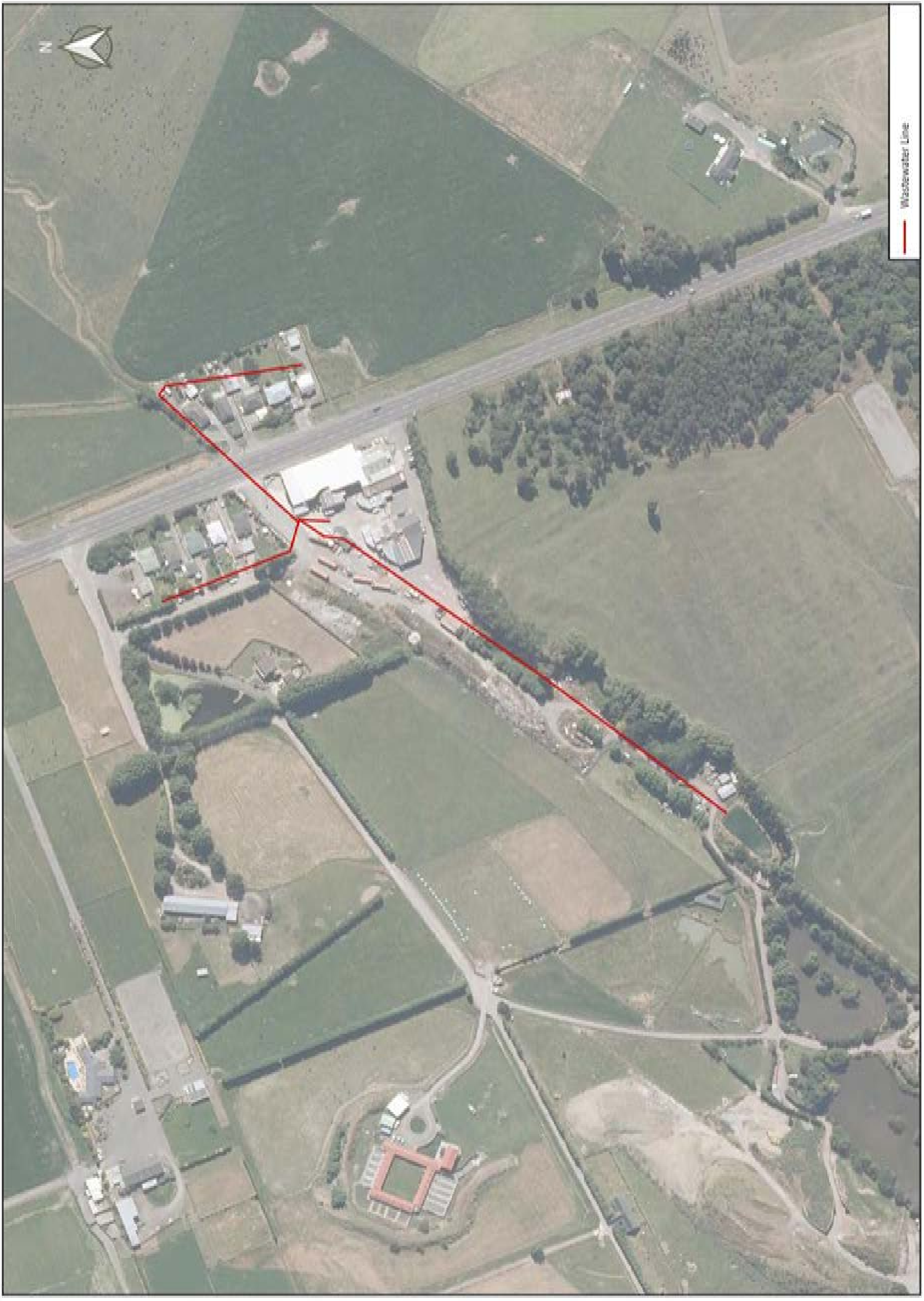
Legend

- Wastewater Billing Area
- Volumetric Charge
- Land Parcel

MANAWATU DISTRICT COUNCIL

Awahuri
Wastewater Billing Area
Reproduced from MDC IntraMaps Data August 2020

Awahuri Wastewater Network Plan



Rural Drainage Schemes

The District Council administers four rural drainage schemes:

- Bainesse
- Maire
- Makowhai
- Ōroua Downs.

The Ōroua Downs scheme is the largest of the four rural drainage schemes and has two main catchments and outlets: the Pukepuke Lagoon and the Kaikokopu Lagoon, which drain to the coast. The Kaikokopu Stream from the Kaikokopu Lagoon runs alongside Hīmatangi Beach. Where the Ōroua Downs drains cross State Highway 1, there are culverts under the road, which Horizons maintain. The age of the scheme is unclear, but is expected to date back well in excess of 30 years. In 1998 the outlet from the Pukepuke lagoon was improved with the construction of a new concrete weir and outlet channel, next to the older timber weir that is still in service. These improvements were carried out to address flooding problems in the Landcorp property.

The Maire and Makowhai schemes are adjacent to each other. The Maire scheme area drains into the Makowhai Stream. The Makowhai Stream drains into the Rangitikei River.

The Bainesse scheme is immediately to the east of the Ōroua Downs scheme but drains towards the east to the Ōroua River.

The drainage schemes are described below.

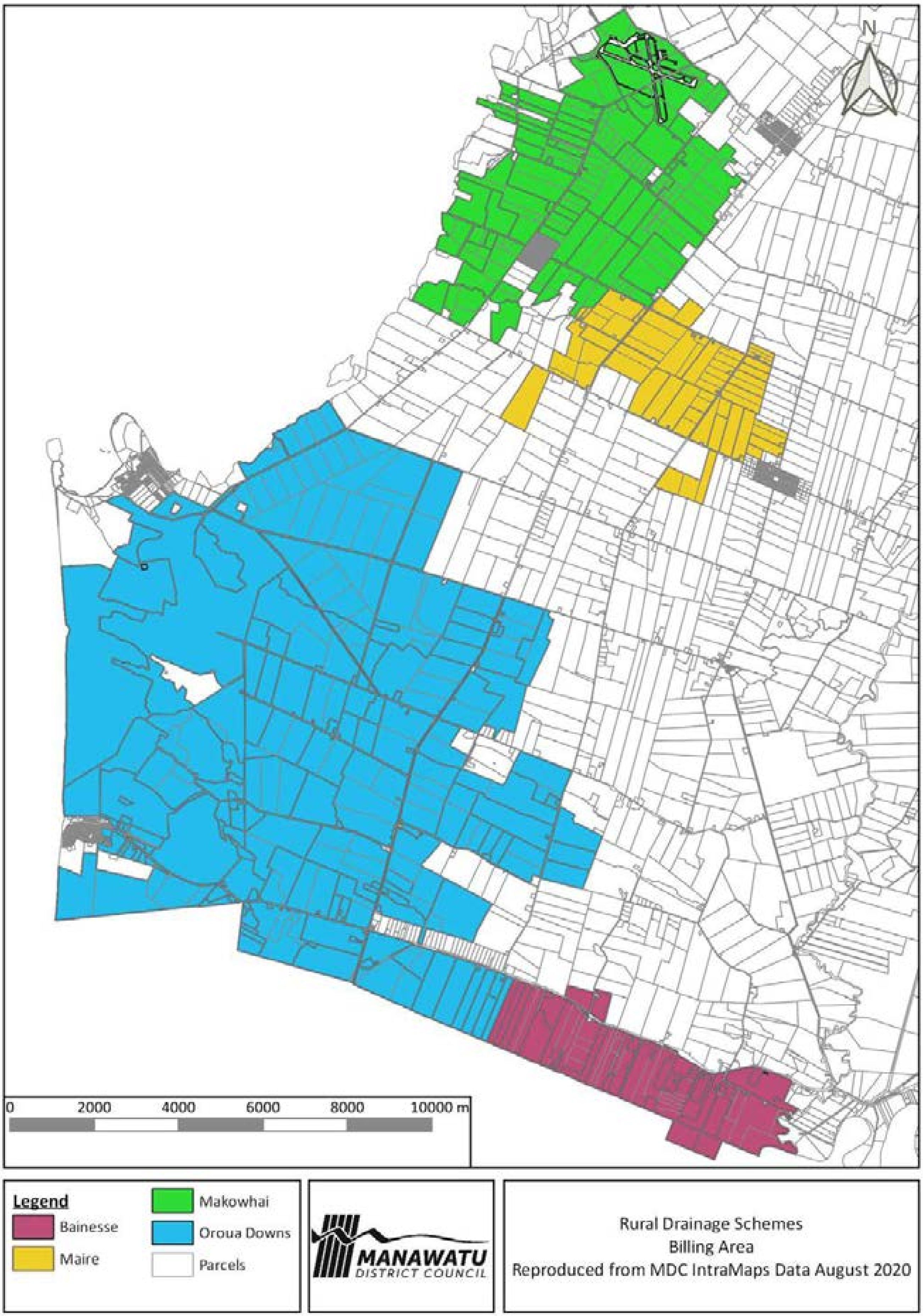
Rural Drainage Schemes – Asset Overview

Scheme	Description	Quantity/comment		
Bainesse	Overview	Pre 2018-208 LTP	Rural Drainage Scheme	
		Post LTP Adoption	No change	
	Scheme Coverage (MDC Intramaps, June 2019)	No# Properties Within Billing Area	78	
	Value (MDC Internal Asset Valuation as at 1 July 2019)	Replacement Cost water.	Open Drains	$785,054
		Depreciated Replacement Cost	Open Drains	$785,054
		Annual Depreciation	Open Drains	$0
Maire	Overview	Pre 2018-208 LTP	Rural Drainage Scheme	
		Post LTP Adoption	No change	
	Scheme Coverage (MDC Intramaps, June 2019)	No# Properties Within Billing Area	42	
	Value (MDC Internal Asset Valuation as at 1 July 2019)	Replacement Cost	Open Drains	$86,016
		Depreciated Replacement Cost	Open Drains	$86,016
		Annual Depreciation	Open Drains	$0
Makowhai	Overview	Pre 2018-208 LTP	Rural Drainage Scheme	
		Post LTP Adoption	No change	
	Scheme Coverage (MDC Intramaps, June 2019)	No# Properties Within Billing Area	94	
	Value (MDC Internal Asset Valuation as at 1 July 2019)	Replacement Cost	Open Drains	$84,405
		Depreciated Replacement Cost	Open Drains	$84,405
		Annual Depreciation	Open Drains	$0
Ōroua Downs	Overview	Pre 2018-208 LTP	Rural Drainage Scheme	
		Post LTP Adoption	No change	
	Scheme Coverage (MDC Intramaps, June 2019)	No# Properties Within Billing Area	225	
	Value (MDC Internal Asset Valuation as at 1 July 2019)	Replacement Cost	Open Drains	$3,180,074
		Depreciated Replacement Cost	Open Drains	$3,180,074
		Replacement Cost	Open Drains	$0

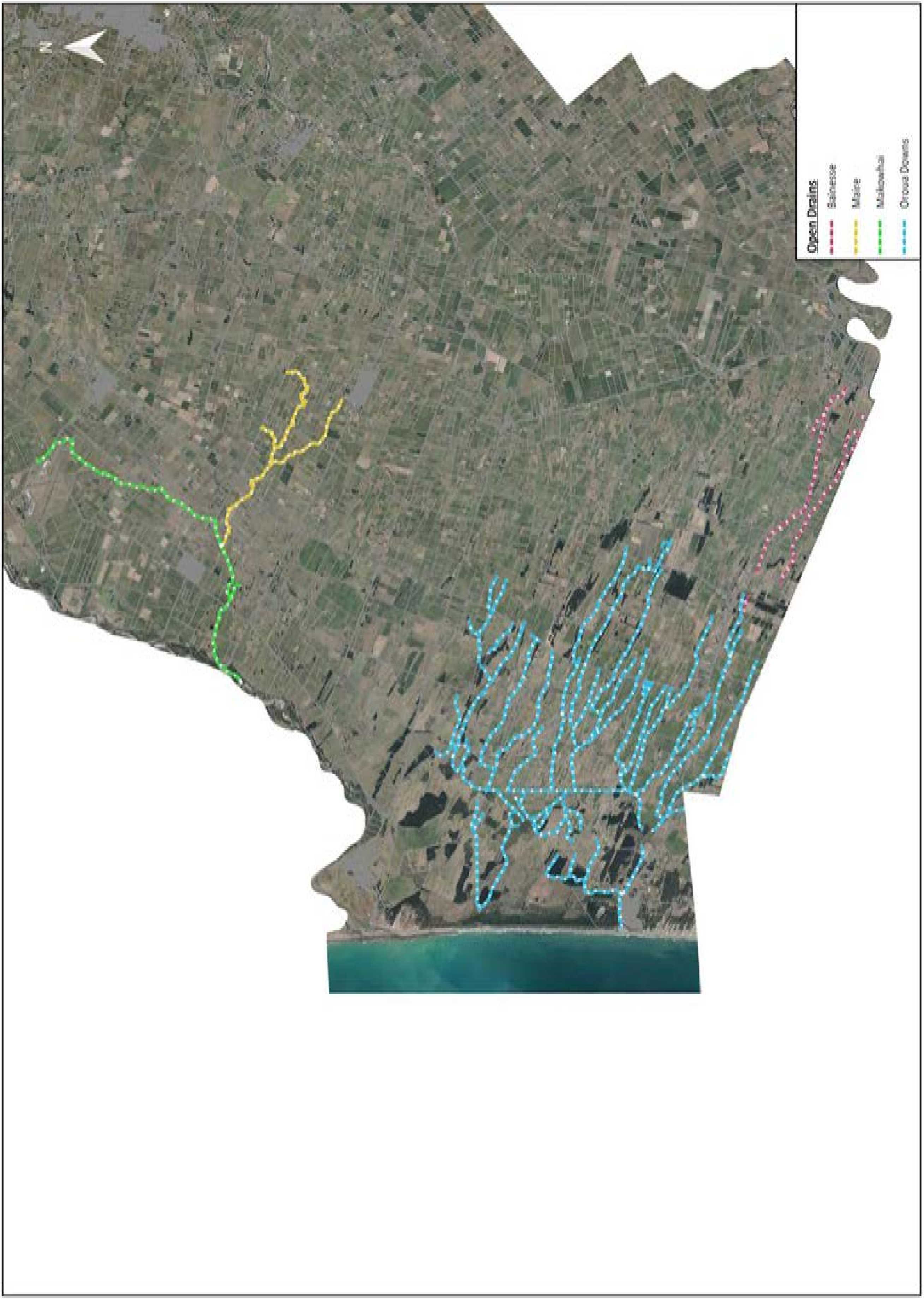
The rural drainage network is proactively maintained, and there are generally no significant issues with capacity or performance. In a large event where receiving environments such as the Rangitikei River are in flood, this can generate upstream issues affecting the rural drainage network.

The maintenance, which includes drain clearing and spraying, is done on an as required basis, with no set programmes. In general, spraying is annual and clearing is 5-yearly. Erosion protection works are also carried out at times. Each scheme has a committee, representing the properties served, which request the District Council to arrange maintenance works to be carried out as necessary. Maintenance works are generally limited to funding available from each of the scheme accounts.

Rural Drainage Billing Area Plan



Rural Drainage Network Plan



The key issues relating to the management of the rural drainage schemes are:

- The schemes are managed by elected committees who are familiar with the unique cleaning and operational requirements of the land that the scheme services
- The successful operational of these schemes within each budget allocation requires an active participation and collaboration of the scheme members
- Runoff volumes are increasing as farmers improve rural land drainage
- Increased flows and storm frequency is expected with climate change. Existing channel size will not handle increased flows. Erosion of channel banks to increase.

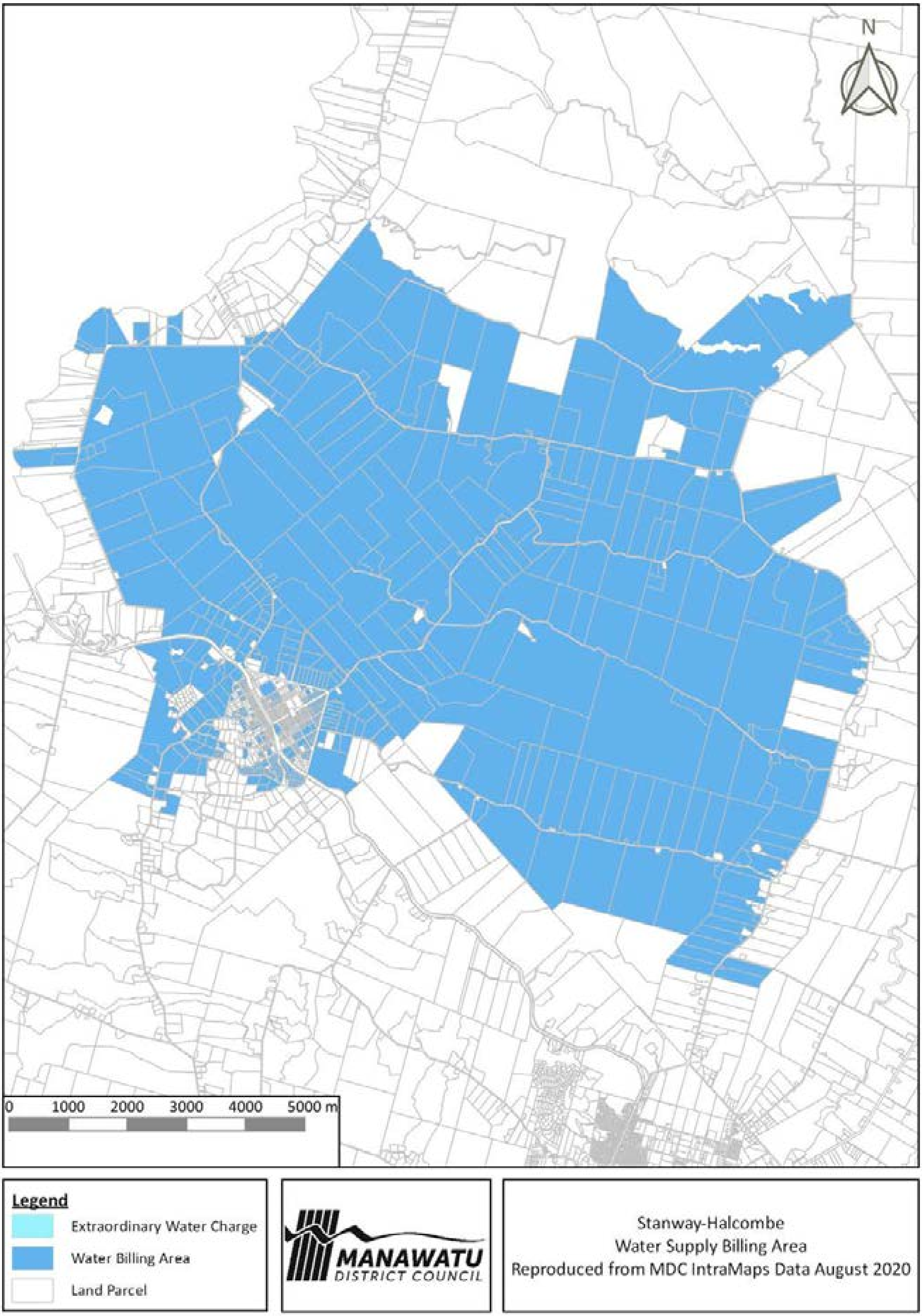
The greatest risk to the schemes and the land area they service is from delayed maintenance work or from work carried out to a poor standard. The committees that manage each of the schemes are well aware of the unique maintenance requirements that each scheme requires and generally restrict maintenance work to a small nucleus of contractors that have experience in each area.

Rural Water Schemes

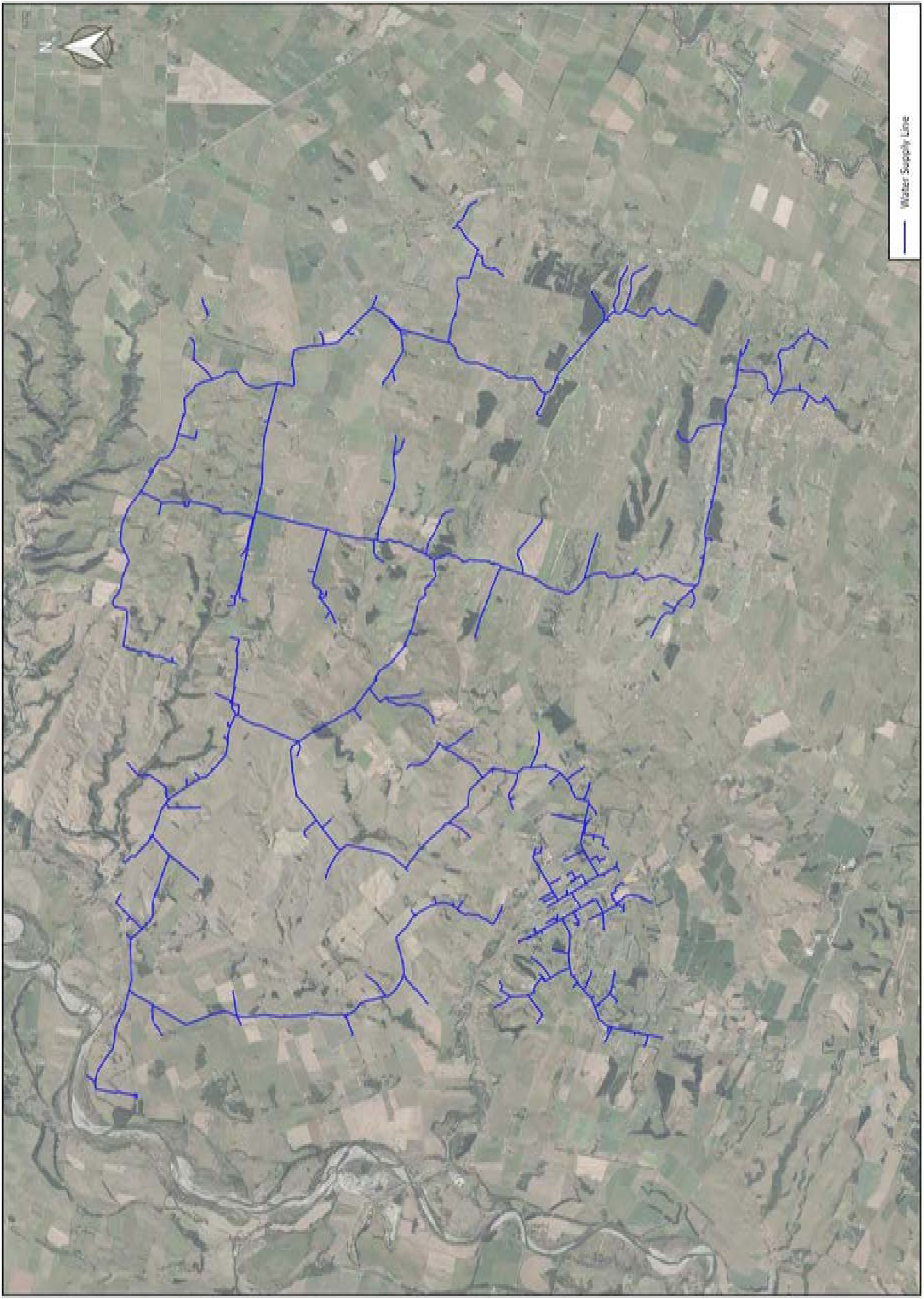
Stanway-Halcombe Water Supply – Asset Overview

Description		Quantity/comment	
Scheme Coverage (MDC Intramaps, June 2017)	No# Properties Within Billing Area	318	
	No# Properties Connected	318	
	SUIP	1,503	
System Components	Source(s)	Shallow bores adjacent to the Rangitikei River.	
	Treatment	Water Treatment Plant adjacent to bores	
	Reticulation	Pressure & Flow	Rural water scheme Restricted Supply
		Storage	Multiple reservoirs.
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$7,809,492
		Facilities	$482,493
		Total	**$8,291,985**
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$4,804,258
		Facilities	$200,856
		Total	**$5,005,114**
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$108,646
		Facilities	$12,219
		Total	**$120,865**

Stanway – Halcombe Water Supply Billing Area



Stanway – Halcombe Water Supply Network Plan

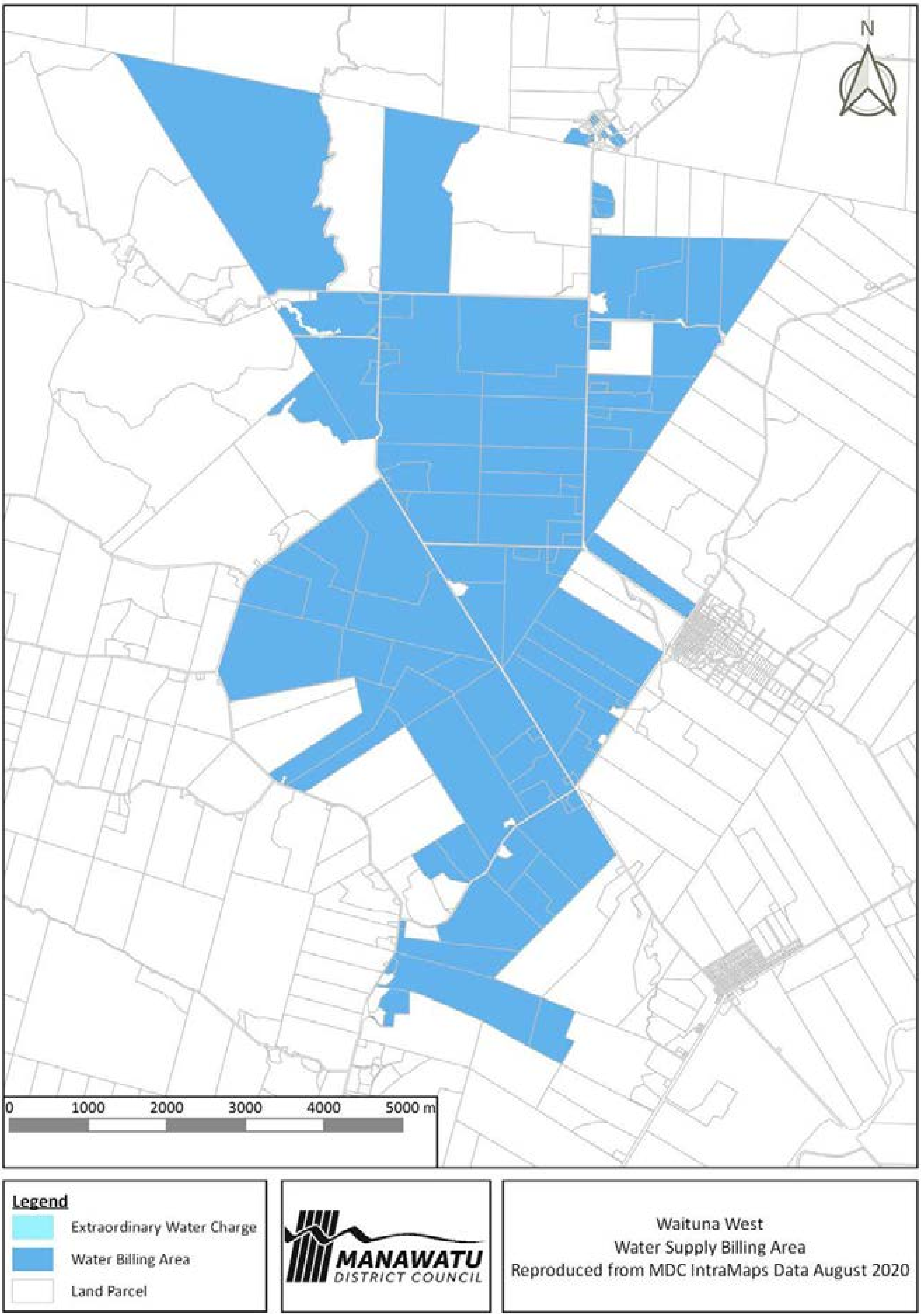


5.3.1 Waituna West

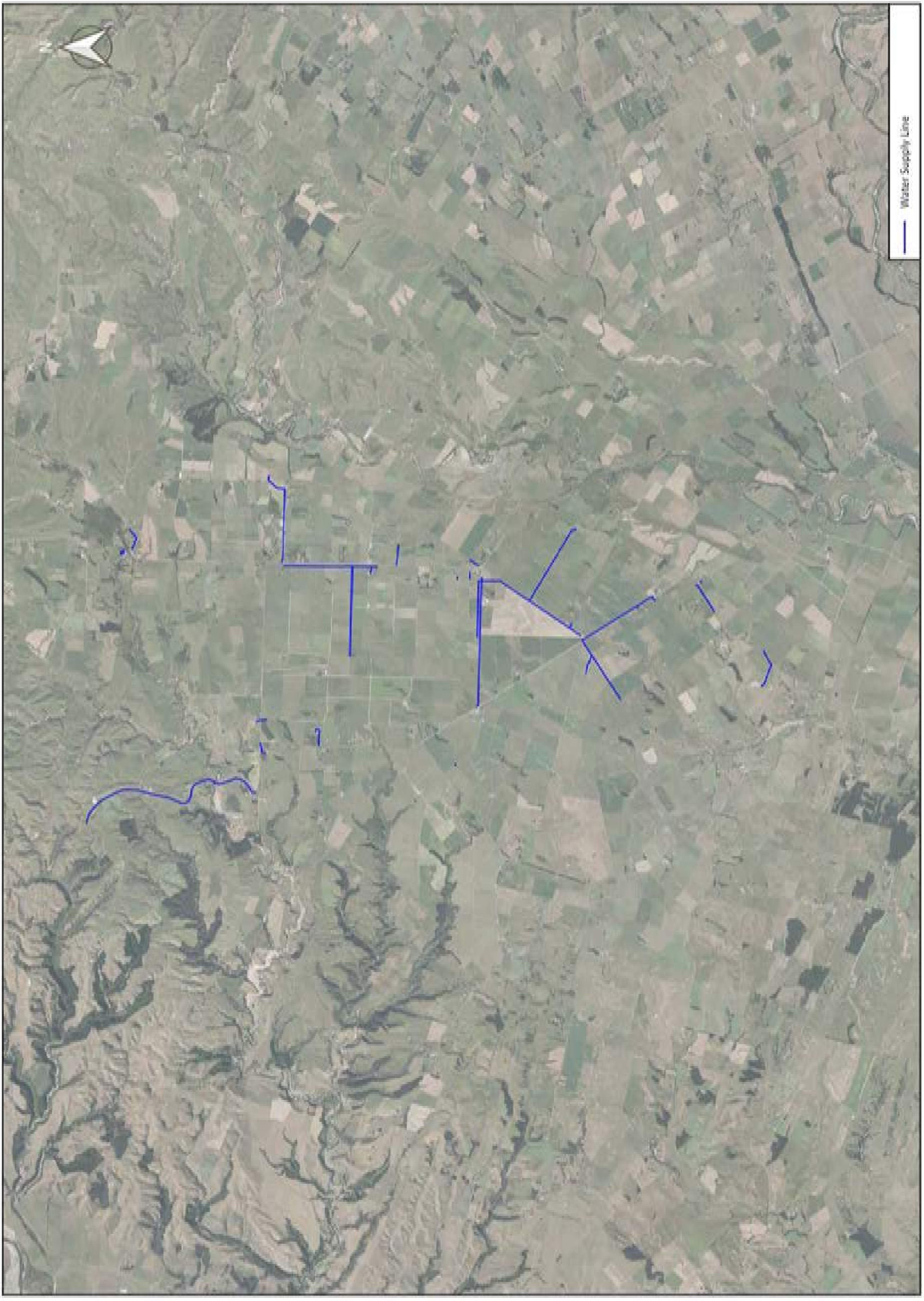
Waituna West Water Supply – Asset Overview

Description		Quantity/comment	
Scheme Coverage (MDC Intramaps, June 2020)	No# Properties Within Billing Area	67	
	No# Properties Connected	67	
	SUIP	614	
System Components	Source(s)	Groundwater	
	Treatment	Waituna West Water Treatment Plant	
	Reticulation	Pressure & Flow	Rural water scheme Restricted Supply
		Storage	Multiple reservoirs.
Value	Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$2,228,847
		Facilities	$1,060,636
		Total	**$3,289,483**
	Depreciated Replacement Cost (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$1,361,019
		Facilities	$734,753
		Total	**$2,095,772**
	Annual Depreciation (MDC Internal Asset Valuation as at 1 July 2019)	Reticulation	$29,162
		Facilities	$33,186
		Total	**$62,348**

Waituna West Water Billing Area Plan



Waituna West Water Network Plan



5.3.2 Kiwitea Rural

The Kiwitea water supply scheme is a rural, restricted supply.

This scheme is operated entirely by a community committee and is not covered in this Asset Management Plan. Council does not pay for any work on this supply, including consent renewal costs.

5.3.3 Ōroua No.1 Rural

The Ōroua No.1 water supply scheme is a rural, restricted supply.

This scheme is operated entirely by a community committee and is not covered in this Asset Management Plan. Council does not pay for any work on this supply, including consent renewal costs.

5.3.4 Infrastructure Dwellings

Manawatū District Council Insurance Valuation 30 June 2020								
Property Indentification				Insurance Valuation				
Insurance No.	Valuation Reference	Asset Description	Address	Reinstatement cost	Reinstatement Inflationary Provision	Indemnity Value	Indemnity Inflationary Provision	Demolition Cost
2315	14160/21010	Dwelling	341 Kawakawa Road Feilding	$365,000	$32,000	$160,000	$3,200	$23,000
2414	14160/07902	Dwelling	269 Kawakawa Road Feilding	$909,000	$96,000	$739,000	$25,000	$52,000
2649	14160/08000	Dwelling	223 Kawakawa Road Feilding	$388,000	$41,000	$121,000	$1,000	$26,000
2860	14160/08100	Dwelling	295 Kawakawa Road Feilding	$285,000	$25,000	$107,000	$1,600	$16,000

5.4 Asset Condition, Capacity and Performance

Historically, the Three Waters capital and renewals programmes have been driven by asset age and expected useful life.

Councils' asset register records 'Condition', 'Performance', 'Capacity' and 'Accuracy' fields on a per asset basis. However, this information is not used at present to support decision making as the confidence in this information is very low

- As the provenance of this information is unknown; and
- It has been historic practice to update this information when an asset is created, but not update over time as additional information is collected.

5.5 Asset Development Strategy

Asset development is driven by the need to rectify deficiencies in the Level of Service, to provide for demand created by outside influences, and to allow for growth. Within the (10 year) life of this Plan the following works are planned. In addition to this a Feilding Water Strategy has been developed which is briefly described below.

- Water Supply
  - Feilding Water Strategy
  - Precinct 4 Growth Works
  - Precinct 5 Growth Works – Turners Road Extension
  - Stanway-Halcombe Water Supply Upgrade
- Wastewater
  - Precinct 4 Growth Works
  - Precinct 5 Growth Works – Turners Road Extension
  - Feilding Wastewater Treatment Plant Upgrade
  - Centralisation Project
- Stormwater
  - Precinct 4 Growth Works
  - Precinct 5 Growth Works – Turners Road Extension
  - Village Stormwater Improvement Works

Stanway-Halcombe Water Supply Upgrade

The Stanway–Halcombe Rural Water Scheme is a water reticulation scheme provided by the Manawatū District Council. It consists of shallow bores adjacent to the Rangitikei River and a water treatment plant which chlorinates the water. The scheme was primarily designed to provide stock watering on a restricted flow basis. The restricted flows were allocated on overall capacity of 2,000 units (one unit being 1 cubic metre) per day. In recent years, there has been a reallocation of a proportion of units to lifestyle properties, as farms have been subdivided.

This means that water that was not intended for human drinking purposes is now being used for this purpose. The scheme does not comply with current drinking-water standards (Drinking-water Standards for New Zealand 2005 (revised 2018). Protozoal compliance with the Drinking water standards has yet to be determined.

Possible options include:

- Protozoal treatment for the entire scheme
- Protozoal treatment for Halcombe village only, which may require the separation of the village to a standalone water supply scheme.

The LTP has specifically highlighted that Council has chosen to wait for clear direction form the Ministry of Health before investing in additional treatment for water supplies. This has resulted in budget being made available for this project within Years 1-12.

Feilding Water Strategy

In order to improve resilience and cater for current and future demands in Feilding the following reasons were determined to be the compelling reasons to have a Feilding Water Strategy:

- Ōroua River enhancement – low flow extraction restriction currently voluntarily practiced is likely to be formalised or be difficult to consent in the future
- More storage is required to meet 24 hour industry best practice plus fire reserve
- Industrial area fire demand. There is no means to deliver high water flow requirement to Precinct 5
- Disaster risk – major risks are a lack of redundancy, physical proximity of some assets, long pipelines and poor condition of some components at the Almadale Water Treatment Plant.

Several projects have been identified as a package to address these issues and are described below.

Feilding Water Project breakdown

1. MacDonald Heights Reservoirs. This is intended to meet the 24 hour plus fire storage requirement. At the current growth rates more storage will be required in 20 years or so. Project complete.

- A new reservoir at MacDonald Heights. This is essentially a duplicate of the existing concrete tank built to an IL4 (post disaster functionality) standard. Project complete
- Existing reservoir seismic strengthening. This is being carried out in conjunction with the new reservoir. Project Complete
- Pipe work to connect reservoirs. Project complete.

2. A new bore to wholly or partly replace Almadale WTP as a source.

- Develop a production bore and procure any treatment required. The bore yield is a key consideration as a further bore(s) may be required
- Pipe water to 97 MacDonald Heights from the new bore.

3. Enhanced treatment to Campbell and Newbury bores to enable Newbury bore to be used and to add extra log removal credits.

- Land procurement to carry out required treatment and storage
- Treatment via greensand filtration for manganese removal prior to blending with Campbell Road upstream of UV disinfection, chlorination, and fluoridation at the bore sites be implemented to provide Drinking Water Standards New Zealand (DWSNZ) compliant water to all users. This will also replace the Awa Street dosing station
- Disposal of treatment residues via the 'Bunnythorpe' sewer rising main. This pipe will require upgrading from Matai Rd.

4. Network improvements to service growth and to enable fire flows to be delivered.

- Update model. This will confirm water flows required and pressures for pumping
- Campbell Rd seismic. A report from Opus has been received with a list of actions. The major work recommended is the replacement of the 'bellows' on the Ōroua River bridge
- Ōroua Bridge to Turners/Darragh intersection firemain. Pumping will be required from the new bore treatment site for Campbell's and Newbury bore. Pipe size 375 or 300mm diameter
- Extension of the 300mm pipe main from West Street to at least South Street. This will provide water for fire and growth to the Feilding CBD, Precinct 5, and Precincts 1&2 (when developed)
- Manchester 200mm pipe from West Street to Hobson Street to provide a redundant system to the CBD to deliver 100 l/s for fire flow
- Awahuri Rd 200mm pipe to service Precinct 1 from South/West intersection
- Kawakawa Road 200mm pipe to Turners extension
- Precinct 5 fire mains - 300mm or 200mm pipes as required
- Aorangi Street 200 pipe to South Street 250 link. This will allow for a feed to the CBD from the east
- Awa Street to South Street 200mm pipe. The flow is currently constricted by a length of 150 pipe from Awa to Drake Street.

5. Decommissioning of redundant assets.

- Almadale WTP
- Awa Street dosing station.

Precinct 4 Growth Works

Council is implementing a structured plan of infrastructure development within Precinct 4 with respect to roading, wastewater, water supply and stormwater services. In terms of implementation, Council is looking to progress infrastructure development in an approximately linear fashion that follows the current patterns of development, in three key stages. However, Council wishes to retain a degree of flexibility so development is able to be responsive to market dynamics and housing demand.

Growth works within Precinct 4 have been costed in detail for years 1 – 10 of the Long Term Plan (2021/24). An allowance has been made in the budget for expenditure in Precinct 4 beyond year 10, however, these budgets have a lower level of accuracy and will be constantly re-evaluated based on how development progresses.

Precinct 5 Growth Works – Turners Road Extension

Council is proposing to construct an adequate but basic road from Turners Road to Kawakawa Road as a first step in developing Precinct 5. Further enhancements to the road will occur in future years.

The extension will enable access to an initial 24 hectares of high-quality industrial land, attracting investment into the District. Council will work in partnership with current landowners and stakeholders to fund and construct this initial stage of the industrial growth area.

The new road will be constructed to a rural standard. Simple swale drains will be used to manage stormwater. No reticulated water supply or wastewater services will be installed.

However, Council will work with developers and industrial businesses in relation to the cost to extend reticulated services to meet the requirements of each development, on a case-by-case basis.

Manawatū Wastewater Treatment Plant Upgrade

The consent conditions for the Manawatū WWTP set out the effluent quality requirements for effluent discharges to the Ōroua River (Condition W18). Effectively as effluent discharge volumes increase, the allowable contaminant levels decrease. This causes issues with reducing the levels of nitrogen in the effluent. The Project Management Plan produced to deliver integrated growth, upgrade, and renewal tasks required to deliver the consent outcomes indicated it would relatively expensive to procure a treatment solution for the WWTP. A report was produced by John Crawford (then employed by Opus) which indicated a method by which a treatment process option could be put into place. There was a reasonable amount of technical and financial risk associated with this, as evidenced by the experience of the Central Hawkes Bay District Council at Waipawa and Waipukurau.

A Nitrogen Reduction Strategy was developed by Council, which in essence proposes to:

1. Optimise irrigation to maximise land application of effluent to take advantage of the nutrient available in the effluent, and to minimise the amount of chemical and power required to remove nutrients, and to minimise the fertiliser requirements of the proposed cut and carry operations on the irrigable land;
2. Separate trade waste treatment to divert nutrient rich materials away from the river discharge. It was identified that some of the industrial trade waste received at the WWTP is very rich in nitrogen, and accounts for 31% of the total nitrogen loads entering the plant. The physical separation of trade waste (by way of a dedicated pipeline) of major trade waste sources (e.g. Ovation, stockyards), will enable separate treatment of these waste stream and considerably reduce the nitrogen loads entering the liquid waste stream (of which part is discharged to the Ōroua River).
3. Further treatment to reduce the nitrogen discharged into the river if required to achieve full compliance with consent conditions.

Each of these elements is described in more detail below.

Optimisation of Irrigation

MDC are actively seeking to irrigate as much as practicable to land within the consent requirements.

It is intended to commence irrigation of effluent from November 1 every year and to irrigate as long as possible. The experience of the 2018/19 summer was that the area of land available for irrigation, during this summer period, was the limiting factor in restricting discharges to the Ōroua River.

Another limiting factor is the need to irrigate for a calendar month at a time due to the way the consent conditions are worded. The reason for this is that effluent quality is assessed on a monthly grab sample, and Council is reporting zero levels of contaminant in the effluent discharged to the river in a complete month where effluent is irrigated, as no effluent has been discharged to the River.

Approximately 100 ha of land were irrigated at the end of the 2018/2019 irrigation season. Additional land areas are being developed within the existing site and in excess of 125 ha of land will be available for irrigation from the start of the 2019/2020 irrigation season. A further 15 ha of land will be developed on the existing site in the following two years.

In addition, MDC are in the process of applying for resource consent to irrigate to an extra approximately 40 ha of land on a block of land adjacent to the existing irrigation area. The soil moisture monitoring of the site has indicated that soil moisture is not a limiting factor for irrigation and by implication, nitrogen application.

Therefore, to optimise irrigation the following actions are planned:

1. Irrigate the areas of land not covered by the pivots within the consented irrigable area
2. Install dripper irrigation in the buffer strips around the perimeter of the irrigable area
3. Extend the irrigable area by obtaining consent to irrigate on the ‘Sutherland’ and ‘Reid’ blocks
4. Seek further land acquisition in the future if a need for more land is demonstrated or flows increase significantly
5. Utilise the land more productively through alternative fodder crops (e.g. vetiver, miscanthus) and soil modification.

It is expected that if the actions (1 to 3) are followed, at treated effluent will be irrigated to land for at least half of the year, and not discharged to the Ōroua River, and that (4 and 5) will improve resilience and certainty around disposal, particularly in a ‘wet year. It also means that a discharge regime could be developed that avoids a river discharge in low flow conditions.

Separation of Trade Waste

This strategy is to separate the trade waste received by the WWTP, treat this waste stream separately and irrigate the nutrient rich liquid to land at low application rates (1 to 2 mm per hectare per day) for extended periods of the year, if not year-round. The advantage of this approach is that significantly less nutrient enters the main liquid waste stream , part of which being discharged to the Ōroua River, whilst being beneficially re-used to encourage fodder crop growth. This will involve the construction of a pipeline to the Turners Road industrial area dedicated to trade waste and the implementation of separate trade waste treatment to divert nutrient rich materials away from the main liquid waste stream.

This project is made up of the following elements:

- Construct a pipeline and pumping system to deliver trade waste directly to the Manawatū WWTP
- Installation of a reception facility, maceration and thickening equipment to produce a thickened material for digestion
- Add a second (larger) digestion tank and associated heating, mixing, and gas handling equipment to allow for the digestion of the thickened material
- Clarification and (if required) disinfection of the liquid portion of the trade waste received to ensure this liquid meet the irrigable effluent requirements
- Irrigation of the liquid portion to land for 10 to 12 months of the year.

This, combined with the enhanced irrigation outlined above, will greatly reduce the amount of nutrient discharged to the river. Due to the conversion of organic nitrogen to ammonia within the current plant process train, it is difficult to determine exactly how much soluble nitrogen will be diverted until the diversion is achieved. However, if combined with the first strategy, an effluent stream much weaker than at present would be discharged to the Ōroua River for significantly shorter periods of the year.

A secondary benefit will be a reduction in alum costs to remove dissolved reactive phosphorus (DRP) as at least 35% of the DRP coming into the plant will be diverted, and minimisation or avoidance of fertiliser costs on the irrigable area. The diversion of trade waste will also incorporate better measurement of individual trade waste streams, some of which are currently problematic due to their nature (generally inconsistent flows) and the difficulty in obtaining representative samples.

Further Treatment

If the two processes above fail to meet the effluent discharge consent conditions, or the design limits of the plant are exceeded, then the options to reduce the nitrogen discharged into the river are as follows:

- Nitrogen removal on the liquid trade waste
- Nitrogen removal on the non-trade waste stream – this would require development and testing of the plan already developed
- Acquisition of more land.

The most cost effective of these methods will be determined (if required) once the effects of the optimised irrigation and trade waste diversion are evident.

Centralisation Project

The wastewater centralisation project intends to pipe untreated or pre-treated wastewater from the Villages of Halcombe, Sanson, Rongotea, Awahuri, Cheltenham and Kimbolton to the Manawatū Wastewater Treatment Plant.

Each of these villages currently has a wastewater treatment plant (WWTP) with discharge consents that have expired or are due to expire over the next few years. All of the existing consents involve some allowance for the discharge of treated wastewater to a waterbody and the centralisation project is Council's preferred option over seeking new village WWTP resource consents as:

- Policy 5-11 of Horizons One Plan requires, on renewal of an existing consent, that before entering a surface water body all treated human sewage is applied onto or into land, or flows overland, or passes through an alternative system that mitigates the adverse effects on the mauri of the receiving water body.
- There is limited suitable land currently available around the treatment plants for land-based irrigation of treated wastewater at Rongotea, Halcombe, Sanson, Kimbolton and Cheltenham. The re-consenting of these treatment plants would therefore involve significant upgrades to achieve consistency with Policy 5-11 of the One Plan and to meet Council's commitments to the Ōroua River Declaration.
- It will reduce the number of resource consents Council manages, making more efficient use of operational staff.
- The volume of effluent from the Villages will not affect Manawatū WWTP operations and the additional flow is within consent limits for the Manawatū WWTP.
- Feilding consents are already in place – therefore one renewal process
    - Lowest technical risk
    - Lowest financial risk
- Higher initial capital cost, lower lifecycle and operational costs
- Avoids the need to purchase additional land at Village WWTPs and to upgrade each of the WWTPs to comply with new consent conditions.
- Long sewer pipelines are not uncommon (Bunnythorpe to Feilding, Ashhurst to Palmerston North, Inglewood to New Plymouth)
- Consistent with the Ōroua Declaration, and statutory obligations under the Local Government Act 2002, Health Act 1956 and Resource Management Act 1991.

Council is also working with the New Zealand Defence Force to consider the future options for the Ōhakea Airforce Base wastewater management. We are also working constructively with the industrial trade waste sector to better manage their wastewater.

Ōhakea Rural Water Supply

The Ōhakea Rural Water Supply scheme will involve the construction of a potable water supply in the area affected by Polyfluoroalkyl substances (PFAS) compounds to the west of the Ōhakea Defence Force base. Central government (Ministry for the Environment) will fund $10.8 million of the costs of design and construction of the new water scheme – about 75 per cent of the cost. Council will fund the balance. Due to the contamination of current bore supplies in the Ōhakea area with PFAS compounds, the new supply (the preferred option being a pipeline from Sanson) will replace the existing bore supplies and provide PFAS-free water on a permanent basis to this area. Around 85 rural properties will be supplied with reticulated drinking and stock water rather than having to rely on tanks and bores.

Stormwater

As the effects of climate change accelerate, we anticipate that storms and flooding will increase in frequency and magnitude. We are also more aware today of the impact that poorly managed stormwater has on streams and other waterways. Horizon's Regional Council's One Plan sets out that all new residential development, including housing subdivisions, must therefore be hydrologically neutral; in other words, they must not put any additional pressure on our stormwater network.

In areas of growth such as Precinct 4, stormwater will be managed appropriately to ensure that it is hydrologically neutral, using management areas along the Makino Stream esplanades. Development contributions will help fund this work. There is also a move towards requiring private property owners or developers to detain stormwater on-site to achieve hydrological neutrality. Council is also exploring communal detention options to managed stormwater from residential growth area in Feilding. This is evident through the new rules in Precinct 4.

Council will also provide adequate stormwater disposal systems to areas designated for development as development occurs.

5.6 Operations and Maintenance Strategy

Stormwater

Asset operations and maintenance are programmed to continue at the same funding levels as at present. Within these programmes minor changes will be made to focus more on regular open drain maintenance and culvert entrances.

Wastewater

Asset operations and maintenance are programmed to continue at the same funding levels as at present until such time the centralisation programme is complete. The completion of the centralisation programme will reduce the costs of operating the existing ponds but extra cost associated with the pumping system will be incurred. This will also enable the configuration and cost structure of the MWWTP to be reviewed and optimised.

Water

Asset operation and maintenance are programmed to continue at the same funding levels as at present. The major changes will be associated with the new bores coming on stream an the subsequent decommission of the Almadale Water Treatment Plant.

5.7 Renewals Strategy

Stormwater

Due to the extremely low rate of failure experienced in the stormwater assets as a result of poor asset condition, only unplanned renewals are expected to be required over the length of this AMP. Concrete pipes formed by the spun concrete method in particular are expected to have useful lives or well over 100 years.

Improved asset data and subsequent analysis are required to improve knowledge and to minimise risk of premature failure of individual components and to manage the amount of unplanned renewals.

Wastewater

An extensive programme of wastewater renewals are planned for the District. The majority of projects are associated with the completion of the Nitrogen Reduction Strategy works. The re consenting of the Manawatū wastewater river discharge is also expected to be a major work.

Water

An extensive programme of renewals are listed below.

Feilding WTP Asset Renewals	District Wide Water Reticulation Renewals	Rural schemes
Unplanned renewals	Feilding Water Strategy firefighting - West & South Streets	Water Supply New Connections - Waituna West
Feilding Water Strategy - New bore completion	Feilding Water Strategy firefighting - CBD	Water Supply New Connections - Stanway/ Halcombe
Feilding Water Strategy - Newbury/ Campbell Line treatment	Feilding Water Strategy firefighting - Precinct 5	Stanway-Halcombe - Renewals
	Aorangi Bridge bellows replacement	Stanway-Halcombe - Renewals
	Hīmatangi Beach Water Reticulation Renewals	Waituna West - Renewals
	Water Unplanned Renewals - Hīmatangi Beach	Rural schemes
	Water Unplanned Renewals - Sanson	Water Supply New Connections - Waituna West
	Water Unplanned Renewals - Rongotea	Water Supply New Connections - Stanway/ Halcombe
		Stanway-Halcombe - Renewals

Improved asset data and subsequent analysis are required to improve knowledge and to minimise risk of premature failure of individual components, particularly within the reticulation and to manage the amount of unplanned renewals.

5.8 Disposal Strategy

Stormwater

A minimal amount of stormwater assets associated with renewals is expected to be disposed.

Wastewater

Once the Wastewater Centralisation is complete a programme of work to decommission the existing ponds will result in the disposal of the asset and potentially the land associated with these ponds.

Water

When the Feilding Water Supply Strategy works are fully commissioned the Almadale Water Treatment will be decommissioned.

6. RISK MANAGEMENT PLANNING

6.1. Introduction

The purpose of infrastructure risk management is to document the findings and recommendations resulting from the periodic identification, assessment and treatment of risks associated with providing services from infrastructure, using the fundamental of International Standard ISO 310000:2018 Risk Management - Principles and guidelines.

Risk Management is defined in ISO 31000:2018 as: 'coordinated activities to direct and control with regard to risk'.

An assessment of risks associated with service delivery will identify risks that will result in loss or reduction in service, personal injury, environmental impacts, a 'financial shock', reputational impacts, or other consequences. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, and the consequences should the event occur. The risk assessment should also include the development of a risk rating, evaluation of the risks and development of a risk treatment plan for those risks that are deemed to be non- acceptable.

The Council faces a range of business risks inherent in the functions of being a local authority. The Council's objective is to integrate risk management practices and procedures that are targeted to (and appropriate for) Council's strategic and operational goals, and also appropriate for Council's business functions. The Council evaluates risk at the corporate and at an activity level. Once the risk cost is known, the organisation can then evaluate the risk reduction opportunities available. Risk treatments are the management practices and processes to eliminate the probability and/or lessen the consequences of the risk event.

6.2. Critical Assets

Critical assets are defined as those which have a high consequence of failure causing significant loss or reduction of service. Critical assets have been identified and along with their typical failure mode, and the impact on service delivery, are summarised in the following tables. Failure modes may include physical failure, collapse or essential service interruption.

By identifying critical assets and failure modes an organisation can ensure that investigative activities, condition inspection programs, maintenance and capital expenditure plans are targeted at critical assets.

Waste Water

Critical Asset Description		Effectiveness of Controls		Analysis and Evaluation
Critical Asset	**Failure mode(s)**	**Current Control(s)**	**Control Rating** (Low, Medium, High)	
Sewage Pump Stations	Pump stations overflow and large volumes of untreated sewage are discharged into the environment or the discharge creates an immediate public health risk. Some pump stations do not meet the requirements of the Engineering Standards (no standby pump, wrong pump selection, insufficient capacity, storage requirements inadequate).	Reactive operational procedures.	Low	Ongoing land development, and the need to avoid overflows has resulted in some pump stations being undersized when compared to our current standards. Investigate and confirm which pump stations are inadequate. Develop a programme of upgrades to be included in the LTP. Develop and report on a formal programme of pump station inspection, cleaning and maintenance.
Kimbolton Road to Kawakawa Road to MWWTP trunk main Awahuri- Feilding Road to Kawakawa Road trunk main South Street trunk main	Pipes cannot contain flows and large volumes of untreated sewage are discharged into the environment or the discharge creates an immediate public health risk. Critical failure modes are: Liquefaction of soils in a major seismic event. Overflows caused by build-up of sediment in the pipes due to infrequent inspection and maintenance. Overflows caused by high flows in large rainfall events. Overflows caused by not catering for growth in a timely fashion.	Flow monitoring undertaken in 2019. Complaints register. Programme of work for trunk mains upgrades for growth has been developed.	Medium	Confirm from knowledge of soil types if and where liquefaction is likely (or not) to impact on sewers identified. All of the sewers identified require a one-off clean to remove sediment and to enable a CCTV inspection to take place. Develop and report on a formal programme of sewer inspection and cleaning based on the CCTV inspection. Prioritise and estimate timing of growth upgrades based on analysis of flow monitoring undertaken in 2019. Confirm when further flow monitoring is required.
Manawatū Wastewater Treatment Plant	Process train or operational failure causes large volumes of partly treated sewage to be discharged into the environment. Process train or operational failure causes a major consent compliance breach.	Reactive operational procedures.	Low	The areas where the risk control can be improved are as follows: Develop a calibrated inflow rainfall response curve based on valid data (ie the new inlet flow meter) and rainfall measurement closer to the centre of the catchment (the MDC offices) so that so that any hydraulic capacity upgrades are designed to an robust flow estimate. The impact of I-I control can also be monitored. Identify the hydraulic constraints at the WWTP and develop a plan to manage these in high flow events. Note an added investment in I-I reduction, particularly inflow management, is an investment in hydraulic capacity. Progressively make the WWTP more seismically resistant. Develop a list of potential plant failures and a response to each one. Develop and report on a formal programme of managing each of the identified failure modes.

Pressure sewer systems at Mt Taylor and Hīmatangi	General system failure due to structural asset fault causing many pump stations or the discharge system to fail in a short period of time and require significant levels of maintenance or replacement. This is due to variations in the types of pump ownership, power charge regimes, and the different types of operations regime. There is also a significant risk of downstream effects in particular H2S impacts on the downstream reticulation and treatment systems due to long retention times of untreated sewage within the system.	Reactive maintenance procedures.	Medium	The differing approaches to the management of pressure sewer systems need to be examined to determine a common approach going forward. The risks around aged sewage should be examined in details and responses to managing this determined.

Water

Critical Asset Description		Effectiveness of Controls		Analysis and Evaluation
Critical Asset	Failure mode(s)	Current Control(s)	Control Rating (Low, Medium, High)	
SCADA system	System failure as a result of a power outage caused by a lightning strike or network failure. This in turn leads to Drinking Water Standards non-compliance due to gaps in available records.	Reactive operational procedures.	Low	This is a common problem. The suggested solutions are: Uninterrupted Power Supplies (UPS) at all sites. Lightning rods at all sites. Solar power plus storage at all sites.
Firefighting network	The water network cannot meet the requirements of the 'SNZ PAS 4509:2008 New Zealand Fire Service Firefighting Water Supplies Code of Practice. Therefore in the event of a fire in the CBD and industrial zones the risk of a fire becoming uncontrolled is higher than necessary.	Existing network capacity and hydrant testing.	Medium	As requirements for firefighting have increased, and land rezoned, our networks have been upgraded as renewals take place. This has left a lag to be caught up. Extra storage for firefighting has been acquired at MacDonald Heights. A model to determine the sizing and timing of the network has been commissioned. Funding for this work is part of the Feilding Water Strategy programme of works.
Campbell Road to Kimbolton Road trunk main	If this trunk main fails the supply to Feilding cannot be maintained for any length of time. This is due to the dominant role of the Campbell Road bore in Feilding's water supply system Critical failure modes are: Failure due to ground movement Failure at culvert crossings Failure on Aorangi Bridge	Reactive operational procedures. Seismic resilience report.	Medium	The resilience report contained the following recommendations: Confirm that parts for repair can be readily obtained in case of a breakage. Replace 'bellows' on Aorangi Bridge. Provide second water supply pipelines to maintain flows to all areas at all times. A model to determine the sizing and timing of the network has been commissioned. Funding for this work is part of the Feilding Water Strategy programme of works.

Campbell Road bore	The Campbell Road bore is the critical water source as the volume of water produced by this bore cannot be reliably replaced by the existing other sources for Feilding at present.	Reactive operational procedures.	High	The bore has produced water for 15 years with no apparent signs of failure risk. A third bore for Feilding is in the current stages of procurement. This bore, in conjunction with the Newbury Line bore, requires a minimum capacity to match the capacity of the Campbell Road Bore. If sufficient capacity cannot be obtained a further water source will be required. Leakage reduction and demand management techniques may also reduce this risk. A programme to reduce leakage is the first step. The only other reliable technique to reduce demand for a prolonged period of time is universal metering. This is not thought to be required at this point in time.

Stormwater

Critical Asset Description		Effectiveness of Controls		Analysis and Evaluation
Critical Asset	**Failure mode(s)**	**Current Control(s)**	**Control Rating** (Low, Medium, High)	
Duke Street Culvert	Culvert has insufficient capacity to discharge calculated flows in the 1% AEP rainfall event. Note the critical event is a catchment wide rainfall event not a Feilding wide or Precinct 4 wide event. Flows are currently managed by the Reids Line floodgates. Release of too much flow will cause inundation and property damage upstream of the culvert. Note failure of the floodgates to operate in a timely fashion will also result in inundation and property damage downstream of the culvert as evidenced previously.	Reliance on Horizons Regional Council to operate flood gates in a timely fashion and at the right trigger flow.	Low	Horizons Regional Council are current financially constrained to carry out their plan to automate the floodgates, purchase the land on which the floodway lies, and improve the floodway. Consideration needs to be given to diverting funding currently directed towards stormwater capital expenditure to assist Horizons to advance their plan.
Inadequate stormwater systems	Undersized primary and secondary stormwater systems in some catchments will result in inundation and property damage in the 1% AEP rainfall event.	Catchments have been identified and a programme of works commenced.	Medium	Works are currently prioritised to meet growth, hydraulic neutrality and political requirements. Consideration of the cost of property damage and post-event political requirements need to be factored in to decision making and communicated to the affected communities and property owners. Resource availability is a key issue in delivering projects to deliver solutions in a timely manner.
Stormwater outlets where discharges could cause environmental harm	Contaminated stormwater is discharged to receiving waters without adequate controls.	Working with dischargers where identified. Compliance monitoring indicates at-risk catchments and outlets.	Medium	This is an issue that is becoming more prominent for environmental and cultural reasons. The risk of environmental harm can be estimated by the permitted activity in a catchment and by known activities. The appropriate 'Best Management Practice (BMP)' solution can then be identified ad implemented.

6.3 Organisational Risk Management

6.3.1 Risk Assessment

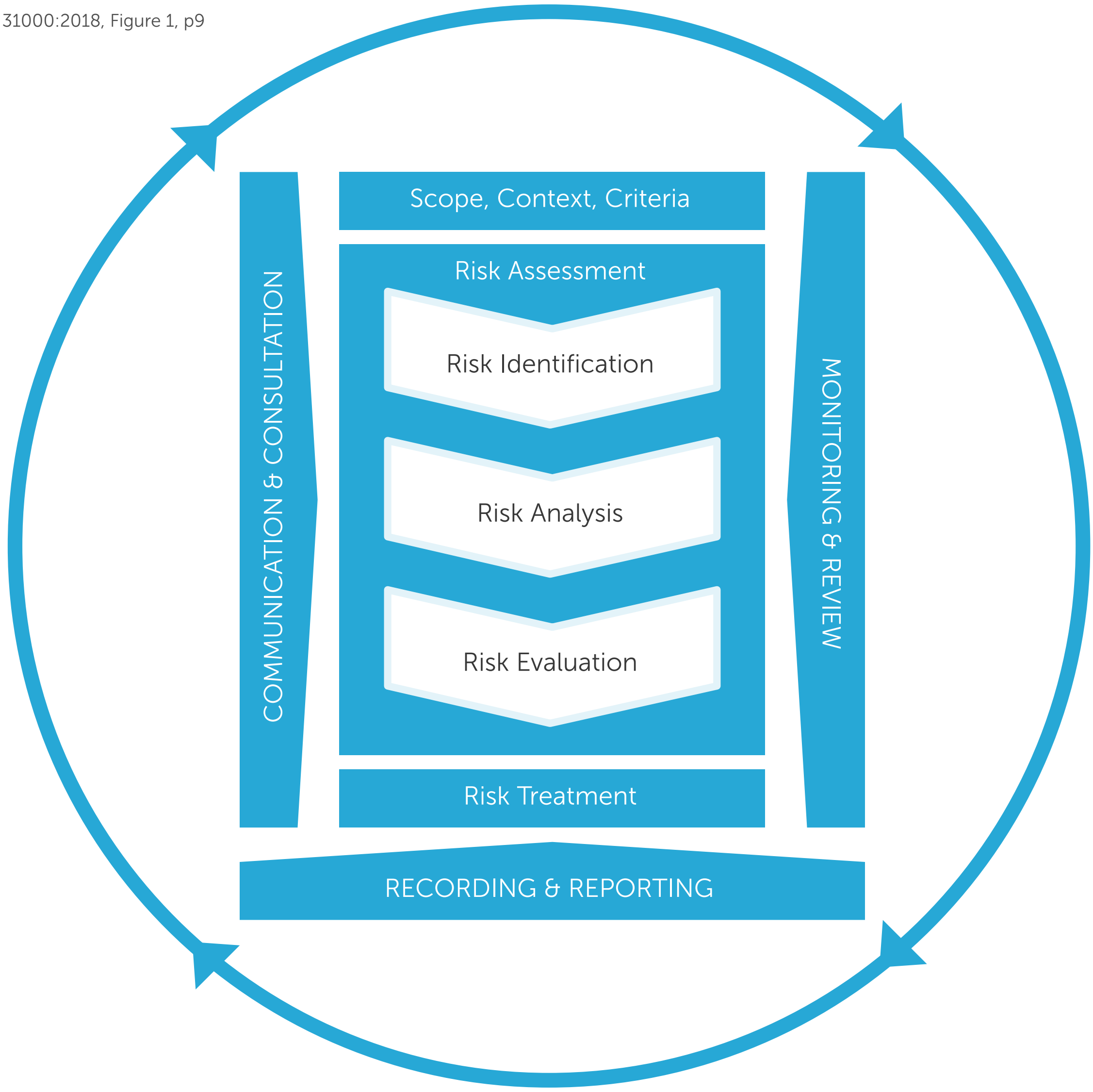
The risk management process used is shown in Figure 9 below.

It is an analysis and problem-solving technique designed to provide a logical process for the selection of treatment plans and management actions to protect the community against unacceptable risks.

The process is based on the fundamentals of International Standard ISO 31000:2018 which the Council follows.

Figure 9- Risk Management Process – Abridged

Source: ISO 31000:2018, Figure 1, p9



The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, development of a risk rating, evaluation of the risk and development of a risk treatment plan for non-acceptable risks.

An assessment of risks associated with service delivery will identify risks that will result in loss or reduction in service, personal injury, environmental impacts, a 'financial shock', reputational impacts, or other consequences.

Critical risks are those assessed with 'Very High' (requiring immediate corrective action) and 'High' (requiring corrective action) risk ratings identified in the Infrastructure Risk Management Plan.

6.3.2 Activity Risk Assessment Using Organisation Risk Framework

Council's Risk Appetite Statement 2016 outlines the level of risk Council is willing to accept in the pursuit of our strategic objectives. Council aims to consider all options to respond to risk appropriately. All decision makers must take into account:

- Build people and culture
- Achieve purposeful growth and development
- Achieve service levels
- Achieve strategic organisational transformation
- Maintain public confidence
- Deliver work programmes
- Maintain legal compliance
- Operate within financial targets.

Council has no appetite for operating outside of financial limits. It also has no appetite for breaches of regulations or legislation, but is willing to accept minimal risk to seek benefits where certain aspects of compliance may be negotiable.

The Risk Analysis Matrix used is set out in Table 7 and the risk level description is outlined in Table 8.

Table 7

Likelihood Guide	Likelihood of Occurrence			Risk Severity Rating Level				
Is expected to occur in most circumstances	Every year or more frequently	Almost Certain	5	Guarded (5)	Moderate (10)	High (20)	Extreme (40)	Extreme (80)
Will probably occur in most circumstances	Every 3 years	Likely	4	Guarded (4)	Moderate (8)	High (16)	Extreme (32)	Extreme (64)
Might occure at some time	Every 10+ years	Possible	3	Low (3)	Guarded (6)	Moderate (12)	High (24)	Extreme (48)
Could occur at some time	Every 30+ years	Unlikely	2	Low (2)	Guarded (4)	Moderate (8)	High (16)	Extreme (32)
May occur only in exceptional circumstances	Every 100+ years	Rare	1	Low (1)	Low (2)	Guarded (4)	Moderate (8)	High (16)
				1	2	4	8	16
			Risk Impact	Minor	Moderate	Major	Severe	Worst Case

Table 8

Risk Level	Description
Low	These risks will not be a priority for treatment and in some cases it may be acceptable for no treatment action to be taken. However, the status of these risks should still be reviewed periodically to ensure no changes which would result in the risk increasing.
Guarded	Treatment when resources are available. The risk should be able to be managed via existing controls and normal operating procedures.
Moderate	This level of risk should not automatically be accepted for risk mitigation but rather a cost-benefit analysis is required to determine if treatment is necessary.
High	Action plans and resources required. The level of risk is likely to endanger capability and should be reduced through mitigation strategies where possible.
Extreme	Requires ongoing executive level oversight. The level of risk warrants that all possible mitigation measures be analysed in order to bring about a reduction in exposure.

6.4. Identifying Risks

The following risk identification techniques are utilised:

- Checklists: Review of generic and/or activity specific risk themes
- Workshops/reviews: formal multi-disciplinary forums that take the form of either 'blue sky' thinking or focused review of existing data. Participants are selected based on attendance requirements relative to maximising outcomes from the degree of involvement and time spent
- Interviews: used on a selective basis to elicit information from specialist personnel
- Experience based reviews: Review of previous projects and/or contracts undertaken
- Ad-hoc: Delivery team identification of risks during contract execution.

6.5 Evaluating the Risks

6.5.1.Prioritisation

Risk evaluation of analysed risks will be used to determine which risks are to be treated and to define the prioritisation for treatment.

Each risk will be allocated a risk score for both current and target exposure and ranked within the risk register by its current exposure risk score.

6.5.2 Risk Tolerance Threshold

To aid in risk treatment prioritisation a risk tolerance threshold(RTT) has been established, and agreed, as being risk score 10. Risks with an exposure below the established RTT will be given a 'live – parked' status. These risks will be monitored but will not be treated, when a change in exposure occurs the need for treatment will be re-evaluated.

The establishment of an RTT will aid the delivery team to focus resource effort on those risks likely to have the greatest negative impact on the contract (and positive impact with respect to opportunities).

Table 6 Wastewater Risk Register

Location	Risk	Risk Types	Gross Risk			Management	Net Risk		
			Consequence	Likelihood	Risk		Consequence	Likelihood	Risk
District	Consent conditions not met	Compliance Environmental Financial Reputation	16	5	E	Monitoring of performance; maintenance; capital works	4	2	M
District	Lack of easements causing access issues	Operational	4	3	M	Proactively ensure key easements in place Use Public Works Act if necessary	4	2	M
District	Failure to deliver renewals programme Insufficient funds Insufficient resources	Operational Financial Compliance Health & Safety	8	5	E	Ensure qualified and experienced staff are hired; maintain sufficient staffing levels; propose realistic programme	8	3	H
District	Failure to deliver upgrade programme Insufficient funds Insufficient resources	Operational Financial Compliance Health & Safety	8	5	E	Ensure qualified and experienced staff are hired; maintain sufficient staffing levels; propose realistic programme	8	3	H
District	Volcanic ash fall. Potential damage to intakes, pipelines, pumps, plant equipment and vehicles could lead to loss of service. Potential impacts on treatment, especially microbiological.	Compliance Operational Environmental Financial Health & Safety Reputation	8	1	M	Ensure all water surfaces covered Shield sensitive equipment Shut down exposed equipment in event of ash fall	2	1	L
District	Failure of mains on private property	Compliance Operational Environmental Financial Health & Safety Reputation	4	2	M	Proactive condition assessment and asset renewal Relocate assets off private property where feasible Enforce building and bylaw controls	4	1	G
District	Pump station overflows	Compliance Operational Environmental Financial Health & Safety Reputation	2	3	G	Reduce I&I Maintain and replace assets as required Monitor flows	2	2	G
District	Odour issues detected outside site boundary	Reputation	8	2	H	Manage trade wastes Install and maintain appropriate treatment, or find alternative	8	1	M
District	Loss of electricity supply	Operational	4	4	H	Use on-site standby generator(s)	2	4	M

District	Systems cannot cope with increased flows from development	Compliance Operational Financial Reputation	4	2	M	Plan for development; secure additional sources Manage demand	2	2	G
District	Inability to meet response time targets	Compliance Operational Reputation	1	4	G	Ensure adequate staffing levels Manage risks to staff such as pandemics	1	3	L

Location	Risk	Risk Types	Gross Risk			Management	Net Risk		
			Consequence	Likelihood	Risk		Consequence	Likelihood	Risk
Feilding	Liquefaction from seismic event	Compliance Operational Environmental Financial Health & Safety Reputation	8	1	M	Locate assets out of high-risk areas where possible Ensure adequate foundations for structures in high-risk areas	8	1	M
Feilding	Damage caused by flooding	Compliance Operational Environmental Financial Health & Safety Reputation	8	2	H	Build resilience into assets to reduce likelihood of damage being caused	8	1	G
Feilding	Failure of river crossing	Compliance Operational Environmental Financial Health & Safety Reputation	4	2	M	Proactive assessment, maintenance and renewal Liaison with Horizons and landowners to keep debris clear	4	1	G
Feilding	Mains failure under railway line	Operational Financial Compliance	4	2	M	Use directional drilling Proactive leak detection and renewals	2	1	L
Awahuri	Failure of mains under State Highway 1	Compliance Operational Financial Health & Safety Reputation	4	2	M	Proactive condition assessment and asset renewal Relocate assets off highway where feasible Work with NZTA to minimise risk of breakage	4	1	G
Awahuri	Damage caused by flooding	Compliance Operational Environmental Financial Health & Safety Reputation	8	2	H	Build resilience into assets to reduce likelihood of damage being caused	8	1	M

Location	Risk	Risk Types	Gross Risk			Management	Net Risk		
			Consequence	Likelihood	Risk		Consequence	Likelihood	Risk
Awahuri	Liquefaction from seismic event	Compliance Operational Environmental Financial Health & Safety Reputation	8	1	M	Locate assets out of high-risk areas where possible Ensure adequate foundations for structures in high-risk areas	8	1	M
Halcombe	Mains failure under railway line	Operational Financial Compliance	4	2	M	Use directional drilling Proactive leak detection and renewals	2	1	L
Sanson	Failure of mains under State Highway 1	Compliance Operational Financial Health & Safety Reputation	4	2	M	Proactive condition assessment and asset renewal Relocate assets off highway where feasible Work with NZTA to minimise risk of breakage	4	1	G
Sanson	Damage caused by flooding	Compliance Operational Environmental Financial Health & Safety Reputation	8	2	H	Build resilience into assets to reduce likelihood of damage being caused	8	1	M
Sanson	Mains failure under railway line	Operational Financial Compliance	4	2	M	Use directional drilling Proactive leak detection and renewals	2	1	L

Stormwater Risk Register

Location	Risk	Risk Types	Gross Risk			Management	Net Risk		
			Consequence	Likelihood	Risk		Consequence	Likelihood	Risk
District	Damage to roads from mains failures	Operational Financial Reputation Compliance	2	5	M	Proactive condition assessment; prioritisation of renewals in roads	2	4	M
District	Lack of easements causing access issues	Operational	4	3	M	Proactively ensure key easements in place Use Public Works Act if necessary	4	2	M
District	Failure to deliver renewals programme Insufficient funds Insufficient resources	Operational Financial Compliance Health & Safety	8	5	E	Ensure qualified and experienced staff are hired; maintain sufficient staffing levels; propose realistic programme	8	3	H
District	Failure to deliver upgrade programme Insufficient funds Insufficient resources	Operational Financial Compliance Health & Safety	8	5	E	Ensure qualified and experienced staff are hired; maintain sufficient staffing levels; propose realistic programme	8	3	H
District	Volcanic ash fall. Potential loss of capacity and flow	Compliance Operational Environmental Financial Health & Safety Reputational	4	1	G	Cover key inlets Educate community on proper ash removal	4	1	G
District	Failure of mains on private property	Compliance Operational Environmental Financial Health & Safety Reputation	4	2	M	Proactive condition assessment and asset renewal Relocate assets off private property where feasible Enforce building and bylaw controls	4	1	G
District	Systems cannot cope with increased flows from development	Compliance Operational Financial Reputation	4	2	M	Plan for development; secure additional sources Manage demand	2	2	G
District	Inability to meet response time targets	Compliance Operational Reputation	1	4	G	Ensure adequate staffing levels Manage risks to staff such as pandemics	1	3	L
Feilding	Mains failure under railway line	Operational Compliance Financial	4	2	M	Use directional drilling Relocate where possible	2	1	L

Feilding	Consent conditions not met	Compliance Environmental Financial Reputation	16	5	E	Monitoring of performance; maintenance; capital works Work with premises to manage flows and quality	8	2	H
Sanson	Failure of mains under State Highway 1	Compliance Operational Financial Health & Safety Reputation	4	2	M	Proactive condition assessment and asset renewal Relocate assets off highway Work with NZTA to minimise risk of breakage	4	1	G

Water Supply Risk Register

Location	Risk	Risk Types	Gross Risk			Management	Net Risk		
			Consequence	Likelihood	Risk		Consequence	Likelihood	Risk
District	Loss of water supply for more than 8 hours to multiple properties	Operational Financial Health & Safety Reputation	4	5	H	Maintain register of key consumers e.g. dialysis patients, major industries, schools, medical, dental, rest homes, relevant commercial premises Minimum 1 day storage in reservoirs Council and contractors hold spares of key components Rural water supplies require consumers have on-site storage	2	3	G
District	Poor water quality	Compliance Operational Financial Health & Safety Reputation	8	3	H	Maintain register of key consumers e.g. dialysis patients, major industries, schools, medical, dental, rest homes, relevant commercial premises	8	1	M
District	Consent conditions not met	Compliance Environmental Financial Reputation	16	5	E	Monitoring of performance; maintenance; capital works	4	2	M
District	Leaks in roads	Operational Financial Reputation Compliance	2	5	M	Proactive leak detection; prioritisation of renewals in roads	2	4	M
District	Lack of easements causing access issues	Operational	4	3	M	Proactively ensure key easements in place Use Public Works Act if necessary	4	2	M
District	Failure of AC mains	Operational Compliance	2	5	M	Pressure management Renewals programme	2	4	M
District	Failure to deliver renewals programme Insufficient funds Insufficient resources	Operational Financial Compliance Health & Safety	8	5	E	Ensure qualified and experienced staff are hired; maintain sufficient staffing levels; propose realistic programme	8	3	H

District	Volcanic ash fall. Increased turbidity, acidity and toxicity of raw water could affect water quality. Potential damage to intakes, equipment could lead to loss of supply.	Compliance Operational Environmental Financial Health & Safety Reputational	8	1	M	Ensure all water surfaces covered Shield sensitive equipment Shut down exposed equipment in event of ash fall	2	1	L
District	Reservoir failure Seismic event	Operational Financial	8	2	H	Feed reticulation directly Assess seismic strength	8	1	M

Location	Risk	Risk Types	Gross Risk			Management	Net Risk		
			Consequence	Likelihood	Risk		Consequence	Likelihood	Risk
District	Trunk main failure Burst Flood damage	Operational Compliance Financial	8	2	H	Proactive leak detection and asset renewals	8	1	M
District	Poor water quality at dead ends in reticulation	Compliance Operational Health & Safety Reputation	4	4	H	Flushing programme Loop mains Backflow prevention	4	3	M
District	Reticulation failure High pressure	Operational Financial Compliance	4	5	H	Proactive leak detection and asset renewals	2	4	M
District	Loss of electricity supply	Operational	4	4	H	Use on-site standby generators	2	4	M
District	Insufficient water supply for firefighting	Operational Financial Health & Safety Reputation	8	2	H	Test hydrant pressure and flow Liaise with FENZ Programme improvements where need identified Upgrade Sanson reticulation	4	2	M
District	Inability to meet response time targets	Compliance Operational Reputation	1	4	G	Ensure adequate staffing levels Manage risks to staff such as pandemics	1	3	L
District	Demand for water exceeds supply	Compliance Operational Financial Reputation	4	2	M	Plan for development; secure additional sources Manage demand	2	2	G
Feilding	Intake damaged Flooding Liquefaction	Operational Financial	8	2	H	Inspect regularly and communicate with Horizons about condition of river, particularly aggradation	8	1	M
Feilding	Clarifier failure Seismic event Structural failure	Compliance Operational Financial Health & Safety	8	2	M	Get clarifier inspected Programme renewal	8	1	M

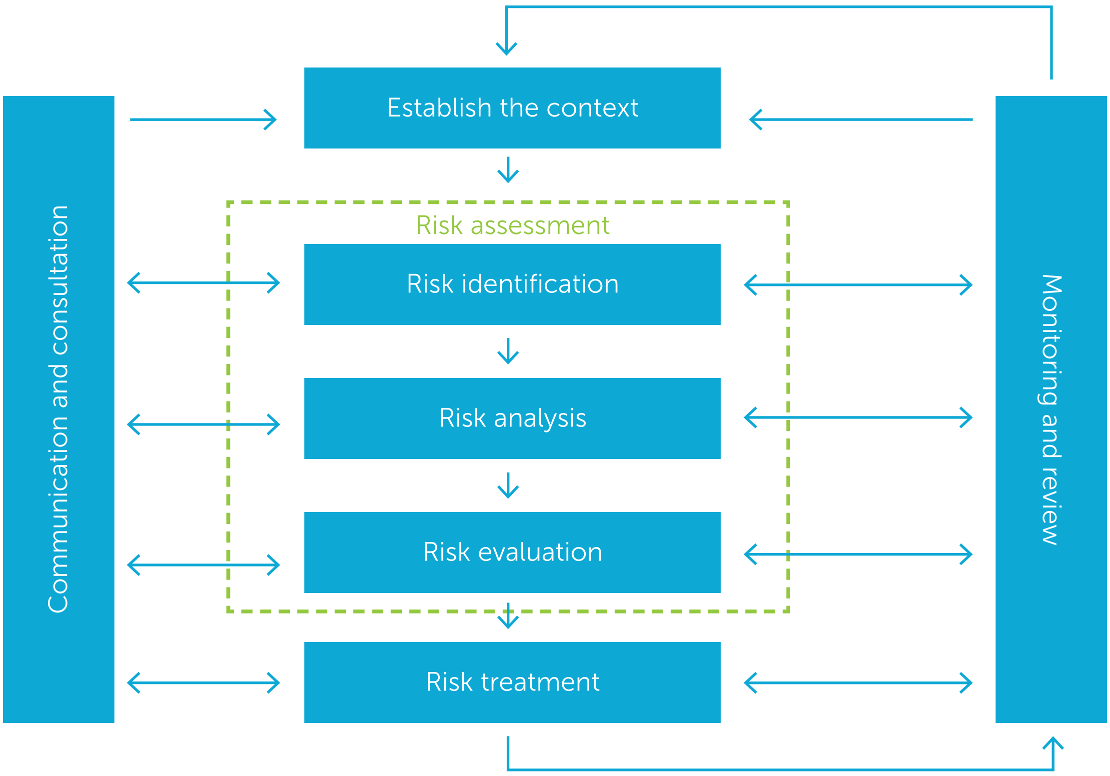
Feilding	Flood damage. Damage to or destruction of plants, pumps, pipelines and reservoirs could lead to loss of supply	Compliance Operational Environmental Financial Health & Safety Reputation	8	2	H	Provide enhanced flood protection of key assets Ensure alternative options available, located out of flood zone	2	2	G
Feilding	Rising main failure	Operational Compliance Financial	8	2	H	Proactive leak detection and asset renewals	8	1	M
Feilding	Damage to bores Seismic event Flooding Liquefaction	Operational Financial	8	2	H	Ensure casings meet specifications; ensure any bore can be used for supply	8	1	M
Feilding	River crossing failure	Operational Compliance Financial	8	2	H	Crossing is above flood level	8	1	M
Feilding	Mains failure under railway line	Operational Financial Compliance	4	2	M	Use directional drilling Proactive leak detection and renewals	2	1	L

Location	Risk	Risk Types	Gross Risk			Management	Net Risk		
			Consequence	Likelihood	Risk		Consequence	Likelihood	Risk
Hīmatangi beach	Damage to bore Seismic event Flooding Liquefaction	Operational Financial	8	2	H	Ensure casings meet specifications; ensure any bore can be used for supply	8	1	M
Rongotea	Damage to bore Seismic event Flooding Liquefaction	Operational Financial	8	2	H	Ensure casings meet specifications; ensure any bore can be used for supply	8	1	M
Sanson	Intake damaged Flooding Liquefaction	Operational Financial	8	2	H	Inspect regularly and communicate with Horizons about condition of river, particularly aggradation	8	1	M
Sanson	Flood damage. Damage to or destruction of plants, pumps, pipelines and reservoirs could lead to loss of supply	Compliance Operational Environmental Financial Health & Safety Reputation	8	2	H	Provide enhanced flood protection of key assets Ensure alternative options available, located out of flood zone	2	2	G
Sanson	Rising main failure	Operational Compliance Financial	8	2	H	Proactive leak detection and asset renewals	8	1	M

Sanson	Failure of mains under State Highway 1	Compliance Operational Financial Health & Safety Reputation	4	2	M	Proactive condition assessment and asset renewal Relocate assets off highway where feasible Work with NZTA to minimise risk of breakage	4	1	G
Stanway-Halcombe	Scheme becomes uneconomic to operate Decline in demand	Financial Health & Safety Reputation	8	1	M	Manage costs Harmonise rates across District	8	1	M
Stanway-Halcombe	Break down in relationship between Council and Committee	Operational Compliance Reputation	8	3	H	Regular attendance at meetings, good customer service and prompt resolution of issues	8	2	M
Stanway-Halcombe	Intake damaged Flooding Liquefaction	Operational Financial	8	2	H	Inspect regularly and communicate with Horizons about condition of river, particularly aggradation	8	1	M
Stanway-Halcombe	Flood damage. Damage to or destruction of plants, pumps, pipelines and reservoirs could lead to loss of supply	Compliance Operational Environmental Financial Health & Safety Reputation	8	2	H	Provide enhanced flood protection of key assets Ensure alternative options available, located out of flood zone	2	2	G
Stanway-Halcombe	Rising main failure	Operational Compliance Financial	8	2	H	Proactive leak detection and asset renewals	8	1	M
Stanway-Halcombe	Mains failure under railway line	Operational Financial Compliance	4	2	M	Use directional drilling Proactive leak detection and renewals	2	1	L
Waituna West	Damage to bore Seismic event Flooding Liquefaction	Operational Financial	8	2	H	Ensure casings meet specifications; ensure any bore can be used for supply	8	1	M
Waituna West	River crossing failure	Operational Compliance Financial	8	2	H	Crossing is above flood level	8	1	M
Waituna West	Scheme becomes uneconomic to operate Decline in demand	Financial Health & Safety Reputation	8	1	H	Manage costs Harmonise rates across District	8	1	M
Waituna West	Break down in relationship between Council and Committee	Operational Compliance Reputation	8	3	H	Regular attendance at meetings, good customer service and prompt resolution of issues	8	2	M

6.6 Managing the Risks

The figure below summarises the key steps of the risk management process specified in AS/NZS ISO 31000:2009 and as applied within this contract. This process is a systematic approach applicable to all aspects of Council's three waters Activity delivery; from governance to task level activity.



6.7 Monitoring and Review

The asset management team will monitor contract delivery raising identified risks on to the risk register for review and notification to Council. Risk owners will be responsible for ongoing monitoring and review of owned risks, the conduct and effectiveness of associated treatments and currency of related data. Council will be responsible for monitoring the content of the risk register to ensure currency of data and the identification and notification of risk owners requiring to update owned data. Contract risk reviews will be conducted to ensure the ongoing validity of risks identified, exposure levels, and progress and effect of associated treatment actions. Risk reviews will be attended by such members of the delivery team as deemed appropriate by the asset management team so as to maximise outcomes.

6.7.1 Water Supply Risk Management – Water Safety Plans

Pursuit to s69z of the Health Act 1956, Water Safety Plans must be in place for all water supplies (excluding those defined as small or neighbourhood drinking water supplies). Review of each Water Safety Plan is required on an annual basis.

MDC currently has water safety plans, approved by the Ministry of Health, that act as a key risk management process, for the following supplies:

- Feilding
- Sanson
- Rongotea
- Hīmatangi Beach
- Waituna West.

No operative water safety plan is held for Stanway-Halcombe.

The water safety plans have been prepared based on Ministry of Health guidance and thus typically set out:

- System overview of water sources, treatment and distribution
- Compliance requirements and criteria for Bacteria and Protozoa
- Monitoring regimes
- Barriers to contamination
- Risk review and summary
- Optimisation tasks including improvement schedule and timetable.

Contingency plans for the likes of:

- FAC concentrations outside maximum and minimum acceptable values
- Backflow occurs into the distribution system
- Dose of UV is outside minimum acceptable level
- Los of water supply
- Contamination of water supply
- Earthquake, flood or other Natural disaster.

6.7.2 Wastewater Risk Management – Centralisation Project Business Case

The wastewater centralisation project intends to pipe untreated or pre-treated wastewater from the Villages of Halcombe, Sanson, Rongotea, Awahuri, Cheltenham and Kimbolton to the Feilding Wastewater Treatment Plant.

Each of these villages currently has a wastewater treatment plant with discharge consents that have expired or are due to expire over the next few years. The business case prepared by MDC has demonstrated that centralisation project is Council's preferred option over seeking new village WWTP resource consents as it provides the most beneficial, long term risk profile.

6.7.3. Stormwater Risk Review – Village Stormwater Services

A key issue consulted on as part of the 2018 -2028 Long Term Plan was the change to the rating of stormwater in the District. Pre-LTP stormwater rates were only collected in Feilding, Rongotea and Sanson.

The LTP proposed the establishment of a Harmonised Stormwater Rate across Feilding, Rongotea, Sanson, Tangimoana, Hīmatangi Beach, Cheltenham and Halcombe. This would assist in funding a village stormwater improvement programme.

This proposal was endorsed during the adoption of the LTP 2018-28.

To inform the scope of the village stormwater improvement programme:

- Risk/issues were benchmarked against key stormwater management objectives to identify scope of works.

This included reviewing risk associated with:

  - Keeping people safe in large, infrequent storm events
  - Protecting residential building floor levels from inundation in large, infrequent storm events
  - Managing runoff to prevent damage to private property in smaller, frequent storms; and
  - Managing runoff to maintain or enhance water quality in smaller frequent storms

- Works required to address the above have been prioritised based on a defined hierarchy. The hierarchy has included:
  - Short term (0-3 years)

Works that improve the efficiency of the existing system and provide some immediate relief to frequent, localised problems (typically maintenance activities and targeted infrastructure upgrades);

  - Medium term (3-10 years)

Works that will optimise the use of available capital to maximum benefit and reduce the overall risk profile;

  - Longer term (10 years+)

Works that should form part of Council's ongoing renewals programme and/or ultimately provide for an increase future level of service.

The outcome of the above is a village risk-based improvement programme for implementation over the next 10 years.

6.8 Assessing Infrastructure Resilience

Historically, the MDC's 3 Waters capital and renewals programs have been driven by asset age and expected useful life.

The 3 Waters Asset Management practices have started to move towards a risk based approach to the management of assets and formally consider asset criticality in decision making.

The intention (via the Improvement Plan) is to continue to enhance MDC's capability to manage risk through asset criticality.

6.9 Lifelines Services – Risks of Natural Hazards

This report undertaken by the Manawatū-Wanganui Lifelines Advisory Group examined the effects of direct damage by known major natural hazards to lifeline services. It:

- assesses the vulnerability of lifeline services to damage from hazards
- identifies interdependencies amongst the lifeline services
- identifies practical strategies for reducing risk
- helps project participants identify and implement mitigation and response strategies for their own networks and co-ordinate these with the plans of other lifelines.

This project incorporated asset information from all participating agencies, with updated hazard maps overlaid. Critical assets were identified as those being either locally, regionally or nationally significant. Where these assets were exposed to risk from the assessed natural hazards, mitigation actions were recorded.

Findings from this study have been incorporated into the risk register above, and asset management planning for the Water Supply and Wastewater activities. Aside from this, findings of the study including the hazardscape are not repeated here as they are covered in the report. It is intended that the report will be a living document, and be updated on an ongoing basis by the Lifelines Advisory Group.

Specific commitments from Manawatū District Council as a result of this study, to improve the resilience of lifeline utilities, include:

1. Seismic assessments on key assets at Water Treatment Plants, followed by upgrading or renewals.
2. Ongoing renewals programme for water supply and wastewater reticulation and treatment assets. This includes key assets such as reservoirs and raw water intakes.
3. Investigations into additional backup electricity generation at Water Treatment Plants and Wastewater Treatment Plants.
4. Continuing focus on risk management through asset management planning, including prioritisation of work programmes based on criticality and risk exposure.
5. Appropriate materials to be used in high-risk areas.
6. Continuation of upgrades to Water Treatment Plants to achieve compliance with Drinking Water Standards for bacteria and protozoa.
7. Condition assessments on key assets.

7. FINANCIAL SUMMARY

7.1 Introduction

The Local Government Act 2002 requires Council to prepare a Financial Strategy as part of its Long Term Plan. This Strategy outlines how the Council intends to manage it finances prudently. This means the Council will act with careful deliberation and will always consider the financial implications of decisions on the community. Council must make adequate and effective provision to meet expenditure needs identified in Annual and Long Term Plans.

The Financial Strategy provides a financial framework for making decisions. Simply, it enables Council to assess proposed spending against rates and borrowing requirements over the whole ten years of the Long Term Plan 2018-28 (LTP). It draws together all of the issues in the LTP along with the financial consequences and presents these along with the Council's response.

This will:

- Enable the community to readily identify what the financial issues are
- Provide the community with certainty about how expenditure will be met
- The impacts of proposals on levels of services, rates, debts and investment
- Enable the community to predict how the Council intends to manage the financial issues in the future
- Provide guidance to decision makers when considering implications of financial issues on communities now and in the future.

Council's vision is Manawatū District - proudly provincial, a great place to land. The services and projects outlined in the Long Term Plan will ensure this vision becomes a reality. The provision of services and projects comes at a cost. Council aims to spend within its means, achieving a balance between meeting the needs of the community with its ability to pay.

7.2 Identifying and Categorising Lifecycle Costs

Council makes decisions on the acquisition and ongoing use of many different assets. The initial capital outlay cost is usually clearly defined and is often a key factor influencing the choice of asset given a number of alternatives from which to select.

The initial capital outlay cost is, however, only a portion of the costs over an asset's life cycle that needs to be considered in making the right choice for asset investment. The process of identifying and documenting all the costs involved over the life of an asset is known as Life Cycle Costing (LCC).

The total cost of ownership of an asset is often far greater than the initial capital outlay cost and can vary significantly between different alternative solutions to a given operational need. Consideration of the costs over the whole life of an asset provides a sound basis for decision-making. With this information, it is possible to:

- Assess future resource requirements (through projection of projected itemised line item costs for relevant assets)
- Assess comparative costs of potential acquisitions (investment evaluation or appraisal)
- Decide between sources of supply (source selection)
- Account for resources used now or in the past (reporting and auditing)
- Improve system design (through improved understanding of input trends such as manpower and utilities over the expected life cycle)
- Optimise operational and maintenance support; through more detailed understanding of input requirements over the expected life cycle)
- Assess when assets reach the end of their economic life and if renewal is required.

The Life Cycle Costing process can be as simple as a table of expected annual costs or it can be a complex (computerised) model that allows for the creation of scenarios based on assumptions about future cost drivers. The scope and complexity of the life cycle cost analysis generally reflects the complexity of the assets under investigation, the ability to predict future costs and the significance of the future costs to the decision being made by Council.

A life cycle cost analysis involves the analysis of the costs of a system or a component over its entire life span. Typical costs for a system may include:

- Acquisition costs (or design and development costs)
- Operating costs:
  - Cost of failures
  - Cost of repairs
  - Cost for replacement.
- Maintenance costs:
  - Cost of corrective maintenance
  - Cost of preventive maintenance
  - Cost for predictive maintenance.

7.3 Valuation Approaches

The 2019 valuation report covers the following asset groups as at 1 July 2019:

- Water Treatment Plants, Intake Structures, Pumping Stations, Reservoirs and Reticulation
- Wastewater Treatment Plants, Pumping Stations and Reticulation
- Stormwater Reticulation and Pumping Stations.

A summary of asset values as at 1 July 2019 is shown in Table 9

Table 9 Summary of Asset Values as 1 July 2019

Class Group	Replacement Value	Depreciated Replacement Value	Annual Depreciation Value
Water	$120,018,675	$61,607,128	$1,709,914
Wastewater	$119,543,793	$77,541,263	$2,017,766
Stormwater	$68,294,000	$38,973,120	$627,435
Total	**$307,856,468**	**$178,121,511**	**$4,355,115**

The valuation is based on PBE IPSAS 17 Property, Plant and Equipment issued September 2014 and incorporates amendments to 31 January 2017. The valuation methodology has been in accordance with the New Zealand Infrastructure Asset Valuation and Depreciation Guidelines – Edition 2.0 (2006)

Significant assumptions made in preparing the valuation are that:

- Work in progress as not been included in the valuation
- GIS database has been used to determine asset quantities for reticulation assets
- Replacement costs for pipes are a function of diameter, material and surface environment along with contract costs and the comparison made by WSP Opus with industry standard costs
- There are no known instances of asset impairment at 1 July 2019.

New unit rates are set at each valuation. For the 2019 valuation the council engaged consultants WSP OPUS Ltd to evaluate and provide a unit rate for each asset component used by the asset register.

Actual construction costs provide the best basis for setting the unit cost rates for valuation. Recent construction costs from similar local authorities have been applied to the water, wastewater and stormwater reticulation rates. MDC supplied aggregated unit rate information from previous contracts. These were used in valuation and compared to recent construction costs of similar local authorities.

In the absence of suitable local cost data, changes in construction cost indices provide a suitable alternative indication of likely movement in asset value. The Capital Goods Price Index (CGPI) provides a measure of the price level for the physical assets. To measure the change in capital costs WSP chose the pipeline construction Statistics New Zealand (SNZ) capital goods price index (S2CB) to reflect the price movement for water and drainage infrastructure. Between 2018 and 2019 the index has increased by 2%, this is based off the June 2019 indices.

The MDC pipeline cost rates were adjusted to provide better uniformity with increasing diameters.

The 1 July 2019 – Valuation is attached in Appendix 1

Table 10- Expected Useful Lives – Water

Asset Category		Useful Lives
Pipes	Plastic	75-100 Years
	Fibre Cements	34-95 Years (previously 60 years for all pressue classes)
	Concretes	100 Years
	Steels	60-110 Years
	Metals	100 Years
Fittings	Backflow Device	20-50 Years
	Hydrants	50 Years
	Valves	50 Years
	Tobys/Meters	10-35 Years
Plant	Civil	5-200 Years
	Mechanical	1-100 Years
	Electrical	10-50 Years
	Valves	25-50 Years

Table 11- Expected Useful Lives – Wastewater

Asset Category		Useful Lives
Pipes	Plastic	50-100 Years
	Fibre Cement	100 Years
	Ceramics/Concretes	100 Years
	Metals	100 Years
Fittings	Manholes	100 Years
Plant	Buildings	50-100 Years
	Civil	10-100 Years
	Mechanical	10-80 Years
	Electrical	10-50 Years
	Valves	25-50 Years

Table 12- Expected Useful Lives – Stormwater

Asset Category		Useful Lives
Pipes/Culverts	Plastic	40-100 Years
	Concretes/Ceramics	100 Years
	Fibre Cements	60 Years
	Metals	50 Years
	Earth Swales, Drains	Indefinite
Fittings	Manholes	100 Years
	Sumps and Catch pits	100 Years

7.4 Funding Strategy

A number of corporate policies and procedures are in place at Manawatū District Council to ensure prudent financial management. These influence the financial aspects of asset management for 3 Waters.

Council's approach to funding its activities, including the 3 waters, is set out in the MDC Revenue and Financing Policy, as required by the Local Government Act, 2002.

In summary, how an activity is funded is determined by:

- Who causes the costs to be incurred
- Who receives the benefit
- When the benefit is likely to be enjoyed.

Note that the review of the Revenue and Financing Policy was included in the consultation for the 2018-2028 Long Term Plan. In addition to the above, MDC also consulted on a review of the Development Contributions Policy. This policy addresses the fees collected towards the cost of infrastructure, how these are calculated, and the projects that the fees will be allocated to.

Both the above policies are available to the public via the MDC website.

7.4.1 Revenue and Financing Policy

Having a Revenue and Financing Policy is a requirement under the Local Government Act 2002. This policy outlines how Council expenditure is funded. In identifying the most appropriate funding sources for each activity, Council must consider:

- User/Beneficiary Pays principle
- Intergenerational Equity principle
- Exacerbator pays principle
- Costs and benefits of funding activities distinctly from other activities.

Whatever the most appropriate funding source, Council must also consider the impact on affordability. Sources of funding for operational expenditure are:

- General rates
- Targeted rates
- Lump sum contributions
- Fees and charges
- Interest and dividends from investments
- Grants and subsidies towards operating expenses
- Other operating revenue.

Sources of funding for capital expenditure consist of:

- Council reserves
- Contributions towards capital expenditure from other parties

- Development contributions
- Annual revenue collected to cover depreciation charges
- Proceeds from the sale of assets
- Operating surpluses
- Any other sources.

7.4.2.1 Water Supply

Water supply provides public benefits, such as:

- Availability of water for public health and services (e.g. firefighting) and recreational facilities (e.g. gardens, swimming pools)
- Increased potential for enhanced community well-being and economic development. Conveyancing system for wastes
- It is not possible to reuse a unit of water without incurring extra costs. It is possible to exclude people from a water supply through disconnection and charges. However, rural water supplies in their current format do not provide a measurable level of public good
- There are significant private benefits attached to urban and rural water supplies. The benefits listed above also apply to private users. Water is a necessity of life and therefore individuals, businesses and farms receive direct
- Benefits from water used. A good water supply contributes to personal health and well-being. Illegal connections, leaks, excessive use and deliberate or unintentional damage to infrastructure cause additional costs to Council
- Benefits are immediate and ongoing to scheme users, and long-term for the District and future generations.

The funding split is 100% private. Council decided the most appropriate means to fund this activity is through targeted rates on areas serviced by individual schemes and user fees and charges (e.g. water meters). The rate is harmonised i.e. the same rate is applied to any applicable property, regardless of location.

Loans and/or depreciation funding over time will meet capital expenditure, such as the renewal of pipes or expansions to the system.

Recovery of exacerbator costs will be in full where possible.

7.4.2.2 Wastewater

Wastewater services provide public benefits, including:

- A clean and healthy environment for present and future generations
- Prevention of disease
- Maintenance of public health standards.

A good quality and effective wastewater disposal system is a key service to attract people and businesses to the District and to help sustain economic growth. Scheme users receive significant private benefits from provision of a collective wastewater disposal scheme, including the removal of human waste and protection against disease. Services remain available assuming the system has not reached design limits. Theoretically, individuals can be excluded from the service through requiring payment or disconnection.

Benefits are immediate and ongoing to scheme users, and long-term for future generations. Illegal stormwater connections to the sewer system, modifications to housing, disposal of toxic substances and overloading can cause additional costs to Council.

The funding split is 100% private. Council decided the most appropriate means to fund this activity is through targeted rates on areas serviced by individual schemes and user fees and charges (e.g. trade waste charges). The rate is harmonised i.e. the same rate is applied to any applicable property, regardless of location.

Loans and/or depreciation funding over time will meet capital expenditure, such as the renewal of pipes or expansions to the system. Recovery of exacerbator costs will be in full where possible.

7.4.2.3 Stormwater

Urban stormwater provides public benefits through:

- Managing risks from flooding
- Protecting the community (including people, property and community assets)
- Maintaining the economic productivity of rural land and property values
- Encouraging residential development.

Urban stormwater provides significant private benefits to users with each connection using a proportion of the available capacity.

Benefits are ongoing. Incorrectly sized pipes installed by urban property owners cause additional costs to Council.

The funding split is 20% public and 80% private. Council decided the most appropriate means to fund this activity is through a combination of the general rate which is based on capital value with differentials (public funding) and targeted rates on areas served by the various schemes (private funding). Targeted rates means that the rates are specific to a particular network e.g. a Feilding Stormwater rate rather than a single, harmonised rate across the District.

Areas which do not have a targeted rate applied must fund all stormwater-related work from general rates.

Loans and/or depreciation funding over time will meet capital expenditure, such as the renewal of pipes or expansions to the system.

Recovery of exacerbator costs will be in full where possible.

7.4.2.4 Rural Drainage

Rural land drainage provides public benefits through:

- Managing risks from flooding.
- Protecting the community (including people, property and community assets).
- Maintaining the economic productivity of rural land and property values.
- Encouraging residential development.

There are significant private benefits from rural land drainage. Each person connected to a service uses a proportion of the available capacity. Rural drainage provides direct benefits to properties from being part of a rural scheme. Benefits are ongoing.

Deliberate actions to restrict water flow and inadequate maintenance may cause additional costs to Council.

The funding split is 100% private. Council decided the most appropriate means to fund this activity is through targeted rates on areas serviced by individual schemes.

The use of this funding source is transparent through the annual plan and rates assessment. Loan funding over time will meet capital expenditure, such as expansions to the system. Recovery of exacerbator costs will be in full where possible.

7.5 Calculating Depreciated Replacement Cost

Most assets lose their value over time (in other words, they depreciate), and must be replaced once the end of their useful life is reached. Depreciation is a method of allocating the cost of an asset over its useful life.

Depreciation represents the charge to the current ratepayers for the use of the asset during each year. If operating costs, including depreciation, are not covered by operating revenues, it can be argued the current users of the service are not paying for the benefits they are receiving. Depreciation will be charged on all assets by allocating the cost/or valuation of the asset over the estimated remaining useful life of the asset.

Assets are regularly revalued (operational assets at least every three years and infrastructural assets annually) with the depreciation expense based on the revalued amount. This ensures the amount of depreciation reflects current market values.

As depreciation is a charge for the use of the asset by current users, Council has elected not to create individual depreciation reserves.

There are some assets depreciated in the balance sheet, but their depreciation is not included in the calculation of rates.

7.6 Developing Long Term Financial Forecasts

Long-term financial planning combines financial forecasting with strategizing. It is a highly collaborative process that considers future scenarios and helps governments navigate challenges. Long-term financial planning works best as part of an overall strategic plan.

Financial forecasting is the process of projecting revenues and expenditures over a long-term period, using assumptions about economic conditions, future spending scenarios, and other salient variables.

Long-term financial planning is the process of aligning financial capacity with long-term service objectives.

Financial planning uses forecasts to provide insight into future financial capacity so that strategies can be developed to achieve long-term sustainability in light of the government's service objectives and financial challenges.

Council has a comprehensive long-term financial planning process because it stimulates discussion and engenders a long-range perspective for decision makers. It can be used as a tool to prevent financial challenges; it stimulates long-term and strategic thinking; it can give consensus on long-term financial direction; and it is useful for communications with internal and external stakeholders.

Council's long-term financial plan includes these elements.

Time Horizon: The plan looks at thirty years into the future.

Scope: The plan considers all appropriated funds, but especially those funds that are used to account for the issues of top concern to elected officials and the community.

Frequency: Council updates long-term planning activities as needed in order to provide direction to the budget process, though not every element of the long-range plan is repeated.

Content: The plan includes an analysis of the financial environment, revenue and expenditure forecasts, debt position and affordability analysis, strategies for achieving and maintaining financial balance, and plan monitoring mechanisms, such as scorecard of key indicators of financial health.

Visibility: The public and elected officials are able to easily learn about the long-term financial prospects of Council and strategies for financial balance. Hence, Council has an effective means for communicating this information, through separate plan documents and by integrating it with existing communication devices.

Disposal costs: A complete life cycle cost projection (LCCP) analysis may also include other costs, as well as other accounting/financial elements (such as, interest rates, depreciation, present value of money/discount rates, etc.).

7.7 Developing Funding Plans

7.7.1 Balancing the Budget

Council is required by legislation and for prudent financial management to balance its budget. This means that operating expenses must be covered by operating revenues unless specific exemptions are detailed in this Financial Strategy. During the preparation of the Long Term Plan the balancing of the budget is done at an activity level. In the Financial Strategy Council has identified a number of circumstances where it is appropriate not to balance the budget.

7.7.2 Unfunded Depreciation

Council uses depreciation to fund the renewal or replacement of assets.

The operating surplus in the Statement of Comprehensive Revenue and Expense includes revenue to fund capital expenditure.

Funding from future development contributions for growth related capital expenditure

In determining our development contributions a fifty year programme has been developed and development contributions were calculated over this time. Often Council is required to put the infrastructure in place to ensure we have the capacity to accommodate growth in advance of the development. In these instances loans are taken out to fund this expenditure. The servicing of these loans (both interest and principal repayments) is to be funded by future development contributions.

7.7.3 Revenue for Capital Purposes

The operating surplus in the Statement of Comprehensive Revenue and Expense includes revenue to fund capital expenditure.

Funding from future development contributions for growth related capital expenditure

In determining our development contributions a fifty year programme has been developed and development contributions were calculated over this time. Often Council is required to put the infrastructure in place to ensure we have the capacity to accommodate growth in advance of the development. In these instances loans are taken out to fund this expenditure. The servicing of these loans (both interest and principal repayments) is to be funded by future development contributions.

7.7.4 Funding from Prior or Future Years Surpluses

There are a small number of circumstances where it is considered prudent to fund operational from prior or future years' surplus.

7.7.5 Intergenerational Issues

Some assets are useful for a long time and provide service to more than one generation. For example, pipes and bridges often have an estimated life of 60 to 100 years.

When making financial decisions about how to fund assets, Council takes into account how today's decision will impact on current and future generations. Council considers that it is fair to expect those people who benefit from the service should pay for it. This principle assists Council to decide how to fund the costs of replacing existing assets and to build new assets. For example, long life assets may be partly funded by a loan. Loans spread the cost of the asset across current and future generations.

7.7.6 Funding Sources

Rates are a property tax set annually by Council. Rates are one source of income the Council uses to fund projects and operating services.

Council considers the affordability of the proposed rate requirements both for the Council and ratepayers. When setting rates Council considers:

- the levels of service provided
- intergenerational issues
- other sources of funds
- legislative requirements
- external factors
- what our ratepayers can afford.

7.7.7 Borrowing

Council utilises external borrowing to fund the acquisition of assets. Council's Liability Management Policy governs the borrowing mechanisms and current limits.

Internal Borrowing: This is a mechanism available to manage both the level of funds available and external debt. This facility enables an activity to borrow from the Council treasury function as opposed to borrowing externally, with an appropriate interest rate charged.

Utilising internal borrowing enables Council to manage its cash/investment portfolio to take advantage of the moving margins between interest rate receivable and interest rates payable. Internal borrowing is used when external borrowing costs are higher than allowed investment returns.

Security for Borrowing: Many of Council's assets are not readily saleable so are less attractive as security items. Council will secure borrowings by a charge over our rating revenue either directly or through a debenture trust deed. Council will not secure other assets unless circumstances show it to be appropriate (e.g. leased assets).

7.7.8 Investments

Council is a risk-averse entity. Council will not undertake transactions where the level of return or benefit is dependent on an unacceptable level of risk. The Investment Policy expressly forbids any form of purely speculative activity.

Adequate liquid funds are to be kept to allow all expected payments to be made on the due date. Investment levels should ensure adequate funds are maintained so special funds and reserves are backed by suitable investments.

7.7.9 Expenditure Classifications

To assist in identifying the reason for expenditure and finding the most appropriate funding source, Council has four expenditure classifications. Classification reflects good practice and new legislative requirements for financial reporting.

Type of Expenditure	Description
Operational expenditure	Operating expenditure is the day-to-day costs associated with providing a service. It includes expenditure not linked to an asset. It includes work required to keep an asset operating at the required level.
Capital – renewal expenditure	Renewal work is expenditure required to replace or refurbish an existing asset that will bring the asset back to the original service potential.
Capital - new works to improve the service level	In meeting desired Council outcomes and working to achieve its vision, Council may invest in additional facilities and/or upgrade existing assets. There will be changing service level requirements because of new technology, changing legislative requirements and resource consent requirements.
Capital - new works to accommodate growth	Capital expenditure to accommodate growth in resident population and business activity.

7.8 Funding of Capital Expenditure

Council funds capital expenditure from borrowing and then spreads the repayment of that borrowing over several years. This enables Council to match best the charges p laced on the community against the period of benefits from capital expenditure.

Borrowing is managed within the framework specified in the Liability Management Policy. Utilities Managers provide advice on smoothing out variations in cash flow.

7.9 Development Contributions

Council's policy on collecting Development Contributions to fund infrastructure for growth is currently under review. Once the revised policy has been adopted by Council, this section of the Asset Management Plan will be updated accordingly.

7.10 Funding Sources

Rates are a property tax set annually by Council. Rates are one source of income the Council uses to fund projects and operating services.

Council considers the affordability of the proposed rate requirements both for the Council and ratepayers. When setting rates Council considers:

- the levels of service provided
- intergenerational issues
- other sources of funds
- legislative requirements
- external factors
- what our ratepayers can afford.

A minimal amount of investment income is generated by Council's investment in forestry assets, and this is used to offset general rates.

7.11 Insurance

Manawatū District Council is a member of LAPP (the Local Authority Protection Programme), which is a cash accumulation mutual pool that members use to assist with the cost of infrastructure repairs resulting from natural disasters. LAPP covers underground assets, but not aboveground assets such as Water Treatment Plants.

Losses on assets covered by LAPP are recovered through a split of 40% LAPP and 60% central government, with a deductible. From a membership of 40 Councils, LAPP now consists of only 26. Wellington City Council is one of the authorities that have left. There is now less risk of LAPP funds being drained by a major disaster, as happened in the aftermath of the Canterbury quake.

Council carries insurance policies itself for our aboveground assets, through our brokers Aon.

7.12 Forecast Reliability

Financial forecasts are dependent on asset valuations, which are as current and complete as possible at time of compilation. Estimates for capital work are based on historic costs, and may be subject to change depending on a number of external factors. Operational expenditure forecasts are based partly on historic costs, and partly on expectations around likely future costs (built up from zero budgets), as well as the effects of inflation.

Job	Total Year 1-10	2021/22 Total Year 1	2022/23 Total Year 2	2023/24 Total Year 3	2024/25 Total Year 4	2025/26 Total Year 5	2026/27 Total Year 6	2027/28 Total Year 7	2028/29 Total Year 8	2029/30 Total Year 9	2030/31 Total Year 10
OPEX											
Operational	97,610,317	9,490,554	9,664,537	9,815,851	9,814,515	9,813,476	9,786,697	9,791,362	9,795,097	9,817,676	9,820,552
CAPEX											
Renewal	32,808,873	5,849,351	3,322,432	2,945,316	3,532,260	3,568,508	2,824,478	2,658,705	2,670,372	2,682,208	2,755,243
New LOS	36,525,696	8,312,860	6,708,358	2,483,115	3,207,541	2,179,059	2,370,767	2,443,639	3,043,343	2,920,946	2,856,068
Growth	19,775,379	3,712,619	2,322,857	1,384,349	1,141,773	1,472,822	1,377,334	2,267,971	2,123,508	1,619,988	2,352,158
TOTAL CAPEX	**89,109,948**	**17,874,830**	**12,353,647**	**6,812,780**	**7,881,574**	**7,220,389**	**6,572,579**	**7,370,315**	**7,837,223**	**7,223,142**	**7,963,469**
GRAND TOTAL	**186,720,265**	**27,365,384**	**22,018,184**	**16,628,631**	**17,696,089**	**17,033,865**	**16,359,276**	**17,161,677**	**17,632,320**	**17,040,818**	**17,784,021**

Job	Sub Job	2021/22 Total Inflated Spend	2021/22 Year 2 (2022/23) Inflated Spend	2021/22 Year 3 (2023/24) Inflated Spend	2021/22 Year 4 (2024/25) Inflated Spend	2021/22 Year 5 (2025/26) Inflated Spend	2021/22 Year 6 (2026/27) Inflated Spend	2021/22 Year 7 (2027/28) Inflated Spend	2021/22 Year 8 (2028/29) Inflated Spend	2021/22 Year9 (2029/30) Inflated Spend	2021/22 Year10 (2030/31) Inflated Spend
TOTAL 3 WATERS	TOTAL 3 WATERS	**17,874,830**	**12,353,647**	**6,812,781**	**7,881,574**	**7,220,388**	**6,572,579**	**7,370,315**	**7,837,223**	**7,223,142**	**7,963,469**
25. Wastewater		**5,396,219**	**4,067,312**	**3,239,833**	**2,459,314**	**3,081,708**	**3,798,093**	**4,038,989**	**4,158,671**	**3,557,535**	**4,768,689**
2501. Wastewater Management		**3,385,535**	**1,686,855**	**1,253,661**	**1,259,151**	**931,755**	**121,970**	**176,789**	**0**	**0**	**0**
250102 - Wastewater Harmonised		**3,385,535**	**1,686,855**	**1,253,661**	**1,259,151**	**931,755**	**121,970**	**176,789**	**0**	**0**	**0**
WW3004 - WW Centralisation - Renewal	001. WW Centralisation - renewal projects	1,560,756	0	0	0	0	0	0	0	0	0
WW3004 - WW Centralisation - Renewal	009. WW Centralisation - Rongotea to Awahuri Road	1,824,779	0	0	0	0	0	0	0	0	0
WW3004 - WW Centralisation - Renewal	015.Cheltenham to Feilding	0	1,686,855	0	0	0	0	0	0	0	0
WW3004 - WW Centralisation - Renewal	016. Kimbolton to Cheltenham	0	0	1,000,587	1,029,211	0	0	0	0	0	0
WW3004 - WW Centralisation - Renewal	017. Kauwhata to Awahuri (join Rongotea pipe)	0	0	0	0	698,370	0	0	0	0	0
WW3004 - WW Centralisation - Renewal	018. Pond decommissioning	0	0	253,074	229,940	233,385	121,970	176,789	0	0	0
2502. Feilding Wastewater		**1,937,535**	**2,304,969**	**1,908,262**	**1,119,684**	**2,066,737**	**3,590,744**	**3,774,007**	**4,067,566**	**3,463,420**	**4,672,131**
250202 - Feilding Wastewater Treatment Plant		**1,306,459**	**1,425,561**	**1,294,604**	**63,224**	**347,661**	**1,907,729**	**1,941,734**	**2,459,791**	**2,377,971**	**2,287,964**
WW2002 - Feilding Wastewater Treatment Plant	001. Feilding WWTP Asset Renewal	57,475	59,303	61,206	63,224	65,374	67,074	69,284	71,572	73,937	75,856
WW2002 - Feilding Wastewater Treatment Plant	520.WWTP Reconsenting	0	862,729	904,840	0	0	0	0	0	0	0
WW2002 - Feilding WWTP Asset Renewal	036. Pump and Mechanical replacements	0	0	0	0	70,436	72,267	74,649	77,114	79,662	81,729
WW2002 - Feilding WWTP Asset Renewal	201. Feilding WWTP - Instrumentation and Electrics	0	0	0	0	70,977	72,822	74,592	77,055	79,601	81,667
WW2002 - Feilding WWTP Asset Renewal	505.Civil, piping and roading renewals	0	0	0	0	140,873	144,534	148,774	153,686	158,764	162,885
WW2013 - Feilding WWTP Upgrade	506.Pipeline Extension and Tradewaste improvements	0	0	0	0	0	1,551,032	1,574,434	2,080,363	1,986,008	1,885,826
WW2013 - Feilding WWTP Upgrade	507.Wetland Development	940,500	185,185	0	0	0	0	0	0	0	0
WW2038 - Feilding WWTP - Irrigation	511.Buffer Development Oroua River Bank	308,484	318,344	328,558	0	0	0	0	0	0	0
250204 - Feilding Wastewater Reticulation		**224,362**	**231,532**	**238,961**	**936,661**	**968,515**	**960,758**	**992,423**	**1,025,192**	**1,059,063**	**1,086,553**
WW2003 - Feilding Wastewater Reticulation	001. Feilding Wastewater Reticulation Renewals	224,362	231,532	238,961	936,661	968,515	960,758	992,423	1,025,192	1,059,063	1,086,553
250205 - Feilding Wastewater Growth		**406,714**	**647,876**	**374,697**	**119,799**	**750,561**	**722,258**	**839,849**	**582,584**	**26,386**	**1,297,614**
WW2016 - Feilding Wastewater Growth	001. Feilding Wastewater Growth	20,508	21,164	21,843	22,563	23,330	23,937	24,726	25,542	26,386	27,071
WW2016 - Feilding Wastewater Growth	101.Precinct 4 - Road 1A Churcher to Road 4	104,500	0	0	97,236	0	0	0	0	0	0
WW2016 - Feilding Wastewater Growth	102.Precinct 4 - Road 4 - Port to Roots Street	0	354,955	352,854	0	0	0	0	0	0	0
WW2016 - Feilding Wastewater Growth	106.Precinct 4 - Root St Stage 2 Rd3 to Pharazyn	0	0	0	0	176,656	0	0	0	0	0
WW2016 - Feilding Wastewater Growth	108.Precinct 4 - Port Street East Churcher to Makino	0	0	0	0	0	182,955	0	0	0	0
WW2016 - Feilding Wastewater Growth	109.Precinct 4 - Road 2 Root to Reids Line	0	0	0	0	0	0	62,995	0	0	0
WW2016 - Feilding Wastewater Growth	110.Precinct 4 - Arnott Street -Stage 1 - Pharazyn Street - 41 Arnott Street	0	0	0	0	0	0	125,990	0	0	0
WW2016 - Feilding Wastewater Growth	111.Trunkmain 4 Lytton St - Marlborough to Kimbolton	0	0	0	0	0	515,366	0	0	0	0
WW2016 - Feilding Wastewater Growth	112.Trunkmain 6 Russell/Carthew/Railway	0	0	0	0	0	0	0	0	0	622,225
WW2016 - Feilding Wastewater Growth	118.Trunkmain 2 Denbigh/Kimbolton	0	271,757	0	0	0	0	0	0	0	0
WW2016 - Feilding Wastewater Growth	119.Trunkmain 3 Kimbolton Rd - Derby to Lytton	0	0	0	0	550,575	0	0	0	0	0
WW2016 - Feilding Wastewater Growth	120.Precinct 4 West trunk sewer upgrades	0	0	0	0	0	0	0	557,042	0	593,142
WW2016 - Feilding Wastewater Growth	123.Trunkmain 1 Carthew Railway to Denbigh	281,706	0	0	0	0	0	0	0	0	0
WW2016 - Feilding Wastewater Growth	124.Trunkmain 5 Kimbolton Rd Lytton to North	0	0	0	0	0	0	626,139	0	0	0
WW2016 - Feilding Wastewater Growth	125.Precinct 4 - Road 2	0	0	0	0	0	0	0	0	0	55,176
2503. Village Wastewater Schemes		**73,150**	**75,488**	**77,910**	**80,479**	**83,216**	**85,379**	**88,193**	**91,105**	**94,115**	**96,558**
250308 - Rongotea Wastewater		**5,225**	**5,392**	**5,565**	**5,749**	**5,944**	**6,099**	**6,300**	**6,508**	**6,723**	**6,897**
WW2009 - Rongotea WWTP Renewals	005. Rongotea WW Pumpstation Renewal	5,225	5,392	5,565	5,749	5,944	6,099	6,300	6,508	6,723	6,897
250310 - Himatangi Wastewater		67,925	70,096	72,345	74,731	77,272	79,281	81,894	84,598	87,393	89,661
WW2012 - Himatangi Wastewater	001. Wastewater asset replacement Himatangi	10,450	10,784	11,130	11,497	11,888	12,197	12,599	13,015	13,445	13,794
WW2023 - Wastewater New Connections	013. Wastewater New Connections Himatangi	57,475	59,312	61,215	63,234	65,384	67,084	69,295	71,583	73,948	75,867
26. Stormwater and Drainage		**3,779,943**	**2,069,687**	**1,013,685**	**1,048,720**	**1,173,512**	**1,028,390**	**1,898,380**	**2,221,934**	**2,234,895**	**1,592,476**
2601. Stormwater Management		**574,781**	**595,363**	**612,181**	**632,367**	**743,000**	**670,933**	**715,497**	**804,197**	**770,909**	**795,059**
260102 - Stormwater Harmonised		**574,781**	**595,363**	**612,181**	**632,367**	**743,000**	**670,933**	**715,497**	**804,197**	**770,909**	**795,059**
ST2001 - Stormwater - District wide new	006. Sanson-Dundas/Milne/Phillips Stormwater Upgrade	313,531	0	306,106	316,200	0	0	0	0	0	0
ST2001 - Stormwater - District wide new	007. Rongotea-Trent to Thames Stormwater Upgrade	0	325,763	306,075	316,168	0	0	0	0	0	0
ST2001 - Stormwater - District wide new	011. Himatangi Beach Stormwater design & build	261,250	269,600	0	0	0	0	0	0	0	0
ST2001 - Stormwater - District wide new	101.Feilding Carthew to Mahinui	0	0	0	0	0	0	268,208	439,751	670,045	691,576
ST2001 - Stormwater - District wide new	102.School Drain Rongotea	0	0	0	0	416,080	335,515	352,797	364,446	100,864	103,483
ST2001 - Stormwater - District wide new	103.Recreation St Tangimoana	0	0	0	0	89,160	91,478	0	0	0	0
ST2001 - Stormwater - District wide new	104.Nuku St Tangimoana	0	0	0	0	148,600	0	0	0	0	0
ST2001 - Stormwater - District wide new	105.Halcombe Rd Culvert	0	0	0	0	0	243,940	94,493	0	0	0
ST2001 - Stormwater - District wide new	106.Discharge quality improvements	0	0	0	0	89,160	0	0	0	0	0

2602. Feilding Stormwater		**3,205,161**	**1,474,324**	**401,504**	**416,352**	**430,512**	**357,457**	**1,182,882**	**1,417,737**	**1,463,986**	**797,417**
260204 - Feilding Stormwater		**76,907**	**79,365**	**81,911**	**84,612**	**87,490**	**89,764**	**92,722**	**95,784**	**98,948**	**101,517**
ST1011 - Feilding Stormwater	002. Stormwater New Connections Feilding	15,675	16,176	16,695	17,246	17,832	18,296	18,899	19,523	20,168	20,691
ST1013 - Feilding Stormwater	001. Stormwater Unplanned Renewals Feilding	61,232	63,189	65,216	67,367	69,658	71,468	73,824	76,261	78,781	80,826
260205 - Feilding Stormwater Growth		**3,128,255**	**1,394,959**	**319,592**	**331,740**	**343,022**	**267,694**	**1,090,160**	**1,321,953**	**1,365,037**	**695,900**
ST1009 - Feilding Stormwater Growth	201.Planning ,designation, and design	20,900	21,568	22,260	22,994	23,776	24,394	25,198	26,030	26,890	27,588
ST1009 - Stormwater Growth Feilding	202.Precinct 5 - Turners upgrades	156,750	161,760	0	0	0	0	0	0	0	0
ST1009 - Stormwater Growth Feilding	203.Precinct 5 Culverts to WWTP	156,750	161,760	0	0	0	0	0	0	0	0
ST1009 - Stormwater Growth Feilding	205.Precinct 5 - Kawakawa and new road (ITM) upgrades	0	0	0	0	0	0	0	0	336,125	344,153
ST1009 - Stormwater Growth Feilding	206.Precinct 4 - Attenuation	494,855	510,671	0	0	0	0	0	0	0	0
ST1009 - Stormwater Growth Feilding	207.Precinct 4 - Root Street - Churcher to Makino	418,000	431,360	0	0	0	0	0	0	0	0
ST1009 - Stormwater Growth Feilding	208.Precinct 4 - Road 1A Churcher to Road 4	313,500	0	0	0	0	0	0	0	0	0
ST1009 - Stormwater Growth Feilding	209.Precinct 4 - Road 4 Port to Roots Street	0	107,840	111,300	0	0	0	0	0	0	0
ST1009 - Stormwater Growth Feilding	210.Precinct 4 - Road 1B From Road 4 to Road 3	0	0	186,032	0	0	0	0	0	0	0
ST1009 - Stormwater Growth Feilding	212.Precinct 4 - Root St Stage 1B Hauranga to Rd3	0	0	0	308,746	0	0	0	0	0	0
ST1009 - Stormwater Growth Feilding	213.Precinct 4 - Root St Stage 2 Rd3 to Pharazyn	0	0	0	0	319,246	0	0	0	0	0
ST1009 - Stormwater Growth Feilding	215.Precinct 4 - Road 2 Roots to Reids Line	0	0	0	0	0	243,300	0	0	0	0
ST1009 - Stormwater Growth Feilding	216.Precinct 4 - Arnott Street - Stage 1 - Pharazyn Street - 41 Arnott Street	0	0	0	0	0	0	125,990	0	0	324,159
ST1009 - Stormwater Growth Feilding	217.Precinct 4 - Arnott Street - Stage 2 - 41 Arnott Street to Reid Line West	0	0	0	0	0	0	0	325,375	0	0
ST1009 - Stormwater Growth Feilding	218.Precinct 4 West attenuation north of Makino road	0	0	0	0	0	0	938,972	0	0	0
ST1009 - Stormwater Growth Feilding	219.Precinct 4 West Makino Outlet and drainage reserves	0	0	0	0	0	0	0	970,548	0	0
ST1009 - Stormwater Growth Feilding	220.Precinct 4 West pipe from Makino Rd to Makino Stream	0	0	0	0	0	0	0	0	1,002,022	0
ST1009 - Stormwater Growth Feilding	221. Land purchase from deliberations	1,567,500	0	0	0	0	0	0	0	0	0
28. Water Supply		**8,698,668**	**6,216,648**	**2,559,263**	**4,373,540**	**2,965,168**	**1,746,096**	**1,432,947**	**1,456,618**	**1,430,712**	**1,602,304**
2802. Feilding Water Supply		**3,385,699**	**1,142,834**	**1,313,435**	**3,016,865**	**1,517,031**	**1,581,827**	**1,260,568**	**1,250,130**	**1,213,122**	**1,377,724**
280202 - Feilding Water Treatment Plant		**1,779,398**	**53,063**	**54,765**	**338,247**	**352,138**	**361,291**	**61,993**	**64,040**	**66,156**	**67,873**
WS2001 - Feilding Water Treatment Plant	001. Feilding WTP Asset Renewals	1,047,898	53,063	54,765	56,571	58,495	60,015	61,993	64,040	66,156	67,873
WS2001 - Feilding WTP Renewals	016. Campbell/Newberry Bore Treatment Upgrade	731,500	0	0	0	0	0	0	0	0	0
WS2001 - Feilding WTP Renewals	111.Dispose of Almadale WTP and pipelines	0	0	0	281,677	293,643	301,276	0	0	0	0
280204 - Feilding Water Supply Reticulation		**1,428,651**	**809,749**	**568,609**	**1,988,383**	**785,654**	**833,153**	**860,612**	**967,119**	**918,401**	**951,207**
WS2002 - Feilding Water Supply Reticulation	001. Feilding Water Reticulation Asset Renewals	225,595	232,805	240,274	708,077	732,158	778,266	803,917	908,551	857,899	882,237
WS2025 - Feilding Water Supply Reticulation	010. New Water Connections Waituna West	0	0	0	0	0	0	0	0	0	6,897
WS2025 - Water Supply New Connections	003. New Water Connections Feilding	15,675	16,176	16,695	17,246	17,832	18,296	18,899	19,523	20,168	20,691
WS2029 - Feilding Water Supply Reticulation	004. Feilding - Fraser Dr Reservoir - Dedicated Rising Main	738,031	0	0	0	0	0	0	0	0	0
WS2071 - District Wide service level improvements	002.District Wide water metering and backflow	31,350	32,352	33,390	34,491	35,664	36,591	37,797	39,045	40,335	41,382
WS2071 - District Wide service level improvements	003.Kawakawa Road watermain extension	418,000	0	0	0	0	0	0	0	0	0
WS2075 - Feilding Reticulation Improvements	001.Feilding water strategy Trunkmain Resilence	0	528,416	278,250	1,228,569	0	0	0	0	0	0
280205 - Feilding Water Supply Growth		**177,650**	**280,023**	**690,060**	**690,234**	**379,239**	**387,383**	**337,962**	**218,971**	**228,565**	**358,644**
WS2024 - Feilding Water Supply Growth	004. Feilding - Precinct 4 Water Supply - Pharazyn St Rider Main (FG13638 to Roots St)	20,900	21,568	22,260	22,994	23,776	24,394	25,198	26,030	26,890	27,588
WS2024 - Feilding Water Supply Growth	201.Precinct 4 - Road 1A Churcher to Road 4	104,500	0	0	0	0	0	0	0	0	0
WS2024 - Feilding Water Supply Growth	202.Precinct 4 - Root Churcher to Makino	0	0	445,200	459,880	0	0	0	0	0	0
WS2024 - Feilding Water Supply Growth	203.Precinct 4 - Root St Stage 1A -Churcher to Road 4	0	0	111,300	114,970	0	0	0	0	0	0
WS2024 - Feilding Water Supply Growth	204.Precinct 4 - Road 1B Rd4 to Rd3	0	0	111,300	0	0	60,985	0	0	0	0
WS2024 - Feilding Water Supply Growth	205.Precint 4 - Root St St 3B - Road 1 to Root Steet	0	0	0	92,390	0	0	0	0	0	0
WS2024 - Feilding Water Supply Growth	206.Precinct 4 - Root St Stage 2 Rd3 to Pharazyn	0	0	0	0	177,143	0	125,990	0	0	0
WS2024 - Feilding Water Supply Growth	208.Precinct 4 - Road 2 Root to Reids Line	0	0	0	0	0	120,763	0	0	0	0
WS2024 - Feilding Water Supply Growth	210.Precint 4 - Arnott Street - Stage 2 - 41 Arnott Street to Reid Line West	0	0	0	0	0	0	0	0	0	331,056
WS2024 - Feilding Water Supply Growth	212.Precinct 5 existing roads	0	0	0	0	178,320	181,241	186,774	192,941	201,675	0
WS2024 - Feilding Water Supply Growth	213.Precinct 2 Sandon/Ranfulry pressure booster	**52,250**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
WS2024 - Feilding Water Supply Growth	219.Precinct 4 - Road 4 - Port to Roots Street	**0**	**258,455**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2803. Village Water Supply Schemes		**28,952**	**1,086,171**	**1,159,176**	**1,238,194**	**1,323,961**	**33,792**	**34,906**	**36,058**	**37,249**	**36,147**
280308 - Rongotea Water Supply		**6,589**	**6,799**	**7,017**	**7,249**	**7,495**	**7,690**	**7,944**	**8,206**	**8,477**	**6,628**
WS2040 - Rongotea Water Supply	004. Water Unplanned Renewals - Rongotea	6,589	6,799	7,017	7,249	7,495	7,690	7,944	8,206	8,477	6,628
280309 - Sanson Water Supply		**5,225**	**5,392**	**5,565**	**5,749**	**5,944**	**6,099**	**6,300**	**6,508**	**6,723**	**6,897**
WS2040 - WS Unplanned Renewals-Villages	003. Water Unplanned Renewals - Sanson	5,225	5,392	5,565	5,749	5,944	6,099	6,300	6,508	6,723	6,897
280310 - Himatangi Beach Water Supply		**17,138**	**1,073,980**	**1,146,594**	**1,225,196**	**1,310,521**	**20,003**	**20,662**	**21,345**	**22,050**	**22,622**
WS2004 - Himatangi Beach Water Supply	001. Himatangi Beach Water Reticulation Renewals	11,913	12,294	12,688	13,107	13,552	13,905	14,363	14,837	15,327	15,725
WS2023 - Himatangi Water Supply New Wk	101.New pipeline to Himatangi from ORWS	0	1,056,294	1,128,340	1,206,341	1,291,025	0	0	0	0	0
WS2040 - WS Unplanned Renewals-Villages	002. Water Unplanned Renewals - Himatangi Beach	5,225	5,392	5,565	5,749	5,944	6,099	6,300	6,508	6,723	6,897

2804. Rural Water Supply Schemes		**5,284,017**	**3,987,643**	**86,653**	**118,482**	**124,176**	**130,477**	**137,474**	**170,430**	**180,340**	**188,433**
280413 - Stanway/Halcombe Rural Water Supply		**634,822**	**3,968,404**	**66,797**	**97,328**	**101,946**	**107,669**	**113,914**	**146,092**	**155,198**	**162,638**
WS2007 - Stanway/Halcombe Rural Water Supply	001. Stanway/Halcombe RWS Intake & Capacity Improvements	44,078	58,428	49,172	78,789	82,420	87,245	92,388	123,387	131,129	137,292
WS2025 - Water Supply New Connections	009. New Water Connections Stanway/Halcombe	2,090	2,157	2,226	2,299	2,378	2,439	2,520	2,603	2,689	2,759
WS2039 - Stanway/Halcombe Rural Water Supply	001. Stanway/Halcombe RWS Intake & Capacity Improvements	13,904	14,629	15,398	16,240	17,148	17,984	19,006	20,102	21,380	22,588
WS2041 - Stanway/Halcombe New Works	101.Separate Halcombe for Reureu and expansion of Stanway plus Reureu	0	3,677,511	0	0	0	0	0	0	0	0
WS2041 - Stanway/Halcombe WTP New Works	103.Stanway-Halcombe new line through Lilburn	313,500	0	0	0	0	0	0	0	0	0
WS2041 - Stanway/Halcombe WTP New Works	104.Stanway-Halcombe Makino Rd Link main	0	215,680	0	0	0	0	0	0	0	0
WS2041 - Stanway/Halcombe WTP New Works	105.Stanway-Halcombe Loop Pipe Main	261,250	0	0	0	0	0	0	0	0	0
280416 - Waituna West Rural Water Supply		**18,371**	**19,239**	**19,856**	**21,154**	**22,231**	**22,808**	**23,560**	**24,338**	**25,142**	**25,795**
WS2008 - Waituna West Rural Water Supply	001. Waituna West RWS Planned Renewals	13,146	13,847	14,291	15,406	16,287	16,710	17,261	17,831	18,420	18,898
WS2025 - Water Supply New Connections	010. New Water Connections Waituna West	5,225	5,392	5,565	5,749	5,944	6,099	6,300	6,508	6,723	6,897
280423 - Ohakea RWS		**4,630,824**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
WS2060 - Ohakea RWS New Works	001.	4,630,824	0	0	0	0	0	0	0	0	0

Ōhakea Water: 10.88M project, balance of this project will be delivered in 2021/2022. This project is funded externally by the Crown.
Wastewater Centralisation: NZDF to MWWTP approx. 3.2M to contribute to the project.
Dia funding grant of 5.4M approved for 3 waters projects.

8. IMPROVEMENT AND MONITORING

Improvement actions have been collated in this section from the individual sections of the activity management plan (AMP) document.

The improvement items indicated should be able to be completed within proposed funding allocations during the next three-year period. During that time the actions will be prioritised, investigated and progressed in order to be completed before the next long term plan (LTP) submission.

8.1 Monitoring Performance

The Utilities Manager is responsible for the planning and delivery of asset management practices. The Council practices seek to follow the industry standard as set out in the International Infrastructure Management Manual (IIMM).

The asset register has known data completeness and integrity limitations, which include (but are not limited to):

- Assets from contracts completed in the last 5 years that have not been added to the register due to process constraints in Council's asset capitalisation and financial reconciliation processes
- Missing or inadequately classified Treatment Plant assets (water and wastewater activities)
- Missing or inadequately classified assets constructed by the MDC Operations Team through renewal and capital projects managed by this part of Council
- Missing spatial data for schemes other than Feilding
- Inaccurate attribute data. For example:
  - Construction date information pre 2000 is understood to have been estimated solely from pipe material information rather than from asbuilts or other Council records
  - Asset fields are defined when an asset is constructed, but are not updated to reflect up to date subsequent condition and performance information.

The above are recognised limitations, and in some cases action is already being undertaken to address the issue.

8.2 Improvement Plan

It is important that Infrastructure recognise areas of their AMP and planning process that require future improvements to ensure effective asset management and informed decision making. The improvement plan generated from the Asset Management Plan is shown in the table below.

Improvement Plan

Asset Management Plan Structure Reference	Improvement Action & Scope	Rationale and/or Outcome
Framework	Strategic review of: • Asset Management Policy. A draft has previously been developed, but never progressed • Asset Management Plan objectives	Reconfirm the strategic direction for Asset Management Practices & the next iteration of the Asset Management Plan
	Define target level of asset management maturity	
	Review current structure of a 3 Waters Plan versus 3 standalone plans	
Levels of Service	Review the monitoring & reporting regime for the current performance measures. E.g. • Ozone vs Assetfinda data recording & analysis process • Availability of data requirements to report on all measures e.g. water loss & demand	Improve practice & address information gaps
	Review & identify opportunities for trend monitoring of performance measures	Improve practice
Growth & Demand	Revisit demand forecasts for the 3 Waters	Address information gap
	Review & identify opportunities for trend monitoring	Confirm works programme & improve practice
Risk Management	Risk register review	Ensure practice remains relevant
	Integrate annual Water Safety Plan review outcomes into the Asset Management Plan.	Ensure practice remains relevant
	Monitor industry changes & opportunities: E.g. outcomes of review into Havelock North water supply contamination	Planning for change
Lifecycle Management	Renewals – Develop a targeted renewals programme	Focus on identifying critical assets and increasing data confidence
	Renewals – Review & identify opportunities for trend monitoring	Track impacts of current strategy adopted in LTP
	Operations & Maintenance – Improve documentation	Address known issues & Improve practice
	Operational service reliability data	Improve practice and address information gaps
Asset Management Practices	Asset Register data validation	Address known issues & Improve practice
	Capitalisation process	Address known issues & Improve practice
	Valuation process	Address known issues & Improve practice

8.3 Monitoring and Review Procedures

This AMP will be reviewed during the annual budget planning process and revised to show any material changes in service levels, risks, forecast costs and proposed budgets as a result of budget decisions.

The AMP will be reviewed and updated annually to ensure it represents the current service level, asset values, forecast operations, maintenance, renewals, upgrade/new and asset disposal costs and proposed budgets. These forecast costs and proposed budget are incorporated into the Long-Term Financial Plan or will be incorporated into the Long-Term Financial Plan once completed.

The AMP has a maximum life of 4 years and is due for complete revision and updating within 2023 financial year.

8.4 Performance Measures

The effectiveness of this Asset Management Plan can be measured in the following ways:

- The degree to which the required forecast costs identified in this Asset Management Plan are incorporated into the long-term financial plan,
- The degree to which the 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the Asset Management Plan,
- The degree to which the existing and projected service levels and service consequences, risks and residual risks are incorporated into the Strategic Plan and associated plans.

8.5 Asset Valuation

An internal MDC valuation of 3 Waters assets is completed annually. The latest valuation is as the MDC "Infrastructural Assets Valuation Report 2019, Water, Wastewater and Stormwater Asset Groups, Valuation as at 1 July 2019" and summary asset values are set out in the Financial Summary.

The valuation is completed in accordance with the New Zealand Infrastructure Asset Valuation and Depreciation Guidelines and key assumptions are that:

- Depreciation follows a straight line
- The replacement cost for pipes has been assumed to be a function of diameter and the use of a modern equivalent material where appropriate
- Unit rates are set by Asset Management Officer.

The valuation is subject to the limitations of the asset register. Additionally, reviews of the valuation process in recent years have highlighted limitations around:

- The setting of unit rates
- Classification of assets, and groups of assets, for the valuation process
- Absence of benchmarking with other local authorities
- Timeliness of the delivery of the annual valuation.

The above are recognised limitations, and in some cases action is already being undertaken to address the issue.

Appendix 1

Infrastructural Assets Valuation Report 2019

Water, Wastewater and Stormwater Asset Groups

Valuation as at 1 July 2019

Prepared by:

Manawatu District Council
Utilities Asset Management Team
135 Manchester Street, Private Bag 10 001, Feilding 4740
Telephone 06 323 0000, Facsimile 06 323 0822

Version: Final

Contents

1 Declaration of Valuation

The purpose of the 2019 valuation completed by Manawatu District Council (MDC) is for reporting asset values in financial statements.

This 2019 valuation report covers the following asset groups as at 1 July 2019:

- Water Treatment Plants, Intake Structures, Pumping Stations, Reservoirs and Reticulation;
- Wastewater Treatment Plants, Pumping Stations and Reticulation; and
- Stormwater Reticulation and Pumping Stations.

MDC certify that the valuations summarised below have been completed in accordance with the following standards and are suitable for inclusion in the financial statements for the year ended 1 July 2019;

- New Zealand Infrastructure Asset Valuation and Depreciation Guidelines – Edition 2.0 (2006); and
- Public Benefit Entities Property, Plant and Equipment (IPSAS) 17

The valuations are based on accurate and complete asset registers with appropriate replacement costs and effective lives. The basis of the data inputs is described in detail in the attached report.

The standard lives are derived in part from New Zealand Infrastructure Asset Valuation and Depreciation Guidelines – Edition 2.0. In certain cases these standard lives have been modified where a different value due to environmental or economic factors is more appropriate.

The component level of the data used for the valuation is sufficient to calculate depreciation separately for those assets that have different useful or remaining lives; or to a level where the sub-components are largely maintained from non-capital budgets.

Table 1-1 presents the total valuation for the above asset groups.

Table 1-1 Summary of Asset Values as 1 July 2019

Class Group	Replacement Value	Depreciated Replacement Value	Annual Depreciation Value
Water	$120,018,675	$61,607,128	$1,709,914
Wastewater	$119,543,793	$77,541,263	$2,017,766
Stormwater	$68,294,000	$38,973,120	$627,435
Total	**$307,856,468**	**$178,121,511**	**$4,355,115**

The opening depreciated value of this valuation report is compared with the closing depreciated value from the annual report to show the gross movement in value in Table 1-2

Table 1-2 Gross Annualised Movement in Depreciated Value

Class Group	Depreciated Value (000's)	Depreciated Value (000's)	Gross Movement
	1-Jul-18	1-Jul-19	
Water	$55,087,821	$61,607,128	11.8%
Wastewater	$74,089,218	$77,541,263	4.7%
Stormwater	$32,855,964	$38,973,120	18.6%
Total	**$162,033,003**	**$178,121,511**	**9.9%**

This table presents the 12-month change in depreciated value since the previous valuation report. It includes all growth, renewals, and depreciation and inflation adjustments to the networks. A discussion and analysis of factors contributing to the movement observed in Table 1-2 is included in section 6.2. The observed movement of 9.9% is believed to be fair and reasonable.

Table 1-3 Movement in Depreciated Value Due to Rate Adjustments and Data Validation

Class Group	Depreciated Value(000's)[1]	Depreciated Value (000's)	Gross Movement
	30-Jun-19	1-Jul-19	30/6/2019 – 1/7/2019
Water	$53,595,370	$61,607,128	14.9%
Wastewater	$75,308,884	$77,541,263	3.0%
Stormwater	$33,388,959	$38,973,120	16.7%
Total	**$162,293,213**	**$178,121,511**	**9.8%**

Table 1-3 highlights the movement of the depreciated value of the utility networks attributed to changes in the unit rate and price indices. The unit rates for all utility asset components have been set by WSP Opus Consultants Ltd (Infrastructural Assets Valuation Addendum 2018 - Water, Wastewater and Stormwater Asset Groups, 2019) and these rates were applied to the asset register.

MDC confirms that the valuation outputs are sufficient for the intended use.

[1] End of financial year book values as set out in the audited 2019 Annual Report (excluding Work in Progress)

.... Date 6-11-2019

James Torrie
Asset Management Officer, Manawatu District Council

.... Date 6-11-2019

Darryn Black
Asset Management Team Leader, Manawatu District Council

.... Date 4/12/2019

Glenn Young
Utility Manager, Manawatu District Council

.... Date 4/12/19

Hamish Waugh
General Manager- Infrastructure, Manawatu District Council

2 Introduction

2.1 Purpose of Valuation

The purpose of the valuation is for reporting asset values in the financial statements of MDC in accordance with Generally Accepted Accounting Practice (GAAP).

This valuation report has been structured as per the recommendation of the New Zealand Infrastructure Asset Valuation and Depreciation Guidelines – Edition 2.0 (2006).

This valuation shall not be used for any other purposes other than those stated without authorisation of the General Manager- Infrastructure, MDC.

2.2 Financial Reporting Standards

The valuation has been based on PBE IPSAS 17 Property, Plant and Equipment issued September 2014 and incorporates amendments to 31 January 2017.

The valuation methodology has been in accordance with the New Zealand Infrastructure Asset Valuation and Depreciation Guidelines – Edition 2.0 (2006).

2.3 Name, Qualifications & Relevant Experience of Valuer

The 2019 valuation has been undertaken by James Torrie, MDC Asset Management Officer. Mr Torrie has a Bachelor of Mechanical Engineering from Auckland University and has 18 years' asset management and valuation experience in local authorities.

Overseeing the valuation process is Glenn Young, MDC Utilities Manager.

Note that the report has been subject to peer review.

2.4 Date at which the Valuation is Applicable

The date of the current valuation is 1 July 2019 and has been subjected to an external review.

The date of the previous valuation is 1 July 2018.

The date of the previous external peer review valuation is 1 July 2016.

2.5 Report of Peer Review

For the 2019 valuation a review of the new unit rates provided by WSP Opus was conducted by Brian Smith. This report is attached as Report of the Peer Review on Appendix F below.

2.6 Recommendations of Audit NZ

The Audit NZ report to Council (Audit New Zealand 2019) reiterates their recommendations from previous reports. While some progress has been made, they hope progress continues to reduce the complexity and frequency of the valuation process. Management has this recommendation under consideration and their decision can be reviewed when it is available.

3 Scope of Valuation

In this report we consider non-current tangible assets that are used in the production or supply of goods and service only.

The scope of the valuation encompasses assets MDC maintain as part of the provision of water, wastewater and stormwater services *inclusive* of:

- Pipelines;
- Treatment plants;
- Reservoirs;
- Resource consents;
- Service fittings;
- Open Drains in Rural Drainage Schemes and within Urban boundaries
- Buildings relating to the provision of water services; and

The scope of the valuation excludes:

- Land associated with the provision of water services.
- Items classified as inventory
- The value of work on projects that are still in progress; and
- Registered easements.

4 Valuation Process

4.1 Data Sources

Council uses the AssetFinda Asset Management System (AMS) as its register for water, wastewater and stormwater assets. AssetFinda AMS was adopted by MDC in 2014.

New capital and renewal data since the date of the previous valuation is added incrementally to the AssetFinda system at the completion of a project, service work order or other job requiring the creation or disposal of assets.

The basis for the addition of new data is as built contract drawings and record sheets from maintenance contractor field reports. These are matched against financial records to ensure all new assets are accounted for in the valuation at the purchase price.

4.2 Data Verification Process

Pre-valuation data checks are undertaken to verify input data is included in the report appendices.

Source data from construction contracts, projects and maintenance reports are used when editing the asset register to ensure each component is given a valid description, an installation date, spatial location, quantity, dimensions and purchase cost.

Before running the valuation the newly calculated unit rates are reviewed by staff, and an audit made to ensure the assets have valid dates, material types commensurate with their age, ownership and assessment of any impairment.

4.3 Significant Assumptions

A description of assumptions is included in the report appendices. In summary:

- Work in progress has not been included in the valuation;
- GIS database has been used to determine asset quantities for reticulation assets;
- Replacement costs for pipes are a function of diameter, material and surface environment along with contract costs and the comparison made by WSP Opus with industry standard costs. The pricing assumptions are set out in Section 4.5.
- There are no known instances of asset impairment at 1 July 2019.

4.4 Optimisation Process

This valuation employs 'incremental or progressive optimisation' to account for the sub-optimality compared to a 'greenfield' approach. Pipe materials and some service valves are optimised for obsolescence utilising Modern Equivalent Assets approach. A list of obsolete components is identified during the analysis of standard component unit rates. Opportunity for further optimisation has not been identified for the 2019 valuation.

4.5 Process for Establishing Unit Rates

New unit rates are set at each valuation. For the 2019 valuation the council engaged consultants WSP OPUS Ltd to evaluate and provide a unit rate for each asset component used by the asset register.

Actual construction costs provide the best basis for setting the unit cost rates for valuation. Recent construction costs from similar local authorities have been applied to the water, wastewater and stormwater reticulation rates. MDC supplied aggregated unit rate information from previous contracts. These were used in valuation and compared to recent construction costs of similar local authorities.

In the absence of suitable local cost data, changes in construction cost indices provide a suitable alternative indication of likely movement in asset value. The Capital Goods Price Index (CGPI) provides a measure of the price level for the physical assets. To measure the change in capital costs WSP chose the pipeline construction Statistics New Zealand (SNZ) capital goods price index (S2CB) to reflect the price movement for water and drainage infrastructure. Between 2018 and 2019 the index has increased by 2%, this is based off the June 2019 indices.

The MDC pipeline cost rates were adjusted to provide better uniformity with increasing diameters.

4.5.1 Comparison with Other Local Authorities

In comparison to the current cost rates used by other local authorities, MDC's previously used cost rates are low. Applying the CGPI to those rates brought them into good alignment with the current cost rates of other local authorities.

4.6 Process for Establishing Standard Useful Lives

The useful life of an asset is defined in NZ IPSAS 17, paragraph 13 as being either;

- The period over which an asset is expected to be available for use by an entity; or
- The number of production or similar units expected to be obtained from the asset by an entity.

NZ IPSAS 17 paragraph 72 states that the following factors need to be considered in determining the useful life of an asset:

- Expected usage of the asset. Usage is assessed by reference to the asset's expected capacity or physical output.
- Expected physical wear and tear, which depends on operational factors such as the number of shifts for which the asset is to be used and the repair and maintenance program, and the care and maintenance of the asset while idle.
- Technical or commercial obsolescence arising from changes or improvements in production, or from a change in the market demand for the product or service output of the asset.
- Legal or similar limits on the use of the asset, such as the expiry dates of related leases.

For this valuation, all component types are allocated a standard useful life that closely aligns with the recommendations of the NAMS Valuation guidelines, and also from the experience of Council engineers. Generally there has been systematic consideration of economic or operational factors that may apply to individual asset lives.

This is identified as an area for improvement and work is being undertaken within the limitations of the management software to implement additional factors in future valuations.

Standard useful lives for each component type are detailed in the E-4 Common Unit Rates

4.7 Restoration, Dismantling or Removal costs of Assets

There are no assets in this valuation which have a residual value applied.

Where a renewal on brownfields sites occur, the cost of site restoration, dismantling and re-establishment is included in the construction cost of the new asset, which will impact on the calculation of future standard unit costs.

Council is aware of some treatment plant facilities that will be redundant in the next 5 years as it pursues a policy of centralising sewage treatment at its Feilding site. There may be some site remediation required which could be capitalised and depreciated if deemed appropriate.

5 Depreciation Methodology

The depreciation methodology adopted across all asset classes covered in this report is the straight line method. This has been applied to all depreciable infrastructure assets covered in this report. Further details describing the methodology can be found in the supporting Addendum to this report. (Utilities Asset Management Team, 2019).

Assets that have been identified as non-depreciable, are flagged by and valued at replacement cost only with no contribution to annual depreciation.

5.1 Component Levels

"Each part of an item of property, plant and equipment with a cost that is significant in relation to the total cost of the item shall be depreciated separately" (PBE IPSAS 17 p59)

Assets in the water, wastewater and stormwater networks are represented at a component level that enable reasonable accounting for depreciation.

Each component type is assigned a standard baselife and replacement cost from look up tables. Asset components are structured within the AssetFinda database in a hierarchy of up to four levels.

Components	Level 1	Level 2	Level 3	Level 4
Valves, Hydrants, Manholes	Asset Type	Asset Sub Type	Diameter	Depth
Water Pipes	Material	Diameter		
Stormwater Pipes	Material	Diameter		
Wastewater Pipes	Materials	Diameter		
Plant Equipment	Asset Group	Asset Type	Asset Sub Type	
Meters, Backflows	Asset Group	Asset Type	Asset Sub Type	
Resource Consents	Asset Group	Asset Type	Asset Sub Type	

Each unique hierarchy combination has a standard replacement cost and base life which is applied to the valuation calculation.

For pipes materials there may be permutations of 'materials' to distinguish between pipe laid in the urban area versus pipe laid through rural land. This allows for separate replacement rates based on surface reinstatement costs. Eg; small diameter polyethylene pipes laid in rural land is about 1/3 the cost of the same material laid beneath asphalt.

6 Valuation Results

6.1 Summary of 2019 Valuation

A summary of the 2019 valuation is set out in Table 6-1. Table 6-2, Table 6-3 and Table 6-4 provide further detail on water, wastewater and stormwater valuations respectively.

Table 6-1 Summary of Asset Values as at 1 July 2019

Class Group	Replacement Value	Depreciated Replacement Value	Annual Depreciation Value
Water	$120,018,675	$61,607,128	$1,709,914
Wastewater	$119,543,793	$77,541,263	$2,017,766
Stormwater	$68,294,000	$38,973,120	$627,435
Total	**$307,856,468**	**$178,121,511**	**$4,355,115**

Asset_Class	Asset_Group	Quantity	Replacement Cost	Depreciated Value	Annual Depreciation
Storm_Pump_Stations	Civil		$114,917	$105,101	$1,149
	Electrical		$9,112	$8,759	$325
	Mechanical		$3,864	$1,476	$129
Stormwater_Line	Main	85,896	$48,265,095	$25,927,031	$479,238
	Service	4882	$975,694	$783,368	$12,055
	Service (Bulk)	25927	$5,484,744	$1,135,108	$68,519
	Sub Soil Drain	302	$54,740	$38,637	$1,369
	Sump Lead	225	$70,043	$47,023	$741
	Culvert	190	$423,965	$389,493	$4,246
Stormwater_Point	Inlet	40	$18,114	$17,477	$181
	Manhole	1198	$5,194,442	$3,090,540	$51,912
	Outlet	38	$18,252	$11,503	$183
	Sump	300	$525,880	$297,858	$5,258
	Wingwall	20	$17,839	$15,019	$178
	Inspection Chamber	21	$43,670	$34,072	$437
Open_Drains	Open Drain	120099	$7,008,093	$7,008,093	0
	Road Drain	18	$121	$121	$0
Grand Total			**$68,244,745**	**$38,926,734**	**$626,121**

Table 6-2 Water Valuation by Community as at July 2019

Finance Report Class	Community	Asset Class	Replacement Cost	Depreciated Cost	Annual Depreciation
Urban Water	*Feilding*	Reticulation	$76,712,589	$37,563,854	$1,008,104
		Facilities	$15,292,669	$6,211,214	$257,323
		Subtotal	***$92,005,258***	***$43,775,068***	***$1,265,427***
	Himatangi Beach	Reticulation	$3,169,061	$2,048,148	$46,696
		Facilities	$1,695,764	$803,369	$28,638
		Subtotal	***$4,864,825***	***$2,851,517***	***$75,334***
	Sanson	Reticulation	$1,626,709	$958,462	$22,853
		Facilities	$1,042,708	$820,493	$25,216
		Subtotal	***$2,669,417***	***$1,778,955***	***$48,069***
	Rongotea	Reticulation	$2,640,988	$2,503,075	$31,924
		Facilities	$1,401,624	$1,286,683	$32,420
		Subtotal	***$4,042,612***	***$3,789,758***	***$64,344***
	Urban Water Subtotal		**$103,582,112**	**$52,195,298**	**$1,453,174**
Rural Water	*Stanway Halcombe RWS*	Reticulation	$9,033,324	$5,512,718	$124,921
		Facilities	$848,514	$399,289	$23,119
		Subtotal	***$9,881,838***	***$5,912,007***	***$148,040***
	Waituna West RWS	Reticulation	$3,533,048	$2,003,979	$46,537
		Facilities	$1,391,223	$852,379	$41,124
		Subtotal	***$4,924,271***	***$2,856,358***	***$87,661***
	Oroua RWS	Reticulation	$1,220,948	$602,870	$16,482
		Facilities	$409,506	$40,595	$4,557
		Subtotal	***$1,630,454***	***$643,465***	***$21,039***
	Rural Water Subtotal		**$16,436,563**	**$9,411,830**	**$256,740**
Total			**$120,018,675**	**$61,607,128**	**$1,709,914**

Table 6-3 Wastewater Valuation by Community as at July 2019

Finance Report Class	Community	Asset Class	Replacement Cost	Depreciated Cost	Annual Depreciation
Sewerage	*Awahuri*	*Reticulation*	$144,594	$97,062	$1,446
		Pumping Stations	$84,073	$29,325	$1,608
		Facilities	$81,610	$62,531	$2,318
		Subtotal	***$310,227***	***$188,918***	***$5,372***
	Cheltenham	Reticulation	$526,861	$343,549	$5,269
		Pumping Stations	$106,241	$82,196	$3,549
		Facilities	$98,617	$68,672	$4,707
		Subtotal	***$731,719***	***$494,417***	***$13,525***
	Feilding	*Reticulation*	$57,804,362	$32,811,707	$598,587
		Pumping Stations	$601,760	$260,668	$9,346
		Facilities	$37,485,127	$27,762,437	$878,719
		Subtotal	***$95,891,249***	***$60,834,812***	***$1,486,652***
	Halcombe	*Reticulation*	$2,058,911	$1,265,430	$21,426
		Facilities	$818,051	$480,923	$46,808
		Subtotal	***$2,876,962***	***$1,746,353***	***$68,234***
	Himatangi Beach	*Reticulation*	$2,995,361	$2,752,145	$46,457
		Pumping Stations	$3,329,846	$2,808,895	$98,050
		Facilities	$3,025,520	$2,518,832	$95,346
		Subtotal	***$9,350,727***	***$8,079,872***	***$239,853***
	Kimbolton	*Reticulation*	$1,046,187	$686,848	$10,462
		Pumping Stations	$116,661	$24,006	$1,755
		Facilities	$1,126,387	$812,082	$60,698
		Subtotal	***$2,289,235***	***$1,522,936***	***$72,915***
	Rongotea	*Reticulation*	$3,585,376	$2,216,431	$36,581
		Pumping Stations	$320,203	$114,793	$5,307
		Facilities	$1,253,395	$721,426	$30,315
		Subtotal	***$5,158,974***	***$%3,052,650***	***$72,203***
	Sanson	*Reticulation*	$1,992,512	$1,098,299	$20,160
		Pumping Stations	$71,489	$17,160	$1,593
		Facilities	$870,649	$509,544	$36,815
		Subtotal	***$2,934,650***	***$1,625,003***	***$58,568***
	Total		**$119,543,793**	**$77,541,263**	**$2,017,766**

Table 6-4 Stormwater Valuation by Community as at July 2019

Finance Report Class	Community	Asset Class	Replacement Cost	Depreciated Cost	Annual Depreciation
Urban Drainage	*Cheltenham*	Reticulation	$197,344	$112,915	$1,977
		Open Drains	$2,231	$2,231	$0
		Cheltenham Subtotal	***$199,575***	***$115,146***	***$1,977***
	Feilding	Reticulation	$56,713,828	$28,557,498	$580,307
		Open Drains	$236,014	$236,014	$0
		Feilding Subtotal	***$56,949,842***	***$28,793,512***	***$580,307***
	Halcombe	Reticulation	$134,467	$105,654	$1,371
	Himatangi Beach	Reticulation	$39,885	$30,723	$456
	Kimbolton	Reticulation	$,2150	$1,350	$23
	Rongotea	Reticulation	$2,100,512	$1,494,885	$21,632
		Pumping Station	$5,741	$3,114	$38
		Open Drains	$957	$957	$0
		Rongotea Subtotal	***$2,107,210***	***$1,498,956***	***$21,670***
	Sanson	Reticulation	$1,936,416	$1,514,886	$19,697
		Pumping Station	$1,936	$1,428	$129
		Open Drains	$3,291	$3,291	$0
		Sanson Subtotal	***$1,941,639***	***$1,519,605***	***$19,826***
	Tangimoana	Reticulation	$33,292	$31,660	$368
		Pumping Station	$120,220	$110,794	$1,437
		Tangimoana Subtotal	***$153,512***	***$142,454***	***$1,805***
	Urban Drainage Subtotal		**$50,722,697**	**$26,350,281**	**$519,762**
Rural Drainage	*Oroua Downs*	Open Drains	$5,557,431	$5,557,431	$0
	Makowhai	Open Drains	$75,500	$75,500	$0
	Bainesse	Open Drains	$1,085,660	$1,085,660	$0
	Maire	Open Drains	$47,129	$45,129	$0
	Rural Drainage Subtotal		**$6,765,720**	**$6,765,720**	**$0**
Stormwater Total			**$68,294,000**	**$38,973,120**	**$627,435**

Table 6-5 Water Valuation by Component as at July 2019

Asset_Class	Asset_Group	Quantity	Replacement Cost	Depreciated Value	Annual Depreciation
Water_Plant	- Not Selected -		$49,373	$44,946	$987
	Building		$2,107,327	$1,124,491	$32,131
	Civil		$10,820,898	$3,871,442	$103,223
	Electrical		$2,503,071	$1,116,946	$106,247
	Mechanical		$6,059,415	$4,007,044	$149,895
	Valve		$541,926	$249,153	$19,915
Water_Meters	Magflow	8	$53,324	$30,897	$1,964
	Volumetric	512	$427,945	$183,355	$16,953
Water_Line	Falling Main	8935	$11,398,471	$5,154,986	$138,792
	Main	308416	$45,745,495	$25,804,094	$504,482
	Service	93328	$8,305,395	$5,753,483	$94,028
	Service (Bulk)	2867	$406,366	$274,619	$4,064
	Trunk Main	25549	$21,656,353	$8,275,619	$328,876
Water_Point	Air Valve	56	$116,289	$85,847	$2,326
	Backflow	108	$304,546	$189,391	$13,900
	Combi Valve	2	$23,746	$17,968	$475
	Combi Valve 3-Way	7	$59,389	$49,010	$1,188
	Combi Valve 4-Way	5	$36,723	$30,419	$734
	Fire Hydrant	921	$2,190,288	$1,265,378	$40,853
	Flexi Joint	4	$57,602	$52,502	$720
	Manhole	14	$104,385	$95,260	$1,047
	Node	1706	$70,777	$58,062	$858
	Sluice Valve	1791	$4,216,793	$2,625,616	$81,704
	TAP	11	$2,289	$1,479	$59
	Toby	6641	$2,481,709	$1,167,199	$53,710
	Variable Flow Meter	491	$266,762	$70,450	$10,471
	Water Sample Box	13	$12,111	$7,471	$311
Grand Total			**$120,018,677**	**$61,607,127**	**$1,709,914**

Table 6-6 Wastewater Valuation by Component as at July 2019

Asset_Class	Asset_Group	Quantity	Replacement Cost	Depreciated Value	Annual Depreciation
Sewer_Pump_Stations	Chamber		$3,364,492	$2,841,491	$99,006
	Civil		$416,647	$222,447	$8,235
	Electrical		$232,,42	$86,638	$5,151
	Mechanical		$592,929	$170,773	$8,128
	Sewer - Valve		$23,763	$15,693	$688
Wastewater_Plant	- Not Selected -		$1,690,764	$1,510,047	$33,815
	Building		$1,237,047	$827,686	$22,371
	Civil		$25,951,928	$19,944,583	$576,198
	Electrical		$3,511,076	$2,260,517	$109,850
	Mechanical		$12,093,705	$8,224,197	$404,229
	Treatment Plant		$31,802	$31,312	$159
	Valves		$243,034	$134,407	$9,548
Wastewater_Line	Gravity Main	112769	$28,830,193	$16,506,318	$288,817
	Pressure Main	28706	$3,997,971	$3,483,131	$43,726
	Pressure Service	6682	$669,679	$626,561	$7,415
	Service	30322	$6,904,579	$4,464,073	$69,178
	Service (Bulk)	31755	$7,358,609	$3,514,635	$73,586
	Trunk Main	12578	$8,699,052	$3,802,863	$85,873
	Gravity Main - Relined	3466	$918,396	$878,393	$18,368
	Trunk Main - Relined	1000	$565,216	$532,517	$11,304
Wastewater_Point	Boundary Valve Box	385	$432,915	$346,495	$16,329
	Flow Meter	2	$9,596	$8,652	$384
	Manhole	1996	$11,186,626	$6,632,570	$112,192
	Node	182	$17,832	$15,673	$333
	Pig Port	13	$8,904	$6,929	$178
	Valve	146	$544,020	$443,969	$12,598
	Valve A	16	$10,578	$8,692	$106
Grand Total			**$119,543,794**	**$77,541,262**	**$2,017,764**

Table 6-7 Stormwater Valuation by Component as at July 2019

Asset_Class	Asset_Group	Quantity	Replacement Cost	Depreciated Value	Annual Depreciation
Storm_Pump_Stations	Civil		$114,917	$105,101	$1,149
	Electrical		$9,112	$8,759	$325
	Mechanical		$3,864	$1,476	$129
Stormwater_Line	Main	85896	$48,265,095	$25,927,031	$479,238
	Main (Relined)	29	$16,159	$16,058	$202
	Service	4882	$975,694	$783,368	$12,055
	Service (Bulk)	25927	$5,484,744	$1,135,108	$68,519
	Sub Soil Drain	302	$54,740	$38,637	$1,369
	Sump Lead	225	$70,043	$47,023	$741
	Culvert	190	$423,965	$389,493	$4,246
Stormwater_Point	Inlet	40	$18,114	$17,477	$181
	Manhole	1198	$5,194,442	$3,090,541	$51,912
	Outlet	38	$18,252	$11,503	$183
	Sump	300	$525,880	$297,858	$5,258
	Wingwall	20	$17,839	$15,019	$178
	Inspection Chamber	21	$43,670	$34,072	$437
Open_Drains	Open Drain	120099	$7,008,093	$7,008,093	$0
	Road Drain	18	$121	$121	$0
Drainage_Earthworks	Earthworks		$49,257	$46,387	$1,311
Grand Total			**$68,294,001**	**$38,973,125**	**$627,433**

6.2 Comparison with Previous Valuation & Comments on Variances

The 2019 valuation is compared with the 2018 depreciated book values in Table 6-8.

Comparing the closing book value as at 30 June 2019 and the opening book value on 1 July 2019 there is an increase in book value of 9.7%. This is discussed in the context of specific movement in the water, wastewater and stormwater valuations in the following paragraphs.

Table 6-8 Gross Movement in Depreciated Value

Group	Class	Depreciated Value			Movement
		1-Jul-18	30-Jun-19	1-Jul-19	%
Water	Reticulation	$44,640,497	$43,537,737	$51,193,106	17.6%
	Facilities	$10,447,324	$10,057,633	$10,414,022	3.5%
	SubTotal	***$55,087,821***	***$53,595,370***	***$61,607,128***	***14.9%***
Wastewater	Reticulation	$39,334,176	$38,340,599	$41,271,471	7.6%
	Facilities	$31,338,718	$33,625,138	$32,932,749	-2.1%
	Pumping Stations	$3,416,324	$3,343,147	$3,337,043	-0.2%
	SubTotal	***$74,089,218***	***$75,308,884***	***$77,451,721***	***3.0%***
Drainage	Reticulation	$26,005,138	$26,539,207	$31,849,571	20.0%
	Pumping Stations	$112,442	$110,900	$115,336	4.0%
	Open Drains	$6,738,384	$6,738,852	$7,008,213	4.0%
	SubTotal	***$32,855,964***	***$33,388,959***	***$38,973,120***	***16.7%***
Total		**$162,033,003**	**$162,293,213**	**$178,031,969**	**9.7%**

6.2.1 Water Valuation

The overall movement for water is 14.9%

The overall movement is significantly more than the CGPI for Pipelines tables (4% for the 12 months to June 2019).

Unit rates for water pipes were reviewed and adjusted by external consultants. Reticulation costs for have increased substantially for the larger diameter pipes such as the 525mm trunk watermain. There has been no contract costs to base unit rates on for several years, and the adjusted cost rates brought the council's rates back in line with the market and provided better uniformity with increasing diameters.

Facilities increase by 3.5% which is closely in line with the price index of 4%.

In consideration of the above, the observed movement of 14.9% is considered reasonable.

6.2.2 Wastewater Valuation

The overall movement for wastewater is 3.0%.

The overall movement is slightly less than the CGPI for Pipelines tables (4% for the 12 months to June 2019).

Reticulation

There is an overall increase in the value of the reticulation network of 7.6%. The unit rates for small diameter (<100mm) pressure lines and large diameter (> 375mm) trunk mains were increased significantly by between 25% and 300% but they contribute to just 10% of the total network length. The pipes that make up the majority of the network (100 – 375mm ranges) however tended to rise with inflation at just 4%. All manholes, valves and boundary fittings were adjusted by a straight 4%.

Facilities

Wastewater pump stations and treatment facilities experienced a 2.1% decrease. The majority of assets received a straight 4% increase. There were minor data entry errors from 2018 that were detected and corrected.

In consideration of the above, the observed movement of 3.0 % is considered reasonable.

6.2.3 Stormwater Valuation

The overall movement for stormwater is 16.7%.

The overall movement is significantly above the CGPI for Pipelines tables (4% for the 12 months to June 2019).

Urban Reticulation

Urban pipe unit rates increased by between 18% and 50%. This resulted in an overall 20% increase for stormwater reticulation. Manholes and other point features increased by 4% across the board. This correction to pipe costs brought the council's rates back in line with the market and provided better uniformity with increasing diameters.

Open Drains & Pumping Stations

Both these asset sub classes had a 4% CGPI increase across the board applied to the unit rates. This is reflected in the overall valuation increase.

In consideration of the above, the observed movement of 16.7% is considered justified and reasonable.

6.3 Reference to the Location of Full Valuation Calculations

The full valuation calculations are stored by MDC in the AssetFinda AMS. The calculations are available on request from MDC's Asset Management Officer.

7 Disclosure Requirements

The purpose of the valuation is for reporting asset values in the financial statements of MDC.

This valuation shall not be used for any other purposes other than those stated, without authorisation of the General Manager- Infrastructure, MDC.

MDC confirms that the valuation has been prepared in accordance with the appropriate guidelines and that the outputs are sufficient for the intended use.

James Torrie
Assets Management Officer – Utilities
Manawatu District Council

17 October 2019

8 Works Cited

Audit New Zealand. (2017). *Report to Council on the Annual Audit of Manawatu District Council.*

National Asset Management Strategy. (2011). *International Infrstructure Management Manual - 2011.*

Utilities Asset Management Team. (2019). *Infrastructural Assets Valuation Addendum 2018 - Water, Wastewater and Stormwater Asset Groups.* Feilding: Manawatu District Council.

Appendix A Pre Valuation Data Checks

Pre-valuation data checks

Pre-valuation data checks performed for the 2019 valuation include:

- Confirmation that install dates correlate with the pipe materials available at the time;
- Confirmation that all new asset types have a replacement cost applied for them from recent contract rates;
- Confirmation that standard replacement costs have been determined from the correct procedure;
- Confirmation that all the completed projects have been entered into the Asset Register or are classified as "work in progress" and are excluded;
- Confirmation that assets are correctly flagged as private where applicable (private, Council Road and Park assets are automatically excluded from valuations);
- Confirmation that pipe lengths and asset quantities been calculated and updated from GIS measurements.
- Confirmation that asset condition default ratings are set to 'Not Assessed' where condition data is absent.

Appendix B Significant Assumptions

The following significant assumptions have been made for the 2019 valuation:

- **Work In Progress**

  Any capital expenditure recorded in MDC's Financial Accounts and incurred before 1 July 2019 and that was classed as work in progress at that date, has not been included in this valuation.

- **Materials**

  The replacement cost for pipes has been assumed to be a function of diameter and the use of a modern equivalent material where appropriate.

  All water pipes and fittings are PN12 rated unless otherwise stated.

- **Quantities**

  The valuation quantities for reticulation assets are based on those recorded in MDC GIS system. Treatment plant quantities are derived from construction plans or contract schedules.

- **Pricing**

  Unit rate assumptions are as set out in Appendix C.

- **Useful Lives**

  Base live assumptions are as set out in Appendix D.

- **Asset Impairment**

  As at 1 July 2019 MDC has not experienced any major natural events, nor operational damage, (malicious or accidental) that would cause asset impairment to any part of the assets covered by this report.

- **Asset Obsolescence**

  When assets have been identified as obsolete, they are flagged in the system and can be provided as a separate line item for financial reporting purposes.

Appendix C Standard Unit Rate Assumptions

Standard unit rates are available on request from MDC's Asset Management System (AssetFinda) or can be found listed in the companion Addendum for this report. (Utilities Asset Management Team, 2019)

For the 2019 Utilities Valuation MDC engaged consultants WSP Limited (formerly OPUS) to review all unit rates for updating in the AMS prior to running the valuation calculations through the AMS. This is part of the triennial peer review process. For interim years the procedure for determining new unit rates is outlined below.

- Where suitable information is available, historical contract rates are inflation adjusted for each of the previous three years and then averaged together. This 3-year average is then combined with the previous year's unit rate to define a new rate.
- Where there is an absence of recent contract data the previous unit rate is simply adjusted for inflation using a nominated GCPI.
- Where plant assets such as civil structures, electrical and piping assets are not amenable to a standard unit rate (i.e. they are a unique design or have an unspecified quantity) the purchase cost of the original asset is adjusted for inflation and recorded in the individual asset's 'optional unit rate' field. This optional unit rate overrides any standard unit rate on an asset by asset basis.
- For Plant assets, the 3 year contract average is extended to 10 years to increase the number of data points available in the calculation. Plant renewals are not as common as reticulation and there may be long periods between suitable contract data.

Note that inflation GCPI used is determined from the Local Government Construction Indices (LGCI) tables published by Berl Economics. However for 2019 WSP Ltd used a figure of 4% based on their use of the Water Pipeline GCPI for the 12 months to June 2019.

Example of Standard Unit Rate Methodology : PVC-u 150mm sewer main

There was 1.85km of PVC-u 150mm sewer main installed between 1 July 2014 and 30 June 2016. Costs were applied using the contractor schedule of rates plus any contract and council overheads applied pro rata.

LGCI tables show indices for each year as:

2014 1.8%, 2015 2.2%, 2016 1.3%

From contract data:

Year	Total Cost	Quantity (Metres)	Cumulative Price Index adjustment to 30 June 2016	Adjusted Cost	Average Cost
From 1 July 2014	$224,605.99	762.17	1.3 + 2.2 + 1.8 = 5.2%	$236,178.75	$309.88
2015	$56,183,81	203.94	1.3 + 2.2 = 3.5%	$58161.29	$285.19
2016	$218,392.96	890.27	1.3%	$221,269,46	$248.54
To 30 June 2016					
3 year Average Cost		1,856.38	Total	$515,609.51	**$277.75**

Strike a new unit rate by averaging the old unit rate with the three year average:

Asset Type	Unit Cost from 2015 valuation	Inflation	Adjusted Unit Rate	3 yr. contract average cost	New Rate	% increase
PVC-u 150	$248.57	1.3%	$251.80	$277.75	**$264.78**	7%

This new rate would then be applied to all 150mm PVC-u sewer mains (and any pipes that use this material as their modern equivalent material substitute) throughout the valuation report.

Appendix D Useful Life Assumptions

The useful life of assets is either:

a) The period over which an asset is expected to be available for use by an entity; or

b) The number of production or similar units expected to be obtained from the asset by the entity

Asset Age

All assets are required to have an installation date recorded. Where there are poor records, an assumed date is used based on the experience of staff, reference to other infrastructure in the vicinity, house construction dates and any other records that improve our knowledge of the asset.

Minimum Remaining Life

If an asset has exceeded its expected useful life, but continues to provide a service, then the valuation sets minimum remaining life equal to 2.5% of its baselife. This ensures that an asset does not depreciate below zero value. It is estimated that in 2019, utility assets worth $658K depreciated replacement cost fall into this category, contributing $24,000 to the annual depreciation.

Total Useful Life

The total useful life of an asset can be considered by the impact of physical, economic, legal or utility constraints on the asset's ability to provide a service.

Each unique asset component type is assigned a standard or typical useful life. This can be adjusted for individual assets, by considering effects of design standards, construction quality, operational stresses, maintenance history and working environment.

It is at the date of this report, rely predominately on the expected physical asset life only. Little consideration of economic or legal factors has been applied to asset groups to date.

Standard Useful Life

Below is listed the typical expected useful lives of a range of asset groups used in this valuation. They are derived from NAMS guidelines on component ages, and adjusted based on engineering experience and analysis.

Table. D-1 Water Asset Base Lives

Asset Category		Useful Lives
Pipes	Plastics	75 – 100 years
	Concretes	100 years
	Steels	60 – 110 years
	Fibre Cements	34 – 95 years (previously 60 years for all pressure classes)
Fittings	Backflow Devices	20 – 50 years
	Hydrants	50 years
	Valves	50 years
	Tobys/Meters	10 – 35 years
Plant	Civil	5 – 200 years
	Mechanical	1 – 100 years
	Electrical	2 – 65 years
	Valves	10 – 35 years
	Building	20 – 50 years

Table. D-2 Wastewater Asset Base Lives

Asset Category		Useful Lives
Pipes	Plastics	50 – 100 years
	Fibre Cements	100 years
	Ceramics/Concretes	100 years
	Metals	100 years
Fittings		
	Manholes	100 years
Buildings		50 - 100 years
Civil		10 – 100 years
Mechanical		10 – 80 years
Electrical		10 – 50 years
Valves		25 – 50 years

Table. D-3 Stormwater Asset Base Lives

Asset Category		Useful Lives
Pipes/Culverts	Plastics	40 – 100 years
	Concretes/Ceramics	100 years
	Fibre Cements	60 years
	Metals	50 years
	Earth Swales, drains	indefinite
Fittings		
	Manholes	100 years
	Sumps and Catchpits	100 years

Appendix E Common Unit Rates

Please refer to the **Infrastructural Assets Valuation Addendum 2019 –** Water, Wastewater and Stormwater Asset Groups for a full list of component unit rates and the movement since the previous valuation.

The following tables lists those older asset types with their modern equivalent material substitute (M.E.M.S).

Table. E-1 ***Water Pipe Modern Equivalent Substitutes***

Material	Diameter	Replacement Material	Replacement Diameter
ABS	150	PVC-m	150
AC	100 - 300	PVC-m	100 - 300
AC	50 - 80	PE080 (MDPE)	50
AC	450	Concrete Lined Steel	450
AC	508	PE100 (HDPE)	506
Cast Iron	50 - 80	PE080 (MDPE)	50 - 80
Cast Iron	100	PVC-m	100
Cast Iron	125	PVC-m	150
Cast Iron	150	PVC-m	150
Cast Iron	175	PVC-m	200
Cast Iron	200	PVC-o	200
Copper	12 - 50	PE080 (MDPE)	20 - 50
Galvanised Iron	15 - 50	PE080 (MDPE)	20 - 50
Galvanised Iron	150	PVC-m	150
PE063 (Alkathene)	15 - 32	PE080 (MDPE)	20 - 32
Reinforced Concrete	375	PVC-m	375
Steel	250 - 450	PVC-m	250 -450
Steel	100 - 150	Steel-Epoxy Lined	100 - 150
Steel	40 - 50	PE080 (MDPE)	40 - 50
Steel	80	Galvanised Iron	80
Unknown	100 - 300	PVC-m	100 - 300
Unknown	15 - 40	PE080 (MDPE)	20

Table. E-2 ***Water Points Modern Equivalent Substitutes***

Asset Type	Sub Type	Diameter	Width	Depth	Replacement	Rep Sub Type	Rep Diameter	Rep Width	Rep Depth
Meter	None	15	15	Surface	Meter	None	20	20	Surface
Toby	Standard	15	15	Surface	Toby	Manifold	20	20	Surface
Toby	Standard	20	20	Surface	Toby	Manifold	20	20	Surface

Table. E-3 *Wastewater Pipe Modern Equivalent Substitutes*

Material	Diameter	Replacement Material	Replacement Diameter
Asbestos	80 - 450	PVC-u	100 - 450
Concrete	100 - 300	PVC-u	100 - 300
GEW	100 - 450	PVC-u	100 - 450
None	50	PE100 PN16	50
None	90 - 375	PVC-u	100 - 375

Table. E-4 *Wastewater Points Modern Equivalent Substitutes*

Asset Type	Asset Sub Type	Diameter	Width	Depth	Rep Asset Type	Rep Asset Sub Type	Rep Diameter	Rep Width	Rep Depth
Manhole	Brick	1050	1050	< 1.5m	Manhole	Concrete	1050	1050	< 1.5m
Manhole	Brick	1050	1050	1.5m-3.0m	Manhole	Concrete	1050	1050	1.5m-3.0m
Manhole	Brick	1050	1050	Dummy Value - 99	Manhole	Concrete	1050	1050	Surface
Manhole	Concrete	0	0	Surface	Manhole	Concrete	1050	1050	Surface
Manhole	Concrete	50	50	Surface	Manhole	Concrete	1050	1050	Surface

Table. E-5 Stormwater Modern Equivalent Substitutes

Material	Diameter	RepMaterial	RepDiameter
Asbestos	80 - 200	PVC-u	90 - 200
Concrete	200	PVC-u	200
None	0	PVC-u	225
None	225	PVC-u	225
Other	0 - 225	PVC-u	100 - 225
Reinforced Concrete	0 - 375	PVC-u	100 - 375
Vitreous Clay	80 - 350	PVC-u	90 - 375
Vitreous Clay	375 - 400	Reinforced Concrete	375 - 400

All stormwater point structures are described using their modern equivalent. There are no substitutions required for this asset class.

Appendix F Report of the Peer Review

To be inserted here.

Brian Smith Advisory Services Limited

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31 October 2019

Darryn Black
Asset Management Team Leader
Manawatu District Council
Private Bag 10001
FEILDING 4743

Dear Darryn

INDEPENDENT PEER REVIEW OF MANAWATU DISTRICT COUNCIL WATER, WASTEWATER AND STORMWATER ASSETS REVALUATION DATED 1JULY 2019

This letter is to confirm that I have undertaken an independent peer review of the above valuation prepared by the Council with additional input from WSP-Opus.

The final valuation report and accompanying addendum report are dated 31 October 2019.

Scope of the Peer Review

The scope of my review included;

- Reviewing the appropriateness of the valuation methodology.
- Reviewing the valuation in terms of the applicable NZ Public Benefit Entities Financial Reporting Standards
- Reviewing the assumptions underpinning the valuation including obsolescence/optimisation, and impairment
- Reviewing the data confidence
- Reviewing asset useful lives and unit replacement rates. WSP-Opus was engaged by Council to provide additional input into asset lives and rates. I reviewed the Opus results and accompanying underlying tables.
- Review of the extent of asset componentisation and its suitability for the valuation
- Reviewing the comparative analysis between the previous valuations (2018 and 2016) and this valuation

Peer Review Methodology

In conducting this peer review I have;

- Reviewed the draft valuation report dated 16 October 2019. From this review minor queries and observations were made and supplied to Council

- Reviewed the WSP-Opus data table on unit rates. This information underpins the valuation report.

- Reviewed the final valuation report received 31 October 2019

I did not undertake any physical verification of assets.

Peer Review Findings

The main peer review discussion areas were;

- The lives of some assets (earthworks, drains, maturation pond and wetland planting)
- Council's intention to centralise sewage treatment which, when formalised, will result in the reduction of asset lives for many treatment asset components
- Data confidence

Overall I am satisfied that;

- The DRC valuation methodology and the periodic re-valuation approach is appropriate for these types of assets

- The valuation methodology follows the good practice guidance as detailed in the NAMS Valuation and Depreciation Guidelines (Second Edition)

- The table of Replacement Cost, Depreciated Replacement Cost and Annual Depreciation values presented below and in section 6.1of the final report are in compliance with the Financial Reporting Standards, specifically PBE IPSAS 17

- The valuation report provides very sound explanations of the reasons for variances from the previous valuations

- The useful lives and remaining useful lives assigned to assets are well articulated in the valuation report.

- The assumptions used in the valuation are explained in the valuation report and are appropriate for this valuation

- Unit replacement rates have been well considered for each asset group and apply a variety of methods, including comparative data, to obtain fair, reasonable and defensible rates

- The report includes reference to asset impairment, obsolescence and asset condition
- The report details the assessed data confidence. .

Peer Review Conclusion

In my opinion the Manawatu District Council Water, Wastewater and Stormwater assets valuation at 1 July 2019, as detailed in the final valuation report dated 31 October 2019;

- Has been carried out in accordance with applicable industry guidance
- Complies with applicable Financial Reporting Standards; and
- Reflects the fair value of assets as at 1 July 2019 as set out in the table below;

Valuation As at 1 July 2019	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Water	$120,018,675	$61,607,128	$1,709,914
Wastewater	$119,543,793	$77,541,263	$2,017,766
Stormwater	$68,794,000	$38,973,120	$627,435
Totals	**$307,856,468**	**$178,121,511**	**$4,355,115**

Peer Reviewer Experience

I confirm that I have sufficient experience and knowledge of this class of assets to undertake the peer review.

I am also independent of Council.

Yours faithfully

B J Smith

Brian Smith B Com CA
Principal
Brian Smith Advisory Services Limited

Infrastructural Assets Valuation Addendum 2019

Water, Wastewater and Stormwater Asset Groups

Valuation as at 1 July 2019

Prepared by:
Manawatu District Council
Utilities Asset Management Team
135 Manchester Street, Private Bag 10 001, Feilding 4740
Telephone 06 323 0000, Facsimile 06 323 0822

1. Contents

List of Tables

2. Revaluation of Assets

2.1. Replacement Cost

The replacement cost is the cost of building the asset "today". In arriving at the value, it is assumed that modern construction techniques and modern equivalent materials are used but that the physical result replaces the assets' level of service as they currently exist without increasing capacity or utility.

The formula used by AssetFinda is as follows:

$$RC = \ Unit\ Replacement\ Cost\ \times Quantity \times Unit\ Rate\ Factor$$

2.2. Unit Replacement Cost

In determining a standard unit replacement rate for each asset type, one must consider the total costs to construct the asset including staff and consultant design / supervision costs, materials, construction labour, contract variations, commissioning and ground reinstatement costs.

Historical project costs are exported from the asset management software and averaged over the preceding three years whilst applying LGCI adjustments. Where there are gaps in the historical record for some asset classes, the unit replacement cost is simply adjusted by the LGCI. Very small project are excluded from this analysis; their large cost overheads having an undue influence on the average unit cost.

Unit replacement costs are related to the unit of measurement most applicable for an asset type. For pipelines this defaults to length in metres. For facility assets the unit may be based on a length, area (hectare, m^2), volume (m^3), lump sum, or other as appropriately recorded.

Unit Replacement Costs for Utility Treatment Plants

Capital expenditure on treatment plants generally involve bespoke items rather than commercial off the shelf products. Such assets must rely solely on annually adjusting their historic purchase price by the LGCI to determine their new replacement cost, rather than using standard lookup table.

In situations where an asset (e.g. standard sensors or a small pump) is used across multiple facilities, there is sufficient price history to place reliance on unit rates.

Included Costs

The replacement rates used in the valuation include the following elements of cost:

- Material supply and delivery;
- Labour;
- Commissioning and site supervision; and
- Engineering costs for design and as-built plans.

Excluded Costs

The replacement rates used in the valuation exclude the following:

- Goods and Services Tax;
- Council corporate overheads;
- Investigation and feasibility costs; and
- Borrowing costs.

Quantities

The geometry of mapped assets allows AssetFinda to intrinsically calculate a quantity such as length or area. Unmapped assets require a quantity to be manually recorded based on some physical aspect of the asset such as length, volume, lump sum, or per unit asset.

Unit Rate Factor

The URF (default value = 1) is applied to particular assets that incur additional construction costs due to their specific environment. Typically it is used to factor in the installation and reinstatement costs due to trench depths for pipes, construction overheads for traffic management on high volume roads and the cost to restore asphaltic concrete compared to rural grassed paddocks as an example.

2.3. Depreciated Replacement Cost

Depreciated Replacement cost is the full replacement cost less allowance for physical deterioration, optimisation for obsolescence and surplus capacity. The formula is as follows:

$$DRC = (RC - Residual\ Value) \times \frac{Remaining\ Useful\ Life}{Total\ Useful\ Life} + Residual\ Value$$

For assets such as earthworks, road formation and open drains it is assumed that the assets have indefinite lives, and that there is no measurable deterioration requiring depreciation. Such assets are flagged in the software to have no depreciation component.

Residual Value

The residual value is the salvage value of the asset when it reaches the end of its life. For utility assets there is typically nil residual value.

Total Useful Life

$$TUL = Age + Remaining\ Useful\ Life$$

Remaining Useful Life by Age

Manawatu District Council determines the *Remaining Useful Life (RUL) of each asset by age.*

$$RUL_{Age} = \ Maximum(Standard\ Baselife - Age, or\ 2.5\% \ \times Baselife)$$

Remaining Useful Life by Condition

A more sophisticated method available in AssetFinda but not currently implemented is to determine remaining useful life using condition gradings. It requires substantive and ongoing condition assessments from field surveys and laboratory analyses. This method may be gradually introduced to certain asset groups when there is sufficient condition data to justify applying it.

Minimum Remaining Useful Lives

Where the asset's age has exceeded its standard baselife, the valuation procedure will calculate a minimum $R.U.L_{Age}$ = % of the standard baselife. This percentage is adjustable at the time on valuation. Manawatu District Council uses a default value of 2.5% on all its asset classes. This has the effect of extending the total useful life by one year each year and ensures that assets still in service continue to attract depreciation at around the rate of inflation.

For baselives of between 35 and 100 years this equates to a Minimum Useful Life of between 1 – 2.5 years.

2.4. Annual Depreciation

Depreciation is a measure of the consumption of the economic benefits embodied in an asset. It distributes the cost of value of an asset over its estimated useful life. Thus depreciation only applies to those assets with finite lives. The depreciation methodology adopted is the straight line method. This has been applied to all depreciable infrastructure assets covered in this report.

Annual depreciation is the amount the asset depreciates in one year using the following calculation:

$$Annual\ Depreciation = \frac{Depreciated\ Replacement\ Cost}{Remaining\ Useful\ Life}$$

Definitions of DRC and RUL are as described in the sections above.

3. Valuation Summary

4. Improvement Plan

The following areas were identified for improvement prior to the next valuation report.

	Recommendation (ex 2017 valuation report)	Response
1	Continue to refine the breakdown of facility asset groups and assign P&ID tags from schematic drawings against the asset register.	Reliant on delivery on completion of as-built information from engineers involved in water/wastewater treatment design projects
2	Quantify the confidence the Council puts in the data, and verify asset attributes that have impact on valuation calculations. Reduce the number of assets where the diameter, material or condition is currently undetermined by performing site audits.	As at 2018, approximately 0.3% of water network and 0.4% of the wastewater network is of unknown material. For stormwater the amount of unspecified pipe is 1%.
3	Seismic assessments to be undertaken of significant concrete structures e.g. clarifiers, large reservoirs as part of condition data collection.	Results of seismic assessments have not been included as still waiting on feedback from plant managers responsible for the planned assessment.
4	Align renewal dates of water fixtures (valves, hydrants, service laterals) with the renewal of their parent supply pipe. This will increase the recoverable depreciation for these assets and make forward works planning simpler.	While technically feasible, synchronising the renewal dates of large numbers of dependent 'child assets' such as valves with their 'parent pipe' will require an ongoing manual adjustment of values that will not provide meaningful change to annual budgets. Suggested changes have not therefore been implemented at this time.
5	Identify wastewater facility assets that will be made redundant under the Council's centralisation strategy, so that remaining depreciated value can be recovered over the remaining 5 years.	Senior engineer has identified the assets due for retirement. Finance staff have yet to advise how the writing down in value of these assets will be implemented in the Asset Management System.

Full Valuation Calculations

The full valuation data table can be found in the AssetFinda valuation tables for 2018. This data is stored in Microsoft SQL2008 tables and are administered by the Assets Management Engineer for the MDC.

5. Appendices

For the 2019 valuation, council requested WSP Opus Ltd to set the new unit rates, drawing on their experience working with multiple councils throughout New Zealand.

5.1. Standard Unit Replacement Costs

5.1.1. Water Replacement Costs

Water Pipeline Costs per metre

Material	Diameter	Height	Base Life	Unit Cost	Proposed Unit Cost	Notes	% Diff
ABS	150	0	90	$268	$278.26		4.00%
AC (Everite)	77	96	50	$61	$200.00		229.06%
AC (Everite)	100	122	50	$234	$243.39		4.00%
AC (Everite)	150	177	50	$268	$278.26		4.00%
AC (Fibrolite)	75	75	60	$61	$200.00		229.06%
AC (Fibrolite)	508	551	60	$1,278	$1,329.52	Default Lawn at 0.9m deep	4.00%
AC (Fibrolite100)	100	122	42	$234	$243.39		4.00%
AC (Fibrolite150)	150	177	53	$268	$278.26		4.00%
AC (Fibrolite200)	200	233	65	$348	$320.00		-8.17%
AC-B (Fibrolite450)	450	490	95	$1,143	$1,189.16	Default Asphalt 0.9m deep replace with PVC-m	4.00%
AC-B (Fibrolite525)	525	572	95	$641	$1,329.52		107.57%
AC-C (Fibrolite080)	80	96	36	$78	$200.00		155.10%
AC-C (Fibrolite250)	250	286	55	$186	$445.07		139.50%
AC-C (Fibrolite300)	300	345	65	$575	$598.37		4.00%
AC-E (Fibrolite050)	50	72	34	$99	$150.00		51.75%
Cast Iron	50	50	100	$99	$150.00		51.75%
Cast Iron	75	75	100	$78	$200.00		155.10%
Cast Iron	80	80	100	$78	$200.00		155.10%
Cast Iron	100	122	100	$234	$243.39		4.00%
Cast Iron	125	125	100	$268	$278.26		4.00%
Cast Iron	150	177	100	$268	$278.26		4.00%
Cast Iron	175	175	100	$289	$300.72		4.00%
Cast Iron	200	232	100	$348	$320.00		-8.17%
Concrete Lined Steel	50	0	100	$103	$150.00		45.89%
Concrete Lined Steel	100	100	100	$255	$243.39		-4.52%
Concrete Lined Steel	150	150	100	$327	$278.26		-14.90%
Concrete Lined Steel	200	0	100	$0	$320.00		#DIV/0!
Concrete Lined Steel	300	300	100	$575	$598.37		4.00%

Concrete Lined Steel	375	375	100	$414	$810.22		95.92%
Concrete Lined Steel	450	450	100	$1,143	$1,189.16	Default Asphalt 0.9m deep	4.00%
Copper	12	12	60	$136	$141.87	Default Asphaltic 0.6m deep	4.00%
Copper	15	15	60	$136	$141.87	Default Asphaltic 0.6m deep	4.00%
Copper	20	20	60	$136	$141.87	Default Asphaltic 0.6m deep	4.00%
Copper	25	25	60	$167	$142.00	Default Asphaltic 0.6m deep	-15.20%
Copper	32	32	60	$95	$142.00		48.82%
Copper	40	40	60	$119	$150.00		25.67%
Copper	50	50	60	$99	$150.00		51.75%
Ductile Iron	100	114	110	$392	$243.39		-37.88%
Ductile Iron	150	177	110	$262	$278.26		6.09%
Ductile Iron	200	0	110	$771	$320.00	DI fittings absorbed into pipeline costs - no cost	-58.49%
Ductile Iron	250	0	110	$0	$445.07		#DIV/0!
Ductile Iron	300	0	110	$0	$598.37		#DIV/0!
Galvanised Iron	15	21	100	$136	$141.87	Default Asphaltic 0.6m deep	4.00%
Galvanised Iron	20	27	100	$136	$141.87	Default Asphaltic 0.6m deep	4.00%
Galvanised Iron	25	33	100	$167	$142.00	Default Asphaltic 0.6m deep	-15.20%
Galvanised Iron	40	48	100	$42	$150.00		256.89%
Galvanised Iron	50	60	100	$99	$150.00		51.75%
Galvanised Iron	80	89	100	$78	$200.00		155.10%
Galvanised Iron	150	177	100	$268	$278.26		4.00%
PE063 (Alkathene)	15	17	100	$136	$141.87	Default Asphaltic 0.6m deep	4.00%
PE063 (Alkathene)	20	25	100	$136	$141.87	Default Asphaltic 0.6m deep	4.00%
PE063 (Alkathene)	25	32	100	$167	$142.00		-15.20%
PE063 (Alkathene)	32	40	100	$95	$142.00		48.82%
PE080 (MDPE)	12	12	100	$136	$141.87	Default Asphaltic 0.6m deep	4.00%
PE080 (MDPE)	16	20	100	$136	$141.87	Default Asphaltic 0.6m deep	4.00%
PE080 (MDPE)	20	25	100	$136	$141.87	Default Asphaltic 0.6m deep	4.00%
PE080 (MDPE)	25	32	100	$167	$142.00		-15.20%
PE080 (MDPE)	32	40	100	$95	$142.00		48.82%
PE080 (MDPE)	40	50	100	$119	$150.00		25.67%
PE080 (MDPE)	50	63	100	$99	$150.00		51.75%
PE080 (MDPE)	60	75	100	$158	$164.33		4.00%
PE080 (MDPE)	73	90	100	$61	$200.00		229.06%
PE080 (MDPE)	80	80	100	$78	$200.00		155.10%
PE080 (MDPE)	100	125	100	$192	$243.39		26.51%
PE080 (MDPE)	146	180	100	$276	$287.20		4.00%
PE080 (MDPE)	200	250	100	$593	$320.00	Directional Drilling under railway line	-46.04%
PE080 (MDPE)	267	315	100	$428	$445.07		4.00%
PE080 (MDPE)	375	375	100	$779	$810.22		4.00%

PE080 (MDPE) (Rural)	20	25	100	$42	$43.46		4.00%
PE080 (MDPE) (Rural)	25	32	100	$64	$66.80		4.00%
PE080 (MDPE) (Rural)	40	50	100	$42	$43.71		4.00%
PE080 (MDPE) (Rural)	50	63	100	$31	-		#VALUE!
PE080 (MDPE) (Rural)	90	0	100	$146	$80.00		-45.34%
PE080 (MDPE) (Rural)	130	160	100	$141	$146.57		4.00%
PE080 (MDPE) (Rural)	200	250	100	$0	$155.00		#DIV/0!
PE100 (HDPE)	64	75	90	$0	$164.33		#DIV/0!
PE100 (HDPE)	100	125	90	$132	$243.39		84.43%
PE100 (HDPE)	150	180	90	$244	$278.26		14.21%
PE100 (HDPE)	506	630	90	$1,278	$1,329.52		4.00%
PE100 (HDPE) (Rural)	200	250	90	$103	$155.00		51.18%
PVC-m	50	60	75	$111	$150.00		35.38%
PVC-m	100	114	75	$234	$243.39		4.00%
PVC-m	150	160	75	$268	$278.26		4.00%
PVC-m	200	225	75	$289	$320.00		10.67%
PVC-m	250	0	75	$186	$445.07		139.50%
PVC-m	375	400	75	$779	$810.22		4%
PVC-o	100	114	75	$234	$243.39		4%
PVC-o	150	160	75	$268	$278.26		4%
PVC-o	200	225	75	$289	$320.00		11%
PVC-u	15	21	75	$136	$141.87	Default Asphaltic 0.6m deep	4%
PVC-u	20	27	75	$136	$141.87	Default Asphaltic 0.6m deep	4%
PVC-u	25	33	75	$167	$142.00		-15%
PVC-u	32	42	75	$95	$142.00		49%
PVC-u	40	48	75	$119	$150.00		26%
PVC-u	50	60	75	$99	$150.00		52%
PVC-u	65	75	75	$224	$200.00		-11%
PVC-u	80	89	75	$78	$200.00		155%
PVC-u	100	114	75	$234	$243.39		4%
PVC-u	150	160	75	$268	$278.26		4%
PVC-u	200	225	75	$289	$320.00		11%
PVC-u	250	0	75	$186	$445.07		140%
PVC-u	300	315	75	$575	$598.37		4%
PVC-u (Rural)	20	27	75	$42	$43.46		4%
PVC-u (Rural)	25	33	75	$64	$66.80		4%
PVC-u (Rural)	32	42	75	$21	$22.01		4%
PVC-u (Rural)	40	48	75	$42	$43.71		4%
PVC-u (Rural)	50	60	75	$31	-		#VALUE!
PVC-u (Rural)	65	75	75	$45	$47.26		4%

PVC-u (Rural)	80	89	75	$63	$65.23		4%
PVC-u (Rural)	100	114	75	$87	$90.31		4%
PVC-u (Rural)	150	160	75	$92	$150.00		63%
Reinforced Concrete	375	375	100	$779	$810.22		4%
Steel	40	40	60	$119	$150.00		26%
Steel	50	50	60	$99	$150.00		52%
Steel	80	80	60	$78	$200.00		155%
Steel	100	114	60	$255	$243.39		-5%
Steel	125	125	60	$268	$278.26		4%
Steel	150	177	60	$283	$278.26		-2%
Steel	250	286	60	$186	$445.07		140%
Steel	300	345	60	$575	$598.37		4%
Steel	375	375	60	$779	$810.22		4%
Steel	450	450	60	$1,143	$1,189.16	Default Asphalt 0.9m deep	4%
Steel	485	485	60	$666	$1,200.00	Default Lawn at 0.9m deep	80%
Steel-Epoxy Lined	0	0	60	$0	$0.00		#DIV/0!
Steel-Epoxy Lined	100	114	60	$255	$243.39		-5%
Steel-Epoxy Lined	150	177	60	$283	$278.26		-2%
Steel-Epoxy Lined	300	345	60	$575	$598.37		4%
Steel-Epoxy Lined	375	375	60	$414	$810.22		96%
Steel-Epoxy Lined	450	450	60	$1,143	$1,189.16	Default Asphalt 0.9m deep	4%
Unknown	0	0	80	$0	$0.00		#DIV/0!
Unknown	15	15	80	$136	$141.87	Default Asphaltic 0.6m deep	4%
Unknown	20	20	80	$136	$141.87	Default Asphaltic 0.6m deep	4%
Unknown	25	25	80	$167	$142.00		-15%
Unknown	40	40	80	$119	$150.00		26%
Unknown	100	100	80	$234	$243.39		4%
Unknown	300	300	80	$575	$598.37		4%

Table 5-1 : Water Pipeline costs per metre

Water Point Features

Asset Type	ASSET SUB TYPE	Diameter	Width	Depth	Unit Cost	Proposed Unit Cost	Base Life	Notes	% Diff
Air Valve	None	25	25	Surface	$1,133	$1,178.53	50		4.00%
Air Valve	None	50	50	Surface	$2,208	$2,296.12	50		4.00%
Backflow	DCHK	20	20	Surface	$1,284	$1,334.90	30		4.00%
Backflow	DCHK	25	25	Surface	$1,024	$1,064.74	30		4.00%
Backflow	DCHK	40	40	Surface	$2,259	$2,348.93	30		4.00%
Backflow	DCHK	50	50	Surface	$2,276	$2,367.09	30		4.00%
Backflow	RPZ	15	15	Surface	$2,838	$2,951.35	20		4.00%
Backflow	RPZ	20	20	Surface	$1,965	$2,043.65	20		4.00%
Backflow	RPZ	25	25	Surface	$1,985	$2,064.25	20		4.00%
Backflow	RPZ	32	32	Surface	$2,540	$2,641.80	20		4.00%
Backflow	RPZ	50	50	Surface	$3,317	$3,449.34	20		4.00%
Backflow	RPZ	80	80	Surface	$3,664	$3,810.33	20		4.00%
Backflow	RPZ	100	100	Surface	$8,089	$8,412.62	20		4.00%
Backflow	Swing Check Valve	150	0	Surface	$1,373	$1,427.83	50		4.00%
Backflow	Swing Check Valve	200	0	Dummy Value -99	$2,015	$2,095.15	50		4.00%
Combi Valve	None	150	150	Surface	$11,416	$11,872.90	50		4.00%
Combi Valve 3-Way	None	100	100	Surface	$8,158	$8,484.09	50		4.00%
Combi Valve 3-Way	None	150	100	Surface	$9,432	$9,809.77	50		4.00%
Combi Valve 4-Way	None	100	100	Surface	$7,062	$7,344.51	50		4.00%
Fire Hydrant	None	50	50	Surface	$1,739	$1,808.23	50		4.00%
Fire Hydrant	None	75	75	Surface	$1,739	$1,808.23	50		4.00%
Fire Hydrant	None	80	80	Surface	$1,751	$1,821.15	50		4.00%
Fire Hydrant	None	100	100	Surface	$2,091	$2,174.72	50		4.00%

Fire Hydrant	None	125	125	Surface	$1,729	$1,798.38	50	4.00%
Fire Hydrant	None	150	150	Surface	$3,095	$3,218.80	50	4.00%
Fire Hydrant	None	180	180	Surface	$1,873	$1,948.24	50	4.00%
Fire Hydrant	None	200	200	Surface	$2,717	$2,825.33	50	4.00%
Fire Hydrant	None	250	0	Surface	$4,085	$4,248.45	50	4.00%
Fire Hydrant	None	375	375	Surface	$3,166	$3,293.14	50	4.00%
Flexi Joint	None	100	100	Surface	$6,467	$6,725.96	80	4.00%
Flexi Joint	None	300	300	Surface	$21,226	$22,074.95	80	4.00%
Manhole	Precast Concrete	450	0	< 1m	$1,677	$1,744.16	99	4.00%
Manhole	Precast Concrete	600	0	< 1m	$4,854	$5,048.46	99	4.00%
Manhole	Precast Concrete	1050	0	Surface	$11,315	$11,767.66	100	4.00%
Node	Bend - 22.5	250	0	Surface	$4,348	$4,522.11	50	4.00%
Node	Bend - 45	250	0	Surface	$2,402	$2,497.97	100	4.00%
Node	Cross	300	300	Surface	$4,599	$4,783.07	50	4.00%
Node	Tee	250	0	Surface	$5,500	$5,719.58	50	4.00%
Node	Tee	300	0	Surface	$9,280	$9,651.64	100	4.00%
Sluice Valve	None	0	0	Surface	$1,239	$1,289.02	50	4.00%
Sluice Valve	None	20	20	Surface	$682	$709.30	50	4.00%
Sluice Valve	None	25	25	Surface	$665	$691.69	50	4.00%
Sluice Valve	None	32	32	Surface	$714	$742.85	50	4.00%
Sluice Valve	None	40	40	Surface	$806	$838.53	50	4.00%
Sluice Valve	None	50	50	Surface	$1,429	$1,485.81	50	4.00%
Sluice Valve	None	65	65	Surface	$1,592	$1,655.83	50	4.00%
Sluice Valve	None	75	75	Surface	$1,157	$1,202.87	50	4.00%
Sluice Valve	None	80	80	Surface	$1,107	$1,151.48	50	4.00%

Sluice Valve	None	100	100	Surface	$2,437	$2,534.74	50	4.00%
Sluice Valve	None	125	125	Surface	$3,682	$3,829.30	50	4.00%
Sluice Valve	None	150	150	Surface	$3,553	$3,695.06	50	4.00%
Sluice Valve	None	175	175	Surface	$2,050	$2,132.20	50	4.00%
Sluice Valve	None	200	200	Surface	$3,353	$3,487.56	50	4.00%
Sluice Valve	None	250	250	Surface	$5,915	$6,152.11	50	4.00%
Sluice Valve	None	300	300	Surface	$5,630	$5,855.70	50	4.00%
Sluice Valve	None	350	350	Surface	$15,812	$16,444.17	50	4.00%
Sluice Valve	None	375	375	Surface	$7,074	$7,356.76	50	4.00%
Sluice Valve	None	400	400	Surface	$15,237	$15,846.66	50	4.00%
Sluice Valve	None	450	450	Surface	$11,759	$12,229.00	50	4.00%
Sluice Valve	None	475	475	Surface	$11,759	$12,229.00	50	4.00%
TAP	None	15	15	Surface	$200	$208.06	35	4.00%
Toby	Manifold	15	15	Surface	$314	$326.27	35	4.00%
Toby	Manifold	20	20	Surface	$314	$326.27	35	4.00%
Toby	Manifold	25	0	Surface	$636	$660.92	35	4.00%
Toby	Standard	15	15	Surface	$444	$461.99	35	4.00%
Toby	Standard	20	20	Surface	$280	$290.76	35	4.00%
Toby	Standard	25	25	Surface	$189	$196.24	35	4.00%
Toby	Standard	32	32	Surface	$311	$322.95	35	4.00%
Toby	Standard	50	50	Surface	$3,850	$4,004.45	35	4.00%
Variable Flow Meter	None	15	15	Surface	$437	$454.44	10	4.00%
Variable Flow Meter	None	20	20	Surface	$539	$560.60	10	4.00%
Water Sample Box	None	20	20	Surface	$896	$931.63	30	4.00%

Table 5-2 : Water Point Feature costs

Asset Group	Asset Type	Asset Sub Type	Base Life	Unit Cost	Proposed Unit Cost	Notes	Diff	% Diff
Magflow	None	100mm	20	$6,092	$6,335		$243.67	4.00%
Magflow	None	150mm	20	$7,320	$7,612		$292.79	4.00%
Magflow	None	200mm	20	$8,820	$9,173		$352.80	4.00%
Magflow	None	300mm	25	$23,055	$23,978		$922.22	4.00%
Variable Flow	None	015mm	10	$462	$481		$18.49	4.00%
Variable Flow	None	020mm	10	$488	$508		$19.52	4.00%
Volumetric	Displacement	015mm	15	$254	$264		$10.14	4.00%
Volumetric	Displacement	020mm	15	$342	$356		$13.67	4.00%
Volumetric	Displacement	025mm	15	$488	$508		$19.53	4.00%
Volumetric	Displacement	032mm	15	$662	$689		$26.49	4.00%
Volumetric	Displacement	040mm	15	$1,133	$1,179		$45.34	4.00%
Volumetric	Turbine	040mm	20	$1,063	$1,105		$42.51	4.00%
Volumetric	Turbine	050mm	20	$1,209	$1,258		$48.38	4.00%
Volumetric	Turbine	080mm	20	$3,992	$4,152		$159.69	4.00%
Volumetric	Turbine	100mm	20	$8,718	$9,066		$348.71	4.00%
Volumetric	Turbine	150mm	20	$7,231	$7,520		$289.23	4.00%

Table 5-3 : Water Meter Feature costs

Water Plant Features

The 'Notes' field in the table below is used to describe the default 'unit of measure' for each component. Bespoke assets usually have zero unit cost as each instance of the component is unique. Bespoke may also be applied to individual assets if there is insufficient data to provide a schedule of quantities.

Asset Group	Asset Type	Asset Sub Type	Base Life	Unit Cost	Proposed Unit Cost	% Diff
Building	Construction of Building	Colour steel garage	50	$776	$807	4.00%
Building	Construction of Building	none	50	$4,787	$4,979	4.00%
Building	Door	Roller Door	31	$0		#DIV/0!
Building	Fence	8 Wire Stock Fence	25	$145	$151	4.00%
Building	Fence	Security	25	$21	$21	4.00%
Building	Flooring	Vinyl	25	$36	$38	4.00%
Building	Foundations	Concrete Slab	50	$386	$402	4.00%
Building	Precast concrete shed	2.5m Dia Ferro prescast concrete shed	27	$4,541	$4,722	4.00%
Building	Roof	Corrugated Iron	50	$142	$148	4.00%
Building	Walls	Profiled Galvanised Iron Cladding	50	$51	$53	4.00%
Building	Walls	Reinforced Concrete Block - 2.4m high	50	$124	$129	4.00%
Building	Walls	Timber framing and hardware	50	$48	$50	4.00%
Civil	Chamber	Chamber	50	$1,609	$1,674	4.00%
Civil	Chamber	Manhole 0900dia	50	$2,191	$2,278	4.00%
Civil	Chamber	Manhole 1050dia	50	$21,350	$22,204	4.00%
Civil	Chamber	Manhole 1200dia	50	$5,203	$5,411	4.00%
Civil	Chamber	Manhole 1500dia	50	$9,408	$9,785	4.00%
Civil	Chemical Dosing	Drainage for bund areas	50	$26,857	$27,931	4.00%
Civil	Clarifier	Settling Tanks	50	$1,923	$2,000	4.00%
Civil	Clarifier	windbreak frame	50	$8,869	$9,224	4.00%

Civil	Earthworks	Pond	200	$139	$144	4.00%
Civil	Earthworks	Retaining Wall	200	$0		#DIV/0!
Civil	Filter	Filter Platform	50	$85,346	$88,760	4.00%
Civil	Filter	Filter Tank	50	$2,162	$2,248	4.00%
Civil	Filter Control Building	Electrical Duct Trenching	50	$13,593	$14,137	4.00%
Civil	Infiltration Gallery	Infiltration gallery	50	$0		#DIV/0!
Civil	Intake	1.2m dia x 12mm thick mild steel well casing with 200 x 12mm slo	99	$0		#DIV/0!
Civil	Intake	1.8m high x 1.2m wide concrete lined tunnel	78	$0		#DIV/0!
Civil	Resource Consents	Discharge Backwash	25	$25,967	$27,006	4.00%
Civil	Resource Consents	Discharge to Land	19	$18,522	$19,263	4.00%
Civil	Resource Consents	Groundwater Abstraction	15	$20,721	$21,550	4.00%
Civil	Resource Consents	Land Use Consent	5	$0		#DIV/0!
Civil	Resource Consents	Surfacewater Abstraction	35	$9,991	$10,390	4.00%
Civil	Site	Chip Seal Path	25	$5,277	$5,488	4.00%
Civil	Site	Concrete Path	99	$12,803	$13,315	4.00%
Civil	Site	Septic Disposal Field and pipe system	100	$10,564	$10,986	4.00%
Civil	Site	Stormwater drainage & sump	50	$0		#DIV/0!
Civil	Site	SW Sump	99	$711	$739	4.00%
Civil	Site	Vehicle Access	99	$31,015	$32,255	4.00%
Civil	Tank	Liner (030-050m3)	20	$91	$94	4.00%
Civil	Tank	Liner (050-100m3)	20	$50	$52	4.00%
Civil	Tank	Liner (100-250m3)	20	$160	$166	4.00%
Civil	Tank	Liner (250-500m3)	20	$78	$81	4.00%
Civil	Tank	Permanent ladder and safety rails	50	$0		#DIV/0!
Civil	Tank	Roof - Coated Steel	50	$226	$235	4.00%

Civil	Tank	Roof - Corrugated Iron	50	$336	$349	4.00%
Civil	Tank	Roof - Wood	50	$326	$339	4.00%
Civil	Tank	Tank	99	$0		#DIV/0!
Civil	Tank	Tank (0000-0005m3)	50	$814	$846	4.00%
Civil	Tank	Tank (0005-0010m3)	50	$2,308	$2,400	4.00%
Civil	Tank	Tank (0010-0020m3)	50	$1,651	$1,717	4.00%
Civil	Tank	Tank (0020-0030m3)	50	$1,025	$1,066	4.00%
Civil	Tank	Tank (0030-0050m3)	50	$258	$269	4.00%
Civil	Tank	Tank (0050-0100m3)	50	$255	$265	4.00%
Civil	Tank	Tank (0100-0250m3)	50	$799	$831	4.00%
Civil	Tank	Tank (0250-0500m3)	50	$508	$529	4.00%
Civil	Tank	Tank (0500-1000m3)	100	$811	$843	4.00%
Civil	Tank	Tank (1000-2000m3)	100	$383	$399	4.00%
Civil	Tank	Tank (2000-5000m3)	100	$385	$400	4.00%
Civil	Tank	Tank (5000-7000m3)	100	$247	$257	4.00%
Electrical	Cabinet	Control panel	25	$0		#DIV/0!
Electrical	Level Sensor	All chemical dosing cabling	20	$6,579	$6,842	4.00%
Electrical	Level Sensor	Chlorine Control unit	15	$10,582	$11,006	4.00%
Electrical	Level Sensor	gravelectric load cells and auto-purge valve to clarifier cones	25	$1,754	$1,825	4.00%
Electrical	Level Sensor	Meter	20	$5,946	$6,184	4.00%
Electrical	Level Sensor	SC monitor	20	$0		#DIV/0!
Electrical	Level Sensor	UV transmittance Meter	15	$21,407	$22,263	4.00%
Electrical	Lighting	General Site Lighting	50	$5,263	$5,474	4.00%
Electrical	Lighting	Pole mounted floodlights	25	$5,263	$5,474	4.00%
Electrical	Motor Control	Variable Speed Drive	20	$15,448	$16,066	4.00%
Electrical	Process Controller	PLC	15	$14,853	$15,447	4.00%

Electrical	Process Controller	Process Analyser	15	$8,959	$9,317	4.00%
Electrical	Pump	Power and control cables	20	$39,884	$41,480	4.00%
Electrical	Pump Control	Burket Modulation valves on filter valves, and Modulation card	25	$1,754	$1,825	4.00%
Electrical	Pump Control	Chemical dosing plant (chlorinator)	25	$0		#DIV/0!
Electrical	Pump Control	Chlorinator	25	$5,341	$5,554	4.00%
Electrical	Pump Control	Chlorinator unit connections	65	$0		#DIV/0!
Electrical	Pump Control	Pneumatic air and regulators to pnuematic valves	25	$5,263	$5,474	4.00%
Electrical	Pump Control	Power and controls for treated water pump	25	$5,263	$5,474	4.00%
Electrical	Pump Control	Pump starter	25	$0		#DIV/0!
Electrical	Pump Control	Solenoid valves for interfacing with pneumatic valves	25	$5,263	$5,474	4.00%
Electrical	SCADA	Control unit	20	$0		#DIV/0!
Electrical	SCADA	inlet valve control	50	$0		#DIV/0!
Electrical	SCADA	PC	5	$4,309	$4,482	4.00%
Electrical	SCADA	PLC	15	$13,960	$14,518	4.00%
Electrical	SCADA	Provide an operator interface linked to the PLC	25	$5,263	$5,474	4.00%
Electrical	SCADA	Server	5	$13,210	$13,738	4.00%
Electrical	Supply	Electrical Transformer	20	$23,352	$24,286	4.00%
Electrical	Supply	Meter Board + Supply cables	50	$14,653	$15,239	4.00%
Electrical	Supply	Power supply	25	$0		#DIV/0!
Electrical	Supply	Standby generator	25	$0		#DIV/0!
Electrical	Switchboard	Electrical switchboard	20	$23,025	$23,946	4.00%
Electrical	Switchboard	Electrical switchboards, control equipment, wiring & fittings	25	$0		#DIV/0!

Electrical	Switchboard	Sub switchboard in filter control room	25	$5,263	$5,474	4.00%
Electrical	Telemetry	Antenna	20	$1,116	$1,160	4.00%
Electrical	Telemetry	Battery and cables	10	$501	$521	4.00%
Electrical	Telemetry	Kingfisher RTU LP1	10	$5,151	$5,357	4.00%
Electrical	Telemetry	PSU1 & PSU2	10	$4,642	$4,828	4.00%
Electrical	Telemetry	Radio	10	$2,532	$2,633	4.00%
Electrical	Telemetry	radio, aerial, module & batteries	15	$0		#DIV/0!
Electrical	Telemetry	solar panel etc.	15	$0		#DIV/0!
Electrical	Telemetry	Telemetry equipment	22	$7,779	$8,090	4.00%
Electrical	Telemetry	Telephone Line (Upgrade)	25	$5,263	$5,474	4.00%
Electrical	Telemetry	Wireless link - aerial and fittings	20	$0		#DIV/0!
Electrical	Transducer	Chlorine gas sensor	7	$1,756	$1,826	4.00%
Electrical	Transducer	Flow Sensor	10	$971	$1,010	4.00%
Electrical	Transducer	Level Sensor	10	$3,835	$3,988	4.00%
Electrical	Transducer	pH meter, flow switch and control valve. Cable back to MSB	25	$5,263	$5,474	4.00%
Electrical	Transducer	Pressure differential sensor	15	$0		#DIV/0!
Electrical	Transducer	Pressure Sensor	15	$0		#DIV/0!
Electrical	Transducer	Turbidimeter	10	$6,721	$6,990	4.00%
Electrical	Wiring	100mm dia conduit	25	$108	$112	4.00%
Electrical	Wiring	Air fan in the switch room	25	$526	$547	4.00%
Electrical	Wiring	Cable tray and cable the valve and flowmeter back to MSB	25	$5,263	$5,474	4.00%
Electrical	Wiring	cabling for gravilectric cones and valve	25	$5,263	$5,474	4.00%
Electrical	Wiring	Cabling to all valves and instruments	25	$5,263	$5,474	4.00%

Electrical	Wiring	Cabling, conduit or cable tray within and to TPS	25	$5,263	$5,474	4.00%
Electrical	Wiring	compressed air manifold and compressed air lines from the manifol	25	$5,263	$5,474	4.00%
Electrical	Wiring	Ducting and cabling	25	$5,263	$5,474	4.00%
Electrical	Wiring	Electrical & control equipment	25	$0		#DIV/0!
Electrical	Wiring	Electrical controls and switch gear	25	$0		#DIV/0!
Electrical	Wiring	Electrical systems	50	$0		#DIV/0!
Electrical	Wiring	electrical upgrades	20	$0		#DIV/0!
Electrical	Wiring	equipment/comms	20	$0		#DIV/0!
Electrical	Wiring	Fantect roof mounted fan to HFA day tank room	20	$6,576	$6,839	4.00%
Electrical	Wiring	Fire alarm system (Upgrade)	25	$5,263	$5,474	4.00%
Electrical	Wiring	Flash Mixer Electrical	20	$8,316	$8,649	4.00%
Electrical	Wiring	General Lighting + HPs	20	$5,619	$5,844	4.00%
Electrical	Wiring	Main cable from the existing meter box to the new MSB	25	$5,263	$5,474	4.00%
Electrical	Wiring	Passive ventilation to Control Shed	25	$5,263	$5,474	4.00%
Electrical	Wiring	Security alarm system (Upgrading)	25	$5,263	$5,474	4.00%
Electrical	Wiring	Upgrade wiring & control	25	$0		#DIV/0!
Electrical	Wiring	weatherproof junction box	25	$5,263	$5,474	4.00%
Electrical	Wiring	Wiring and Controls etc	15	$207,014	$215,295	4.00%
Headworks	- Not Selected -	none	200	$0		#DIV/0!
Mechanical	Augmentation	Contract 99/20 Mainzeal construction	80	$0		#DIV/0!
Mechanical	Chemical Dosing	Chlorinator Hour Meter	25	$630	$655	4.00%
Mechanical	Chemical Dosing	Chlorine cylinder with auto switchover	25	$11,539	$12,001	4.00%

Mechanical	Chemical Dosing	Chlorine dosing system	20	$0		#DIV/0!
Mechanical	Chemical Dosing	Chlorine Injector	25	$0		#DIV/0!
Mechanical	Chemical Dosing	Chlorine, pH and Turbidity - pipework	20	$1,259	$1,309	4.00%
Mechanical	Chemical Dosing	Fluoride Controller	10	$8,765	$9,116	4.00%
Mechanical	Chemical Dosing	Fluoride dosing system	20	$0		#DIV/0!
Mechanical	Chemical Dosing	Motorised hoist - 1 tonne	24	$0		#DIV/0!
Mechanical	Chemical Dosing	Motorised hoist - 2 tonne	25	$0		#DIV/0!
Mechanical	Chemical Dosing	Poly dosing batch plant including SS day tank &mechanical stirre	20	$94,176	$97,943	4.00%
Mechanical	Chemical Dosing	Regulator	25	$0		#DIV/0!
Mechanical	Clarifier	Clarfier inlet breather pipes	50	$15,211	$15,820	4.00%
Mechanical	Clarifier	Clarifier corroded inlet vent pipes	50	$16,646	$17,311	4.00%
Mechanical	Clarifier	Clarifier flared bellmouth inlets	50	$7,356	$7,650	4.00%
Mechanical	Clarifier	Clarifier outlet and breather pipe	50	$19,462	$20,240	4.00%
Mechanical	Clarifier	Cloth to both existing and new windbreak frame	10	$3,342	$3,476	4.00%
Mechanical	Consultants fees	Contract Management Unit costs	1	$0		#DIV/0!
Mechanical	Consultants fees	none	1	$0		#DIV/0!
Mechanical	Consultants fees	Tender advertising	1	$0		#DIV/0!
Mechanical	Eye Shower	none	25	$4,647	$4,833	4.00%
Mechanical	Filter	Filter bed	50	$28,914	$30,071	4.00%
Mechanical	Filter	Filter inlet manifold	50	$7,790	$8,101	4.00%
Mechanical	Filter	Filter Media	8	$1,647	$1,713	4.00%
Mechanical	Filter	Filter nozzles	25	$19,488	$20,267	4.00%
Mechanical	Filter	Horizontal pressure filter	40	$0		#DIV/0!
Mechanical	HVAC	Venting system	37	$0		#DIV/0!
Mechanical	Level Sensor	Pressure Gauge	25	$0		#DIV/0!

Mechanical	Misc	250mm x 250mm x 5mm thick MS plate probe protection box	80	$0		#DIV/0!
Mechanical	Misc	410 litre pressure cylinder and associated misc fittings (small	25	$0		#DIV/0!
Mechanical	Misc	Breakpoint chlorination unit	10	$0		#DIV/0!
Mechanical	Misc	Deionised Water System Millipore	10	$3,449	$3,587	4.00%
Mechanical	Misc	Electrical controls and switch gear	1	$0		#DIV/0!
Mechanical	Misc	galvanised handrailing around intake structure	50	$14,711	$15,300	4.00%
Mechanical	Misc	Handrails	20	$12,405	$12,901	4.00%
Mechanical	Misc	Motorised valve actuator	25	$0		#DIV/0!
Mechanical	Misc	S&I Filter inlet air valves	50	$4,987	$5,187	4.00%
Mechanical	Misc	Safety Ladders in Settling pond	50	$1,974	$2,053	4.00%
Mechanical	Misc	Scales	25	$0		#DIV/0!
Mechanical	Misc	Spectrophotometer Hach DR2700	10	$5,513	$5,733	4.00%
Mechanical	Misc	SW Pipes Sumps and manholes for filter, 6ML Reservoir& FCB	99	$6,711	$6,979	4.00%
Mechanical	Misc	Upper level walkway including access stairs	50	$33,081	$34,404	4.00%
Mechanical	Motor	Lime stirrers	37	$0		#DIV/0!
Mechanical	Pipework	0.6m x 0.95m x 1.0m mild steel valve box attached	50	$0		#DIV/0!
Mechanical	Pipework	050NB PVC	50	$221	$230	4.00%
Mechanical	Pipework	050NB steel pipe	25	$3,826	$3,979	4.00%
Mechanical	Pipework	080NB Pipe	50	$79	$82	4.00%
Mechanical	Pipework	080NB steel pipe	50	$79	$82	4.00%
Mechanical	Pipework	100NB PVC	50	$157	$163	4.00%
Mechanical	Pipework	100NB steel pipe	25	$157	$163	4.00%

Mechanical	Pipework	150NB earthenware ex- service reservoir	100	$223	$231	4.00%
Mechanical	Pipework	150NB pipe	80	$223	$231	4.00%
Mechanical	Pipework	150NB steel pipe	50	$222	$231	4.00%
Mechanical	Pipework	160m3 Timber tank - Electrical controls, floats etc.	25	$0		#DIV/0!
Mechanical	Pipework	160m3 Timber tank - Internal pipework and nozzles.	50	$0		#DIV/0!
Mechanical	Pipework	200NB concrete lined steel pipe	25	$0		#DIV/0!
Mechanical	Pipework	200NB manifold, and discharge pipework	99	$9,869	$10,264	4.00%
Mechanical	Pipework	225NB earthenware ex- treated water storage	99	$0		#DIV/0!
Mechanical	Pipework	225NB RCRRJ	100	$0		#DIV/0!
Mechanical	Pipework	250NB Concrete Lined Steel	100	$830	$864	4.00%
Mechanical	Pipework	250NB HDPE - Plain	50	$830	$864	4.00%
Mechanical	Pipework	250NB HDPE - Slotted	50	$830	$864	4.00%
Mechanical	Pipework	250NB Steel epoxy coated	50	$138,481	$144,020	4.00%
Mechanical	Pipework	250NB well casing	50	$1,107	$1,151	4.00%
Mechanical	Pipework	260NB stainless steel	50	$67,342	$70,036	4.00%
Mechanical	Pipework	300NB galvanised steel pipe	50	$0		#DIV/0!
Mechanical	Pipework	300NB mPVC	100	$605	$629	4.00%
Mechanical	Pipework	300NB RCRRJ	99	$0		#DIV/0!
Mechanical	Pipework	300NB stainless steel	50	$0		#DIV/0!
Mechanical	Pipework	300NB well casing	50	$803	$835	4.00%
Mechanical	Pipework	300NB well casing 0-51m	50	$0		#DIV/0!
Mechanical	Pipework	300NB well casing 51-168m	50	$0		#DIV/0!
Mechanical	Pipework	375NB galvanised Steel Pipe	80	$647	$673	4.00%

Mechanical	Pipework	375NB RCRRJ	100	$427	$444	4.00%
Mechanical	Pipework	400NB PN 8 SDR21	100	$515	$536	4.00%
Mechanical	Pipework	400NB well casing	50	$1,155	$1,202	4.00%
Mechanical	Pipework	450NB RCRRJ	99	$197	$204	4.00%
Mechanical	Pipework	600NB HDPE	100	$488	$507	4.00%
Mechanical	Pipework	600NB RC half-pipe	100	$488	$507	4.00%
Mechanical	Pipework	600NB RCRRJ	100	$488	$507	4.00%
Mechanical	Pipework	600NB Steel Pipe	50	$392	$408	4.00%
Mechanical	Pipework	750NB RCRRJ pipe	100	$686	$713	4.00%
Mechanical	Pipework	Above ground pipework	35	$0		#DIV/0!
Mechanical	Pipework	Backup intake gallery	20	$7,857	$8,172	4.00%
Mechanical	Pipework	Below ground pipework	50	$0		#DIV/0!
Mechanical	Pipework	Boost Pump Pipework	50	$4,987	$5,187	4.00%
Mechanical	Pipework	Bore	70	$77,136	$80,222	4.00%
Mechanical	Pipework	Bore Screen	100	$0		#DIV/0!
Mechanical	Pipework	Borehead chamber	50	$0		#DIV/0!
Mechanical	Pipework	Bulk Fill Point - Fluoride	20	$2,639	$2,744	4.00%
Mechanical	Pipework	Chlorine misc dia small pipework & fittings	20	$1,455	$1,513	4.00%
Mechanical	Pipework	Chlorine Regulator	5	$3,611	$3,756	4.00%
Mechanical	Pipework	Clayton float control unit	25	$0		#DIV/0!
Mechanical	Pipework	Cleaning/pig access point on pump line	50	$0		#DIV/0!
Mechanical	Pipework	Feed pipe	50	$9,120	$9,485	4.00%
Mechanical	Pipework	Flash Mixer pipe fittings	20	$6,687	$6,954	4.00%
Mechanical	Pipework	Intake pipework renewal	50	$31,658	$32,924	4.00%
Mechanical	Pipework	Misc small dia pipework and fittings	50	$0		#DIV/0!

Mechanical	Pipework	Misc. 80-150mm dia galvanised steel pipe and specials	25	$0		#DIV/0!
Mechanical	Pipework	Pipework	80	$7,154	$7,440	4.00%
Mechanical	Pipework	Pipework and valves (80mm)	35	$0		#DIV/0!
Mechanical	Pipework	Pipework and valving 20-32mm	80	$0		#DIV/0!
Mechanical	Pipework	Pipework Fluoride	20	$3,673	$3,820	4.00%
Mechanical	Pipework	Screen	50	$3,961	$4,119	4.00%
Mechanical	Pipework	Tee junction	20	$4,282	$4,453	4.00%
Mechanical	Pipework	Valve box - ?m x ?m reinforced concrete with steel lid	50	$0		#DIV/0!
Mechanical	Pipework	Valve box - 2.2m x 1.5m reinforced concrete with galv. steel lid	50	$0		#DIV/0!
Mechanical	Pipework	Valve box - 2.3m x 1.2m reinforced concrete, 1.0m deep	50	$0		#DIV/0!
Mechanical	Pipework	Water Sampling Point	25	$5,960	$6,198	4.00%
Mechanical	Pneumatics	Air compressor	30	$0		#DIV/0!
Mechanical	Pneumatics	Compressor,air dryer and power cabling	35	$44,094	$45,858	4.00%
Mechanical	Pneumatics	S&I air scour blower and associated pipework and valves	35	$60,635	$63,060	4.00%
Mechanical	Pump	200mm dia Pleuger in-line boost pump	25	$0		#DIV/0!
Mechanical	Pump	25 litre pressure tank	10	$0		#DIV/0!
Mechanical	Pump	Backwash pump and associated pipework valves	35	$15,711	$16,340	4.00%
Mechanical	Pump	Carry water pump	37	$2,131	$2,216	4.00%
Mechanical	Pump	Dosing pump 0.0 - 0.5kW	15	$6,506	$6,767	4.00%
Mechanical	Pump	Dosing pump 0.5 to 1.5 kw	10	$0		#DIV/0!
Mechanical	Pump	Guide rails	10	$7,202	$7,491	4.00%

Mechanical	Pump	Injector	15	$0		#DIV/0!
Mechanical	Pump	Pressure Tank	20	$1,256	$1,307	4.00%
Mechanical	Pump	Pump	20	$8,041	$8,362	4.00%
Mechanical	Pump	Pump - Pneumatic Transfer	20	$36,686	$38,154	4.00%
Mechanical	Pump	Pump - Submersible	25	$24,364	$25,339	4.00%
Mechanical	Pump	Pump - Submersible 01-05kW	15	$10,114	$10,519	4.00%
Mechanical	Pump	Pump - Submersible 05-10kW	20	$11,057	$11,500	4.00%
Mechanical	Pump	Pump - Submersible 10-20kW	25	$6,356	$6,610	4.00%
Mechanical	Pump	Pump - Submersible 30-40kW	25	$10,280	$10,691	4.00%
Mechanical	Pump	Pump - Submersible 40-60kW	25	$49,059	$51,021	4.00%
Mechanical	Pump	Pump - Submersible stormwater	20	$0		#DIV/0!
Mechanical	Pump	Pump 00.5-01kW	10	$2,775	$2,886	4.00%
Mechanical	Pump	Pump 01-05kW	15	$5,950	$6,188	4.00%
Mechanical	Pump	Pump 10-20kW	25	$10,642	$11,068	4.00%
Mechanical	Pump	Pump 20-30kW	25	$17,665	$18,372	4.00%
Mechanical	Pump	Pump sets	25	$0		#DIV/0!
Mechanical	Pump	Sample Water Pump	35	$2,671	$2,777	4.00%
Mechanical	Reservoir	By pass feed cap valve	50	$7,132	$7,417	4.00%
Mechanical	Reservoir	close down - Opus consultant cost	1	$0		#DIV/0!
Mechanical	Reservoir	Reservoir inlet connection	50	$13,224	$13,753	4.00%
Mechanical	UV Reactor	Reactor vessel	20	$80,846	$84,080	4.00%
Reservoir	- Not Selected -	none	200	$0		#DIV/0!
Treatment Plant	- Not Selected -	none	200	$0		#DIV/0!
Valve	Actuator	Modulating Actuators	20	$17,676	$18,383	4.00%
Valve	Actuator	Suppression Dampeners	20	$1,300	$1,352	4.00%
Valve	Backflow Preventer	Testable BackFlow Preventers	25	$17,878	$18,593	4.00%
Valve	Bermad Valve	Altitude valve	35	$0		#DIV/0!

Valve	Bermad Valve	Surge control valve	35	$0		#DIV/0!
Valve	Butterfly Valve	050NB	35	$544	$566	4.00%
Valve	Butterfly Valve	080NB	35	$1,236	$1,286	4.00%
Valve	Butterfly Valve	100NB	35	$1,451	$1,509	4.00%
Valve	Butterfly Valve	100NB gear operated	35	$1,203	$1,251	4.00%
Valve	Butterfly Valve	150NB	35	$0		#DIV/0!
Valve	Butterfly Valve	200NB	35	$1,988	$2,067	4.00%
Valve	Butterfly Valve	250NB	35	$881	$917	4.00%
Valve	Butterfly Valve	300NB	35	$0		#DIV/0!
Valve	Butterfly Valve	300NB gear operated	35	$1,203	$1,251	4.00%
Valve	Check Valve	050NB	35	$690	$717	4.00%
Valve	Check Valve	080NB	35	$1,194	$1,242	4.00%
Valve	Check Valve	100NB	35	$1,221	$1,270	4.00%
Valve	Check Valve	150NB	35	$5,320	$5,533	4.00%
Valve	Check Valve	200NB	35	$2,050	$2,132	4.00%
Valve	Check Valve	300NB	35	$6,749	$7,019	4.00%
Valve	Check Valve	Non-Return Valve	35	$4,474	$4,653	4.00%
Valve	Check Valve	Swing check valve	35	$0		#DIV/0!
Valve	Clayton Valve	Clayton diaphragm valve	25	$951	$989	4.00%
Valve	Clayton Valve	flow control valve	25	$0		#DIV/0!
Valve	Control Valve	flow control valve	35	$0		#DIV/0!
Valve	Flow Meter	020mm Flow Meter	10	$7,510	$7,810	4.00%
Valve	Flow Meter	025mm Kent PSM	15	$0		#DIV/0!
Valve	Flow Meter	040mm Kent Helix	25	$1,221	$1,270	4.00%
Valve	Flow Meter	080mm Kent Helix	20	$1,902	$1,978	4.00%
Valve	Flow Meter	100mm Kent Helix	20	$8,805	$9,157	4.00%
Valve	Flow Meter	100mm Magflow	15	$0		#DIV/0!

Valve	Flow Meter	150mm MagFlow	14	$256	$266	4.00%
Valve	Flow Meter	200mm Magflow	20	$8,822	$9,175	4.00%
Valve	Flow Meter	300mm MagFlow	25	$23,055	$23,978	4.00%
Valve	Flow Meter	MagFlow	20	$6,019	$6,259	4.00%
Valve	Flow Meter	SCM Meter	20	$6,460	$6,718	4.00%
Valve	Gate Valve	080NB resilient seated valve	35	$931	$968	4.00%
Valve	Gate Valve	100NB resilient seated valve	35	$1,221	$1,270	4.00%
Valve	Gate Valve	150NB resilient seated valve	35	$3,682	$3,829	4.00%
Valve	Gate Valve	225NB resilient seated valve	35	$3,599	$3,743	4.00%
Valve	Gate Valve	250NB resilient seated valve	35	$4,787	$4,979	4.00%
Valve	Gate Valve	300NB resilient seated valve	35	$6,749	$7,019	4.00%
Valve	Gate Valve	450NB resilient seated valve	35	$5,276	$5,487	4.00%
Valve	Gate Valve	500NB resilient seated valve	35	$29,197	$30,365	4.00%
Valve	Gate Valve	none	35	$2,946	$3,064	4.00%
Valve	Gauge	Pressure Gauge	20	$956	$994	4.00%
Valve	Reflux Valve	100NB	35	$1,256	$1,306	4.00%
Valve	Sluice Valve	sluice valve	35	$6,450	$6,708	4.00%
Valve	Valve	20 & 25mm dia	35	$475	$494	4.00%
Valve	Valve	Filter modulating valves	35	$0		#DIV/0!
Valve	Valve	GF actuated valve	35	$0		#DIV/0!
Valve	Valve	none	35	$0		#DIV/0!
Valve	Valve	Valve Replacement	35	$8,825	$9,178	4.00%

Table 5-4 : Water Plant costs

Note not all plant assets obtain their replacement value from the table above. Bespoke items use the Optional Unit Rate field to provide their value which is adjusted annually from the GCPI.

5.1.2. Wastewater Replacement Costs

Wastewater Pipeline Costs per metre

Material	Diameter	Height	Base Life	Unit Cost	Proposed Unit Cost	Notes	% Diff
AC-PVC	150	0	50	$254.77	$264.96	Relined Pipe with PVC	4.00%
Asbestos	80	0	100	$247.57	$130.34		-47.35%
Asbestos	100	0	100	$247.57	$231.73		-6.40%
Asbestos	150	0	100	$254.77	$264.96		4.00%
Asbestos	200	0	100	$268.74	$293.46		9.20%
Asbestos	225	0	100	$331.89	$351.75		5.98%
Asbestos	450	0	100	$532.09	$719.39		35.20%
Concrete	100	0	100	$247.57	$231.73		-6.40%
Concrete	150	0	100	$254.77	$264.96		4.00%
Concrete	300	0	100	$458.47	$476.81		4.00%
Concrete	375	0	100	$410.88	$565.47		37.62%
Concrete	450	0	100	$418.36	$719.39		71.95%
Concrete	525	0	100	$498.38	$845.70		69.69%
Concrete	680	0	100	$499.52	$1,142.90		128.80%
Concrete	840	0	100	$711.96	$1,184.70		66.40%
Concrete-PVC(Rib-loc)	375	0	50	$453.10	$565.47	Relined Pipe with PVC	24.80%
CS	150	0	100	$168.18	$264.96		57.55%
Ductile Iron	100	0	50	$247.57	$231.73		-6.40%
GEW	100	0	100	$247.57	$231.73		-6.40%
GEW	150	0	100	$254.77	$264.96		4.00%
GEW	225	0	100	$331.89	$351.75		5.98%
GEW	300	0	100	$458.47	$476.81		4.00%
GEW	375	0	100	$410.88	$565.47		37.62%

GEW	450	0	100	$418.36	$719.39		71.95%
GEW-PVC	150	150	50	$338.08	$264.96	Relined Pipe with PVC	-21.63%
GEW-PVC	375	0	50	$807.64	$565.47		-29.99%
LDPE Redline	25	32	75	$389.85	$100.00		-74.35%
LDPE Redline	32	40	75	$35.83	$100.00		179.10%
None	0	0	100	$0.00			#DIV/0!
None	100	0	100	$247.57	$231.73		-6.40%
None	150	0	100	$254.77	$264.96		4.00%
None	375	0	100	$410.88	$565.47		37.62%
Novaflo	50	0	100	$58.01	$100.00		72.38%
PE100 PN16	25	32	90	$389.85	$100.00		-74.35%
PE100 PN16	32	40	90	$35.83	$100.00		179.10%
PE100 PN16	40	50	90	$30.27	$100.00		230.36%
PE100 PN16	50	63	90	$57.04	$100.00		75.32%
PE100 PN16	61	75	90	$81.50	$100.00		22.70%
PE100 PN16	73	90	90	$127.59	$119.42		-6.40%
PE100 PN16	90	110	90	$103.56	$134.63		30.00%
PE100 PN16	101	125	90	$122.47	$231.73		89.21%
PE100 PN16	125	150	90	$162.10	$252.88		56.00%
PE100 PN16	140	150	90	$190.99	$262.19		37.28%
PE100 PN16	162	200	90	$196.59	$265.79		35.20%
PE80	32	0	90	$69.75	$100.00		43.37%
PE80	40	50	90	$41.24	$100.00		142.48%
PE80	50	0	90	$23.58	$100.00		324.09%
PE80	80	0	90	$125.33	$130.34		4.00%
PE80	130	160	90	$168.18	$253.62		50.80%
PE80	225	280	90	$338.22	$351.75		4.00%
PVC-o	150	0	100	$254.77	$264.96		4.00%

PVC-u	40	0	100	$38.10	$100.00	162.47%
PVC-u	50	0	100	$58.01	$100.00	72.38%
PVC-u	80	0	100	$125.33	$130.34	4.00%
PVC-u	100	0	100	$247.57	$231.73	-6.40%
PVC-u	150	0	100	$254.77	$264.96	4.00%
PVC-u	175	0	100	$168.18	$271.11	61.20%
PVC-u	200	0	100	$268.74	$293.46	9.20%
PVC-u	225	0	100	$331.89	$351.75	5.98%
PVC-u	250	0	100	$401.73	$417.80	4.00%
PVC-u	300	0	100	$458.47	$476.81	4.00%
PVC-u	375	0	100	$410.88	$565.47	37.62%
PVC-u	450	0	100	$532.09	$719.39	35.20%
PVC-u	475	0	100	$543.06	$734.22	35.20%
PVC-u	525	0	100	$625.52	$845.70	35.20%
SS	80	0	100	$125.33	$130.34	4.00%
SS	100	0	100	$172.63	$231.73	34.23%

Table 5-5 : Wastewater Pipeline costs per metre

Wastewater Point Features

Asset Type	ASSET SUB TYPE	Diameter	Width	Depth	Unit Cost	Proposed Unit Rate	Base Life	% Diff
Boundary Valve Box	Standard Valve	25	0	Surface	$1,133	$1,179	35	4.00%
Boundary Valve Box	Standard Valve	32	0	Surface	$263	$273	50	4.00%
Boundary Valve Box	Standard Valve	40	0	Surface	$1,480	$1,539	25	4.00%
Flow Meter	MagFlow	100	0	Surface	$4,613	$4,798	25	4.00%
Manhole	Brick	1050	1050	< 1.5m	$6,902	$7,178	100	4.00%
Manhole	Brick	1050	1050	1.5m-3.0m	$10,680	$11,108	100	4.00%
Manhole	Brick	1050	1050	Surface	$4,954	$5,152	100	4.00%
Manhole	Concrete	0	0	Surface	$4,838	$5,031	100	4.00%
Manhole	Concrete	50	50	Surface	$4,954	$5,152	100	4.00%
Manhole	Concrete	600	0	Surface	$3,614	$3,759	100	4.00%
Manhole	Concrete	900	900	Surface	$4,382	$4,558	100	4.00%
Manhole	Concrete	1050	1050	< 1.5m	$7,297	$7,588	100	4.00%
Manhole	Concrete	1050	1050	1.5m-3.0m	$10,096	$10,499	100	4.00%
Manhole	Concrete	1050	1050	3.0m-4.5m	$9,785	$10,177	100	4.00%
Manhole	Concrete	1050	1050	4.5m-6.0m	$10,093	$10,497	100	4.00%
Manhole	Concrete	1050	1050	Surface	$3,863	$4,017	100	4.00%
Manhole	Concrete	1200	1200	< 1.5m	$0		100	#DIV/0!
Manhole	Concrete	1200	1200	1.5m-3.0m	$9,807	$10,200	100	4.00%
Manhole	Concrete	1200	1200	3.0m-4.5m	$0		100	#DIV/0!
Manhole	Concrete	1200	1200	Surface	$7,164	$7,451	100	4.00%
Manhole	Concrete	1350	1350	1.5m-3.0m	$6,155	$6,402	100	4.00%
Manhole	Concrete	1350	1350	3.0m-4.5m	$0		100	#DIV/0!
Manhole	Concrete	1350	1350	Surface	$6,155	$6,402	100	4.00%
Manhole	Concrete	1500	1500	< 1.5m	$5,306	$5,518	100	4.00%

Manhole	Concrete	1500	1500	3.0m-4.5m	$18,756	$19,506	100	4.00%
Manhole	Hy-Seal	1050	0	< 1.5m	$13,049	$13,571	100	4.00%
Manhole	Hy-Seal	1050	0	1.5m-3.0m	$12,622	$13,127	100	4.00%
Manhole	Hy-Seal	1050	0	3.0m-4.5m	$17,495	$18,195	100	4.00%
Manhole	None	0	0	< 1.5m	$0		100	#DIV/0!
Manhole	None	0	0	Surface	$0		100	#DIV/0!
Manhole	None	40	40	Surface	$0		100	#DIV/0!
Manhole	None	63	63	Surface	$0		100	#DIV/0!
Manhole	None	75	75	Surface	$0		100	#DIV/0!
Manhole	None	600	600	< 1.5m	$1,544	$1,606	100	4.00%
Manhole	PE - Mini Manhole	150	150	< 1.5m	$3,847	$4,001	100	4.00%
Manhole	PE - Mini Manhole	150	150	1.5m-3.0m	$3,847	$4,001	100	4.00%
Manhole	PE - Mini Manhole	150	150	Surface	$3,461	$3,599	100	4.00%
Manhole	PE - Mini Manhole	300	300	Surface	$1,496	$1,556	100	4.00%
Manhole	PE - Mini Manhole	600	600	< 1.5m	$7,502	$7,802	50	4.00%
Manhole	PE - Mini Manhole	600	600	< 1m	$2,869	$2,984	50	4.00%
Manhole	PE - Mini Manhole	900	0	Surface	$0		90	#DIV/0!
Manhole	PE - Mini Manhole	1050	1050	< 1.5m	$5,965	$6,204	100	4.00%
Manhole	PE - Mini Manhole	1050	1050	1.5m-3.0m	$8,984	$9,344	100	4.00%
Manhole	PE - Mini Manhole	1050	1050	3.0m-4.5m	$13,556	$14,099	100	4.00%
Manhole	PE - Mini Manhole	1050	1050	Surface	$4,395	$4,570	100	4.00%
Node	Connection Point	0	0	< 1.5m	$0		100	#DIV/0!
Node	Connection Point	0	0	1.5m-3.0m	$0		100	#DIV/0!
Node	Joint	0	0	1.5m-3.0m	$0		100	#DIV/0!
Node	Joint	50	50	Surface	$856	$891	50	4.00%
Node	Joint	63	50	Surface	$0		90	#DIV/0!

Node	Joint	63	63	Surface	$0		50	#DIV/0!
Node	Joint	75	75	Surface	$0		50	#DIV/0!
Node	Joint	90	75	Surface	$0		90	#DIV/0!
Node	Joint	110	0	Surface	$0		50	#DIV/0!
Node	Joint	110	90	Surface	$0		90	#DIV/0!
Node	Joint	150	0	Surface	$0		100	#DIV/0!
Node	Joint	180	140	Surface	$0		90	#DIV/0!
Node	None	0	0	Dummy Value -99	$0		100	#DIV/0!
Node	Outlet	200	0	Surface	$0		100	#DIV/0!
Node	Tee Junction	40	63	Surface	$0		90	#DIV/0!
Node	Tee Junction	50	50	Surface	$859	$893	50	4.00%
Node	Tee Junction	50	63	Surface	$859	$893	90	4.00%
Node	Tee Junction	63	63	Surface	$0		50	#DIV/0!
Node	Tee Junction	75	0	Surface	$0		50	#DIV/0!
Node	Tee Junction	90	90	Surface	$0		50	#DIV/0!
Node	Tee Junction	110	0	Surface	$0		50	#DIV/0!
Node	Tee Junction	125	0	Surface	$0		50	#DIV/0!
Node	Tee Junction	125	50	Surface	$0		90	#DIV/0!
Node	Tee Junction	125	63	Surface	$0		90	#DIV/0!
Node	Tee Junction	125	75	Surface	$0		90	#DIV/0!
Node	Tee Junction	140	63	Surface	$0		90	#DIV/0!
None	None	100	100	1.5m-3.0m	$0		100	#DIV/0!
None	None	100	100	Surface	$0		100	#DIV/0!
Pig Port	None	0	0	Surface	$675	$702	50	4.00%
Pig Port	None	50	50	Surface	$632	$657	50	4.00%
Pig Port	None	75	75	Surface	$675	$702	50	4.00%

Valve	Air Valve	0	0	Surface	$15,910	$16,546	50	4.00%
Valve	Air Valve	25	0	Surface	$0		50	#DIV/0!
Valve	Air Valve	50	0	Surface	$6,461	$6,719	50	4.00%
Valve	Flushing Point	50	50	< 1.5m	$4,371	$4,546	50	4.00%
Valve	Flushing Point	50	50	Surface	$4,371	$4,546	50	4.00%
Valve	Non Return Valve	50	0	Surface	$0		50	#DIV/0!
Valve	Non Return Valve	100	100	Surface	$6,992	$7,272	50	4.00%
Valve	Standard Valve	32	0	Surface	$0		25	#DIV/0!
Valve	Standard Valve	40	0	< 1.5m	$0		25	#DIV/0!
Valve	Standard Valve	50	0	< 1.5m	$4,371	$4,546	25	4.00%
Valve	Standard Valve	63	0	< 1.5m	$2,960	$3,079	50	4.00%
Valve	Standard Valve	63	0	Surface	$2,960	$3,079	50	4.00%
Valve	Standard Valve	75	0	< 1.5m	$2,814	$2,927	50	4.00%
Valve	Standard Valve	75	0	Surface	$2,816	$2,929	50	4.00%
Valve	Standard Valve	80	0	< 1.5m	$2,536	$2,637	50	4.00%
Valve	Standard Valve	90	0	Surface	$2,536	$2,637	50	4.00%
Valve	Standard Valve	110	0	Surface	$3,001	$3,121	50	4.00%
Valve	Standard Valve	125	0	Surface	$4,126	$4,291	50	4.00%
Valve	Standard Valve	140	0	Surface	$5,833	$6,066	50	4.00%
Valve	Standard Valve	150	0	< 1.5m	$0		25	#DIV/0!
Valve	Standard Valve	150	0	Surface	$1,962	$2,040	25	4.00%
Valve	Standard Valve	180	0	Surface	$5,833	$6,066	50	4.00%
Valve A	None	0	0	Surface	$573	$596	100	4.00%
Valve A	None	32	32	Surface	$400	$416	100	4.00%
Valve A	None	100	100	Surface	$2,100	$2,184	100	4.00%

Table 5-6 : Wastewater Point Feature costs

Wastewater Pump Station Features

Asset Group	Asset Type	Asset Sub Type	Base Life	Unit Cost	Proposed Unit Rate	Notes	% Diff
Chamber	Control Box	Standard Control Box	25	$3,181.25	$3,309	Each	4.00%
Chamber	Power Supply	230V 50Hz Single Phase buried in Conduit	50	$139.14	$145	m	4.00%
Chamber	Pump	Heavy Duty Mutrator Pump	15	$73,123.66	$76,049	Each	4.00%
Chamber	Pump	Standard Macerator Pump	25	$3,153.27	$3,279	Each	4.00%
Chamber	Tank	3m Dia Wetwell & pump Chamber	100	$110,436.32	$114,854	Each	4.00%
Chamber	Tank	Standard 2200L Tank	50	$5,391.42	$5,607	Each	4.00%
Chamber	Tank	Standard 5000L Tank	50	$10,683.49	$11,111	Each	4.00%
Chamber	Tank	Standard 900L Tank	50	$4,453.98	$4,632	Each	4.00%
Civil	Storage Tank	1.8m dia RC pipe	50	$1,535.75	$1,597	m	4.00%
Civil	Storage Tank	2.05m dia FJRC pipe	50	$3,232.62	$3,362	m	4.00%
Civil	Storage Tank	Base - 200mm thick reinforced concrete	50	$129.65	$135	Each	4.00%
Civil	Storage Tank	Base - 450mm thick reinforced concrete	50	$276.27	$287	Each	4.00%
Civil	Storage Tank	Concrete lid with std cast iron M.H	50	$216.08	$225	Each	4.00%
Civil	Storage Tank	MH cover - 200mm thick concrete lid	50	$129.65	$135	Each	4.00%
Civil	Valve Chamber	Chamber 1.2m x.0.9m concrete	50	$4,455.33	$4,634	Each	4.00%
Civil	Valve Chamber	MH Riser 1.8m concrete c/w lid	100	$4,713.83	$4,902	Each	4.00%
Civil	Wet Well	100mm thick RC wing wall -2.25 m2	50	$524.00	$545	Each	4.00%
Civil	Wet Well	100mm thick timber lid with G.I cover	25	$333.38	$347	Each	4.00%
Civil	Wet Well	2.3m dia concrete pipe	50	$2,973.87	$3,093	m	4.00%
Civil	Wet Well	Base - 400mm thick concrete	50	$194.47	$202	Each	4.00%
Civil	Wet Well	Concrete lid with std cast iron M.H	50	$259.31	$270	Each	4.00%
Civil	Wet Well	MH cover - 600mm dia C.I	50	$388.96	$405	Each	4.00%
Civil	Wet Well	MH Riser 1.05 dia Concrete	50	$2,322.91	$2,416	m	4.00%

Civil	Wet Well	MH Riser 1.2 dia Concrete	50	$3,233.16	$3,362	m	4.00%
Civil	Wet Well	None	50	$13,051.49	$13,574	Bespoke	4.00%
Civil	Wet Well	Pump tank - 1.8m dia RC pipe	50	$1,657.37	$1,724	m	4.00%
Civil	Wet Well	Pump tank - 125mm thick RC lid with chequer plates	50	$129.65	$135	Each	4.00%
Civil	Wet Well	Pump tank - 2.05m dia FJRC pipe	50	$3,298.87	$3,431	m	4.00%
Civil	Wet Well	Pump tank - 400mm deep reinforced concrete base	50	$280.91	$292	Each	4.00%
Civil	Wet Well	Pump tank - 450mm thick reinforced concrete base	50	$276.27	$287	Each	4.00%
Civil	Wet Well	Pump tank - Concrete lid with 6mm thick steel plates	50	$3,131.33	$3,257	Each	4.00%
Civil	Wet Well	Reinforced concrete base	50	$194.47	$202	Each	4.00%
Civil	Wet Well	Tank - 9.1m3 round concrete	50	$6,460.92	$6,719	Each	4.00%
Electrical	Cabinet	Ground Control	32	$5,897.33	$6,133	Bespoke	4.00%
Electrical	Electrical and control	None	28	$13,415.26	$13,952	Bespoke	4.00%
Electrical	Electricity supply	new power supply & pole	25	$11,504.19	$11,964	Bespoke	4.00%
Electrical	Level Control	High Level Alarm Controller	15	$1,376.12	$1,431	Each	4.00%
Electrical	Switchboard	None	25	$11,361.43	$11,816	Each	4.00%
Electrical	Telemetry System	None	15	$4,026.29	$4,187	Each	4.00%
Mechanical	Emergency Storage Tank - 150mm dia AC connecting pipe	None	60	$0.00		m	#DIV/0!
Mechanical	Emergency Storage Tank - 200mm dia AC connecting pipe	None	60	$0.00		m	#DIV/0!
Mechanical	Flow Meter	MagFlow 100	25	$9,194.14	$9,562	Each	4.00%
Mechanical	Guide Rails	None	10	$1,837.18	$1,911	Each	4.00%
Mechanical	Other - Ladder and misc fittings	None	25	$8,259.62	$8,590	Each	4.00%
Mechanical	Other - Ladder, guide bars and misc fittings	None	20	$3,818.20	$3,971	Each	4.00%
Mechanical	Pipework and valves	None	28	$37,029.29	$38,510	Each	4.00%
Mechanical	Pump	Motor Unit	10	$5,481.14	$5,700	Each	4.00%

Mechanical	Pump & Motor	None	25	$5,181.87	$5,389	Each	4.00%
Mechanical	Pump (c/w Auto Coupling)	None	25	$7,866.14	$8,181	Each	4.00%
Mechanical	Pump (Mascerating)	None	50	$2,412.01	$2,508		4.00%
Sewer - Valve	Check Valve	100 mm	25	$6,910.33	$7,187	Each	4.00%
Sewer - Valve	Check Valve	150 mm	25	$0.00		Each	#DIV/0!
Sewer - Valve	Check Valve	200 mm	25	$0.00		Each	#DIV/0!
Sewer - Valve	Gate Valve	100 mm	25	$2,708.23	$2,817	Each	4.00%

Table 5-7 : Wastewater Sewer Pump Station costs

Note not all pump station assets obtain their replacement value from the table above. Bespoke items use an Optional Unit Rate field to provide their value.

Wastewater Plant Features

Asset Group	Asset Type	Asset Sub Type	Base Life	Unit Cost	Proposed Unit Rate	Notes	% Diff
Building	Building	Chemical Dosing Building	30	$0		m2	#DIV/0!
Building	Building	Electrical Shed	50	$295	$307	m2	4.00%
Building	Building	Main Building	50	$0		m2	#DIV/0!
Building	Building	Offices	50	$0		m2	#DIV/0!
Building	Building	Plant House	50	$0		m2	#DIV/0!
Building	Building	Portacom Retic Office	30	$87,106	$90,590	m2	4.00%
Building	Building	Precast Shed	50	$7,417	$7,713	Each	4.00%
Building	Building	Storage Shed	50	$0		m2	#DIV/0!
Building	Building	Water Shed	50	$2,568	$2,670	m2	4.00%
Building	Building	Workshop	50	$0		m2	#DIV/0!
Building	Control Shed SDI	SDI Control Shed Building -	50	$0		m2	#DIV/0!
Building	Door	Roller Shutter Door	50	$0		Each	#DIV/0!
Building	Fence	Fence	50	$57	$59	m	4.00%
Building	Fence	Fence - Electric Stock	20	$0		Bespoke	#DIV/0!
Building	Fence	Fence - Stock 8-wire & gates	25	$0		Bespoke	#DIV/0!
Building	Floor	Concrete floor with pipe drain (145mm thick)	100	$0		m2	#DIV/0!
Building	Foundations	Concrete Pad	100	$3,117	$3,241	m2	4.00%
Building	Roof	Brownbuilt on timber purlins	50	$160	$166	m2	4.00%
Building	Shed	Building	50	$709	$737	m2	4.00%
Civil	Access Track	Track Formation	200	$434	$452	m	4.00%
Civil	Bore Surrounds	None	50	$7,870	$8,185	Bespoke	4.00%
Civil	BTF Pumpstation Civil/Structural	BTF Pumpstation Civil/Structural	100	$10,960	$11,398	Bespoke	4.00%
Civil	Chamber	Inlet Pipework	100	$60,828	$63,261	Each	4.00%

Final

Civil	Chamber	Manhole 1050dia	50	$1,104	$1,148	Each	4.00%
Civil	Chamber	Manhole 600dia	100	$16,727	$17,397	Each	4.00%
Civil	Chamber	None	100	$2,496	$2,596	Each	4.00%
Civil	Chamber	Outlet Pipework	100	$57,261	$59,551	Each	4.00%
Civil	Chamber	screen and flow measurement flume - RC concrete	100	$0		Bespoke	#DIV/0!
Civil	Chemical Dosing	Intermediate Bulk Container 1000L	50	$2,649	$2,755	m3	4.00%
Civil	Civil/Structural	None	100	$10,720	$11,149	Bespoke	4.00%
Civil	Concrete Structure	Chambers and channels (incl covers) - UV Entry/outlet T	100	$0		Bespoke	#DIV/0!
Civil	Concrete Structure	Channels	100	$51,318	$53,371	Bespoke	4.00%
Civil	Concrete Structure	Concrete Pad	100	$1,648	$1,714	m2	4.00%
Civil	Concrete Structure	Effluent collection weirs	100	$0		Bespoke	#DIV/0!
Civil	Concrete Structure	Main tank	100	$0		m3	#DIV/0!
Civil	Concrete Structure	None	100	$46,790	$48,661	Bespoke	4.00%
Civil	Concrete Structure	Precast wall panels	100	$0		m2	#DIV/0!
Civil	Concrete Structure	Refurbishment	100	$0		Bespoke	#DIV/0!
Civil	Concrete Structure	Sludge return well	100	$0		Bespoke	#DIV/0!
Civil	Concrete Structure	Spillway	100	$36,598	$38,062	Bespoke	4.00%
Civil	Drainage	Novacoil surface drain	20	$0		m	#DIV/0!
Civil	Duct	Chamber	50	$473	$492	Each	4.00%
Civil	Duct	Tunnel	50	$400	$416	m	4.00%
Civil	Floating Reed Bed	None	20	$174	$181	m2	4.00%
Civil	Inlet Meter	Chamber	25	$0		Bespoke	#DIV/0!
Civil	Inlet Meter	Civil related installation & materials	100	$2,929	$3,047	Each	4.00%
Civil	Inlet Works	Distribution structure	100	$15,332	$15,945	Bespoke	4.00%
Civil	Inlet Works	Inlet - 125mm dia Tanalised post, 2.2m long	50	$0		Bespoke	#DIV/0!
Civil	Inlet Works	Screen	50	$124,941	$129,939	Bespoke	4.00%

Civil	Jetties	None	100	$0		Bespoke	#DIV/0!
Civil	Land Improvements	Earthworks	100	$0		Bespoke	#DIV/0!
Civil	Maturation Pond	Earthworks	200	$0		m2	#DIV/0!
Civil	Monitoring Bores	050NB	50	$1,156	$1,202	m	4.00%
Civil	Monitoring Bores	None	100	$0		m	#DIV/0!
Civil	Outlet Works	Base - 100mm thick concrete	100	$0		m2	#DIV/0!
Civil	Pavement/Pad	Chip seal	20	$12	$12	m2	4.00%
Civil	Pavement/Pad	Concrete	100	$0		m2	#DIV/0!
Civil	Pavement/Pad	Earthworks	100	$0		m2	#DIV/0!
Civil	Pipelines and Tank	None	75	$91,399	$95,055	m3	4.00%
Civil	Pond	200mm dia Pinus radiata posts, 2.4m long	50	$0		Each	#DIV/0!
Civil	Pond	Baffle	50	$0		Each	#DIV/0!
Civil	Pond	Concrete weir - 3.0m x 0.9m	100	$0		Bespoke	#DIV/0!
Civil	Pond	Cover	25	$0		m2	#DIV/0!
Civil	Pond	Earthworks	200	$78	$81	m2	4.00%
Civil	Pond	Liner	50	$23	$24	m2	4.00%
Civil	Pond	Liner anchor ring beam RC	50	$0		m	#DIV/0!
Civil	Pond	Partition -50mm thick RC pond	100	$0		m2	#DIV/0!
Civil	Pond	Pier 250mm dia AC - 2m tall	100	$0		Each	#DIV/0!
Civil	Pond	Pier Base 1.2m2 RC	100	$0		Each	#DIV/0!
Civil	Pond	Pond - Desludging	20	$0		m3	#DIV/0!
Civil	Pond	PVC 110m sludge line 2011	100	$24,079	$25,042	m	4.00%
Civil	Pond	Rip rap banks	100	$0		m2	#DIV/0!
Civil	Pond	Spillway	100	$4,795	$4,987	m2	4.00%
Civil	Pond	Waveband - 50mm thick RC - 1.5m wide	100	$0		m	#DIV/0!
Civil	Pond	Waveband - 70mm thick RC - 2.25m wide	100	$0		m	#DIV/0!

Civil	Pond	Waveband - 75mm thick RC - 3.8m wide	100	$0		m	#DIV/0!
Civil	Pond	Waveband - 75mm thick RC , 1.35m wide	100	$0		m	#DIV/0!
Civil	Pond	Waveband - RC concrete	100	$0		m	#DIV/0!
Civil	Resource Consents	Discharge to Air	10	$318,038	$330,759	Bespoke	4.00%
Civil	Resource Consents	Discharge to Land	10	$490,627	$510,252	Bespoke	4.00%
Civil	Resource Consents	Discharge to Water	10	$731,972	$761,251	Bespoke	4.00%
Civil	Resource Consents	Legal Easements	200	$0			#DIV/0!
Civil	Rock Filter	Rock baskets	100	$1,578	$1,641	m3	4.00%
Civil	SCAN Civil & elect	None	50	$75,710	$78,738	Each	4.00%
Civil	Site Safety	Handrails	50	$0			#DIV/0!
Civil	Slow Sand Filter	None	25	$102,503	$106,603	Each	4.00%
Civil	Sludge drying beds	RC with 500mm high block walls	100	$0		m2	#DIV/0!
Civil	Tank	265mm thick reinforced co	100	$0		m2	#DIV/0!
Civil	Tank	Base - 335mm thick sloped 41	100	$0		m2	#DIV/0!
Civil	Tank	None	30	$0		m3	#DIV/0!
Civil	Tank	Tank (000-005m3)	50	$501	$522	m3	4.00%
Civil	Trees	None	100	$0		Each	#DIV/0!
Civil	Trickling Filter	Distribution arms	50	$0		Each	#DIV/0!
Civil	Trickling Filter	None	50	$0		Bespoke	#DIV/0!
Civil	Trickling Filter	Precast drain floor units laid	100	$0		m2	#DIV/0!
Civil	Trickling Filter	RC central column with2.25m2 RC b	100	$0		Each	#DIV/0!
Civil	Trickling Filter	Rock baskets	50	$0		m3	#DIV/0!
Civil	UV & Effluent Meter	Duct for Flow meter	100	$1,636	$1,702	m	4.00%
Civil	Water Resevoir	None	100	$0		m3	#DIV/0!
Civil	Weir - 600mm x 500mm - 5mm thick V-notch plate	None	50	$0		Each	#DIV/0!

Civil	Weirs and Scrum troughs	None	50	$0		Each	#DIV/0!
Civil	Wetland material	Rock baskets	100	$0		m3	#DIV/0!
Civil	Wetlands	Earthworks	200	$0		m3	#DIV/0!
Civil	Wetlands	planting	50	$0		m2	#DIV/0!
Electrical	Cabinet	Ground Control	50	$53,524	$55,665	Each	4.00%
Electrical	Cabinet	None	50	$0		Each	#DIV/0!
Electrical	Cables	None	50	$123	$128	Bespoke	4.00%
Electrical	Conduits and cable to inlet chamber	None	50	$8,210	$8,539	m	4.00%
Electrical	D.O. monitoring unit	None	25	$0		Each	#DIV/0!
Electrical	Ducts	None	50	$50	$52	m	4.00%
Electrical	Electrical	None	50	$93,896	$97,652	Bespoke	4.00%
Electrical	Electrical and control	equipment for irrigation pumps incl Magfl	50	$0		Bespoke	#DIV/0!
Electrical	Electrical and control	Inlet meter	50	$3,197	$3,324	Each	4.00%
Electrical	Electrical and control	inlet works and aerator	50	$0		Bespoke	#DIV/0!
Electrical	Electrical and control	None	50	$104,855	$109,049	Bespoke	4.00%
Electrical	Electricity supply	None	50	$0		Bespoke	#DIV/0!
Electrical	Electricity supply	Site 11kV supply	50	$76,968	$80,046	Each	4.00%
Electrical	Fibre Optic network	None	50	$3,530	$3,671	Bespoke	4.00%
Electrical	Flow logger	None	25	$0		Each	#DIV/0!
Electrical	Irrigation Weather Station	None	25	$0		Bespoke	#DIV/0!
Electrical	Level Control	Instrumentation - level measurement and control -	25	$0		Bespoke	#DIV/0!
Electrical	Magflow	None	25	$807	$840	Each	4.00%
Electrical	Mains Power Cable	None	50	$2,250	$2,340	Bespoke	4.00%
Electrical	Meter	Alum Dosing Electrical	25	$2,243	$2,333	Each	4.00%
Electrical	Meter	None	25	$27,818	$28,931	Each	4.00%
Electrical	Motor Control	Variable Speed Drive	15	$1,983	$2,063	Each	4.00%

Electrical	New wiring, float switch, 10mt pvc cable	None	15	$0		Each	#DIV/0!
Electrical	PCL	None	15	$5,591	$5,815	Each	4.00%
Electrical	PDL microdrives (now not supported) -	None	10	$0		Each	#DIV/0!
Electrical	PLC - Admin	None	10	$5,330	$5,543	Each	4.00%
Electrical	Power Cable - In the Trench of SDI Feed, Return Line & Main	None	50	$0		Bespoke	#DIV/0!
Electrical	Power Supply	None	50	$5,118	$5,323	Bespoke	4.00%
Electrical	Power Supply	Transformer and connection -	50	$31,966	$33,245	Bespoke	4.00%
Electrical	Process Control	PLC	20	$11,229	$11,678	Each	4.00%
Electrical	SCADA	upgrade	10	$4,850	$5,044	Bespoke	4.00%
Electrical	SCADA	upgrade 2012	10	$5,795	$6,027	Bespoke	4.00%
Electrical	Scan	None	10	$0		Each	#DIV/0!
Electrical	SDI Control Shed electrical and control equipment -	None	25	$0		Bespoke	#DIV/0!
Electrical	SDI Control Shed Sentek Data Aqcuisition Control System (incl p	None	25	$0		Each	#DIV/0!
Electrical	Security	CCTV Cameras	10	$24,320	$25,293	Bespoke	4.00%
Electrical	Security	Lighting	20	$22,524	$23,425	Bespoke	4.00%
Electrical	Shipping Container	None	10	$4,063	$4,226	Each	4.00%
Electrical	Sludge Meter	None	25	$6,956	$7,235	Each	4.00%
Electrical	Soil Moisture Monitors	None	25	$0		Bespoke	#DIV/0!
Electrical	Switchboard	Main Switchboard - 180ALRWB,70mm Earth	15	$0		Bespoke	#DIV/0!
Electrical	Switchboard	Main Switchboard - Electrical Cabinet	15	$6,433	$6,690	Each	4.00%
Electrical	Switchboard	Switchboard, telemetry and PLCs	15	$25,976	$27,015	Each	4.00%
Electrical	Telemetry	None	15	$7,984	$8,303	Each	4.00%
Electrical	Transducer	D.O. probe	25	$0		Each	#DIV/0!
Electrical	Transducer	H2S Analyser	10	$1,146	$1,192		4.00%

Electrical	Transducer	Level Sensor	25	$2,839	$2,952	Each	4.00%
Electrical	Transducer	Level Sensor - Solids	25	$0			#DIV/0!
Electrical	Transducer	Turbidity Meter/Analyser	10	$41,429	$43,086	Each	4.00%
Electrical	UV Banks	None	25	$0		Bespoke	#DIV/0!
Electrical	UV intensity Monitoring System	None	25	$0		Each	#DIV/0!
Electrical	Wiring	Wiring and Controls	25	$4,897	$5,093	Bespoke	4.00%
Mechanical	Actuated Valves	None	25	$0		Each	#DIV/0!
Mechanical	Aerator	None	25	$41,859	$43,533	Each	4.00%
Mechanical	Aerator Anchor	None	50	$0		Each	#DIV/0!
Mechanical	Air Pipework	None	25	$0		m	#DIV/0!
Mechanical	Alum Dosing Meter Civil/Mech	None	50	$4,280	$4,451	Each	4.00%
Mechanical	Ames Costa screw pump and m	None	40	$0		Each	#DIV/0!
Mechanical	Aquamat System	None	15	$475	$494	Bespoke	4.00%
Mechanical	Automatic wiping system	None	25	$0		Each	#DIV/0!
Mechanical	Baffle - Plywood structure	None	25	$0		Each	#DIV/0!
Mechanical	Baffle Plate	None	50	$0		Each	#DIV/0!
Mechanical	Blower	None	20	$13,820	$14,373	Each	4.00%
Mechanical	Blower - Radiator	None	20	$701	$729	Each	4.00%
Mechanical	Cantilever Lifting Gantry	None	25	$0		Bespoke	#DIV/0!
Mechanical	Central Pivot Irrigators	None	35	$0		Bespoke	#DIV/0!
Mechanical	Chemical dosing system	None	25	$0		Each	#DIV/0!
Mechanical	Common outlet line - 450mm dia	None	60	$0		m	#DIV/0!
Mechanical	Control Cabinet	None	50	$2,085	$2,169	Each	4.00%
Mechanical	Conveyor (motor and gearbox)	None	20	$55,071	$57,274	Bespoke	4.00%
Mechanical	Degritter	None	40	$0		Each	#DIV/0!

Mechanical	Dormarg grit removal unit	None	25	$0		Each	#DIV/0!
Mechanical	Drainage	Sewer Drains 125OD	80	$13,770	$14,321	m	4.00%
Mechanical	Drainage	Subsoil 160D	80	$102	$106	m	4.00%
Mechanical	Filter	Filter Media	5	$5,037	$5,238	m3	4.00%
Mechanical	Filter	Recirculating Sand Filter	25	$59,260	$61,630	Each	4.00%
Mechanical	Filter Screen	None	20	$55,063	$57,265	Each	4.00%
Mechanical	Filters, valves, chemical dosing system etc -	None	25	$0		Bespoke	#DIV/0!
Mechanical	Filters, valves, chlorine dosing system etc -	None	25	$0		Bespoke	#DIV/0!
Mechanical	Flow Meters	None	20	$74,507	$77,487	Each	4.00%
Mechanical	Flow Meters	V-Notch Weir and Ultrasonic	25	$0		Bespoke	#DIV/0!
Mechanical	Gas holder - Structure and pipework	None	50	$0		Bespoke	#DIV/0!
Mechanical	Generator	None	25	$0		Each	#DIV/0!
Mechanical	HVAC	Air conditioner	10	$0		Each	#DIV/0!
Mechanical	Instrumentation - Sludge blanket detector	None	15	$0		Each	#DIV/0!
Mechanical	Irrigation drip line	None	40	$14,138	$14,703	m	4.00%
Mechanical	Khrone Flowmeter Installation	None	25	$0		Bespoke	#DIV/0!
Mechanical	Laboratory Equipment	None	14	$0		Bespoke	#DIV/0!
Mechanical	Lagoon inflow - Pumped line 375 dia PVC	None	60	$0		m	#DIV/0!
Mechanical	Level measurement for flow recording -	None	22	$0		Each	#DIV/0!
Mechanical	Lifting Device -	None	50	$0		Bespoke	#DIV/0!
Mechanical	Meter	050NB	15	$5,632	$5,857	Each	4.00%
Mechanical	Meter	080NB	20	$10,028	$10,429	Each	4.00%
Mechanical	Meter	None	25	$27,825	$28,938	Each	4.00%
Mechanical	Meter - Instrumentation	None	15	$0		Bespoke	#DIV/0!
Mechanical	Module Holder -	None	50	$0		Bespoke	#DIV/0!
Mechanical	Office Furniture -	None	14	$0		Bespoke	#DIV/0!

Mechanical	OTA Tipping Bucket	None	25	$2,774	$2,885	Each	4.00%
Mechanical	Other - Ladder, guide bars and misc fittings	None	20	$0		Bespoke	#DIV/0!
Mechanical	Outlet Works	Outlet Launders	80	$96,444	$100,302	Bespoke	4.00%
Mechanical	PDP Aeration System	None	15	$43,790	$45,542	Bespoke	4.00%
Mechanical	Pegson Sludge air lift pumps -	None	40	$0		Each	#DIV/0!
Mechanical	Pipework	025NB PE80	25	$31	$32	m	4.00%
Mechanical	Pipework	050NB PE80	60	$13	$13	m	4.00%
Mechanical	Pipework	050NB Unknown	60	$0		m	#DIV/0!
Mechanical	Pipework	080NB uPVC	80	$88	$92	m	4.00%
Mechanical	Pipework	100NB CI	40	$0		m	#DIV/0!
Mechanical	Pipework	100NB PVC	100	$0		m	#DIV/0!
Mechanical	Pipework	100NB unknown	50	$0		m	#DIV/0!
Mechanical	Pipework	150NB AC	60	$0		m	#DIV/0!
Mechanical	Pipework	150NB CI	40	$0		m	#DIV/0!
Mechanical	Pipework	150NB Novaflo	25	$0		m	#DIV/0!
Mechanical	Pipework	150NB Steel	50	$0		m	#DIV/0!
Mechanical	Pipework	150NB Unknown	60	$0		m	#DIV/0!
Mechanical	Pipework	150NB uPVC	80	$0		m	#DIV/0!
Mechanical	Pipework	160NB uPVC	80	$0		m	#DIV/0!
Mechanical	Pipework	200NB AC	60	$0		m	#DIV/0!
Mechanical	Pipework	225NB Unknown	50	$0		m	#DIV/0!
Mechanical	Pipework	250NB AC	60	$0		m	#DIV/0!
Mechanical	Pipework	250NB Steel	50	$0		m	#DIV/0!
Mechanical	Pipework	250NB Unknown	50	$134	$140	m	4.00%
Mechanical	Pipework	300NB AC	60	$0		m	#DIV/0!
Mechanical	Pipework	300NB RC	80	$0		m	#DIV/0!

Mechanical	Pipework	315NB SS	25	$0			#DIV/0!
Mechanical	Pipework	355NB uPVC	80	$1,835	$1,908	m	4.00%
Mechanical	Pipework	375NB mPVC	50	$140	$145	m	4.00%
Mechanical	Pipework	380NB Unknown	50	$0		m	#DIV/0!
Mechanical	Pipework	400NB Steel	50	$0		m	#DIV/0!
Mechanical	Pipework	400NB uPVC	80	$617	$642	m	4.00%
Mechanical	Pipework	450NB Steel	50	$0		m	#DIV/0!
Mechanical	Pipework	450NB uPVC	80	$693	$721	m	4.00%
Mechanical	Pipework	480NB Unknown	40	$0		m	#DIV/0!
Mechanical	Pipework	525NB RCRRJ	80	$195	$203	m	4.00%
Mechanical	Pipework	600NB RCRRJ	80	$0		m	#DIV/0!
Mechanical	Pipework	760NB RCRRJ	80	$0		m	#DIV/0!
Mechanical	Pipework	900NB RCRRJ	80	$0		m	#DIV/0!
Mechanical	Pipework	Inlet & Outlet Pipes	80	$0		m	#DIV/0!
Mechanical	Pipework	Pipework - FDS	30	$0		Bespoke	#DIV/0!
Mechanical	Pipework	T Junction Diffuser	50	$5,070	$5,273	Each	4.00%
Mechanical	Pipework - Irrigation distribution and return	None	80	$0		m	#DIV/0!
Mechanical	Pipework and valves	None	30	$0		Bespoke	#DIV/0!
Mechanical	Pivot Irrigator	None	35	$260,372	$270,787	Bespoke	4.00%
Mechanical	Plant Equipment	None	14	$0		Bespoke	#DIV/0!
Mechanical	Pneumatics	Air blowers	14	$300,071	$312,074	Each	4.00%
Mechanical	Pneumatics	Air diffuser system - pipe with ceramic diffusers	25	$0		Each	#DIV/0!
Mechanical	polyelectrolyte dosing system - Metering pump, tanks, electrical	None	25	$0		Bespoke	#DIV/0!
Mechanical	Pump	None	25	$0		Each	#DIV/0!
Mechanical	Pump	Pump - Submersible 01-05kW	10	$1,156	$1,202	Each	4.00%
Mechanical	Pump & Motor	None	25	$157,627	$163,932	Bespoke	4.00%

Mechanical	Pump & Motor (Low Flow)	None	25	$0		Each	#DIV/0!
Mechanical	Pump & Motor (Sludge circulating)	None	25	$0		Each	#DIV/0!
Mechanical	Pump & Motor (Submersible)	None	25	$0		Each	#DIV/0!
Mechanical	Pump (Chemical Dosing)	None	10	$98,882	$102,837	Each	4.00%
Mechanical	Pump (Dewatering)	None	40	$0		Each	#DIV/0!
Mechanical	Pump (Mascerating)	None	50	$2,412	$2,508	Each	4.00%
Mechanical	Pump (Sludge Return)	None	25	$0		Each	#DIV/0!
Mechanical	Pump (Sludge Return) Electrics	None	25	$0		Each	#DIV/0!
Mechanical	Pump (Sludge) Helical Rotor	None	25	$0		Each	#DIV/0!
Mechanical	Pump (Sump)	None	25	$0		Each	#DIV/0!
Mechanical	Pumpstation pipework Epoxy coated steel pipe, 9mm wall, various	None	30	$0		Each	#DIV/0!
Mechanical	Quad Bike and Trailer	None	10	$15,514	$16,134	Each	4.00%
Mechanical	Scraper system	None	25	$0		Bespoke	#DIV/0!
Mechanical	Screen	Aerobic South Curtains	25	$0		Bespoke	#DIV/0!
Mechanical	Screen	Drum Screen	35	$313,244	$325,774	Each	4.00%
Mechanical	Screen	None	40	$8,991	$9,350	Bespoke	4.00%
Mechanical	Screen	Screen Filter	40	$125,497	$130,516	Each	4.00%
Mechanical	Screen	Screen Press	40	$0		Each	#DIV/0!
Mechanical	SDI Control Shed Chemical Pump, Pipework and valves -	None	25	$0		Bespoke	#DIV/0!
Mechanical	SDI tubing `Wasteflow`	None	25	$0		Bespoke	#DIV/0!
Mechanical	Sludge heating - 500,000 BTU/hr boiler and heat exchanger	None	50	$114,731	$119,320	Each	4.00%
Mechanical	Sludge removal mechanism and influent equipment -	None	25	$0		Each	#DIV/0!
Mechanical	Sludge waste system - magflow meter, valves and pipework	None	15	$0		Each	#DIV/0!
Mechanical	Travelling Irrigation Effluent Applicator -- Briggs Model 15 -	None	25	$0		Bespoke	#DIV/0!
Mechanical	UV Chamber	None	15	$13,494	$14,034	Each	4.00%

Mechanical	UV Equipment TAK - 2 modules, control panel, penstocks and air c	None	25	$0		Each	#DIV/0!
Mechanical	UV Equipment TAK - 8 modules, control panel, penstocks and air c	None	25	$0		Each	#DIV/0!
Mechanical	Workshop Equipment -	None	14	$0		Each	#DIV/0!
Treatment Plant	- Not Selected -	None	200	$0		Each	#DIV/0!
Valves	Air Valve	None	50	$1,047	$1,089	Each	4.00%
Valves	Butterfly Valve	200NB Butterfly Vavle	25	$0			#DIV/0!
Valves	Butterfly Valve	450NB Butterfly Valve	25	$0			#DIV/0!
Valves	Check Valve	020NB	25	$50	$52	Bespoke	4.00%
Valves	Check Valve	050NB	25	$63	$65	Each	4.00%
Valves	Check Valve	250NB	25	$0		Each	#DIV/0!
Valves	Check Valve	300NB	25	$1,704	$1,773	Each	4.00%
Valves	Control Valve	050NB Actuated Valve	25	$1,507	$1,567	Each	4.00%
Valves	Control Valve	None	25	$3,511	$3,651	Bespoke	4.00%
Valves	Isolating Valve	020NB	25	$38	$39	Each	4.00%
Valves	Isolating Valve	050NB	25	$230	$240	Each	4.00%
Valves	Isolating Valve	250NB	25	$0		Bespoke	#DIV/0!
Valves	Isolating Valve	300NB	25	$2,872	$2,987	Each	4.00%
Valves	Isolating Valve	None	25	$8,506	$8,846	Bespoke	4.00%
Valves	SDI Valve	None	25	$0		Proxy	#DIV/0!
Valves	Sluice Valve	200NB	25	$0		Proxy	#DIV/0!

Table 5-8 : Wastewater Plant Feature costs

Note not all plant assets obtain their replacement value from the table above. Bespoke items use an Optional Unit Rate field to provide their value.

5.1.3. Stormwater Replacement Costs

All costs assume replacement in the urban road corridor at 1.5m depth. Unit rate factors are applied on an asset by asset basis where their location incurs additional costs. For open channel flow, diameter refers to the wetted hydraulic perimeter.

Stormwater Pipeline Costs per metre

Material	Diameter	Height	Base Life	Unit Cost	Proposed Unit Cost	Notes	% Diff
Asbestos	80	0	60	$156	$196.54		25.77%
Asbestos	100	0	60	$156	$195.02		24.80%
Asbestos	150	0	60	$227	$216.00		-4.69%
Asbestos	200	0	60	$227	$283.22		24.80%
Boss Pipe	300	0	100	$0			#DIV/0!
Concrete	200	0	100	$227	$283.22		24.80%
Concrete	300	0	100	$416	$432.80		4.00%
Concrete Box Culvert	750	0	100	$0		Concrete Box Culvert	#DIV/0!
Concrete Box Culvert	950	950	100	$0	$1,187.50	Concrete Box Culvert	#DIV/0!
Concrete Box Culvert	1200	2730	100	$0		Concrete Box Culvert	#DIV/0!
Concrete Box Culvert	2000	1000	100	$3,286	$3,554.11	Concrete Box Culvert	8.16%
Concrete Box Culvert	2000	1450	100	$3,286	$4,180.62	Concrete Box Culvert	27.23%
None	0	0	92	$386	$401.88		4.00%
None	225	0	92	$386	$294.00		-23.92%
Novaflo	100	110	40	$152	$195.02		28.19%
Open Drain	1	0	70	$10	$10.75		4.00%
Other	0	0	80	$386	$401.88		4.00%
Other	100	0	80	$156	$195.02		24.80%
Other	150	0	80	$227	$216.00		-4.69%
Other	200	0	80	$227	$283.22		24.80%

Other	225	0	80	$386	$294.00	-23.92%
Polyethylene	50	63	100	$0		#DIV/0!
Polyethylene	220	250	100	$0		#DIV/0!
Polyethylene	225	0	100	$264	$294.00	11.21%
Polyethylene	285	315	100	$0		#DIV/0!
Polyethylene	300	0	100	$350	$432.80	23.61%
Polyethylene	375	0	100	$565	$550.00	-2.67%
Polyethylene	500	0	100	$0		#DIV/0!
PVC-u	50	0	80	$0		#DIV/0!
PVC-u	80	0	80	$156	$196.54	25.77%
PVC-u	90	0	80	$156	$195.02	24.80%
PVC-u	100	110	80	$156	$195.02	24.80%
PVC-u	150	160	80	$227	$216.00	-4.69%
PVC-u	175	200	80	$169	$228.00	35.28%
PVC-u	200	0	80	$227	$283.22	24.80%
PVC-u	225	250	80	$386	$294.00	-23.92%
PVC-u	250	0	80	$386	$401.88	4.00%
PVC-u	300	315	80	$416	$432.80	4.00%
PVC-u	375	400	80	$713	$550.00	-22.91%
PVC-u	450	0	80	$515	$665.18	29.29%
PVC-u	600	0	80	$0		#DIV/0!
Reinforced Concrete	0	0	100	$713	$742.02	4.00%
Reinforced Concrete	100	0	100	$156	$195.02	24.80%
Reinforced Concrete	150	0	100	$227	$216.00	-4.69%
Reinforced Concrete	225	282	100	$324	$294.00	-9.32%
Reinforced Concrete	250	0	100	$311	$401.88	29.30%
Reinforced Concrete	300	367	100	$320	$432.80	35.22%
Reinforced Concrete	375	444	100	$335	$550.00	64.20%

Reinforced Concrete	400	0	100	$0		#DIV/0!
Reinforced Concrete	450	534	100	$533	$665.18	24.80%
Reinforced Concrete	525	614	100	$463	$696.00	50.28%
Reinforced Concrete	600	699	100	$672	$810.00	20.56%
Reinforced Concrete	675	779	100	$566	$887.50	56.92%
Reinforced Concrete	750	864	100	$714	$1,002.34	40.40%
Reinforced Concrete	825	944	100	$864	$1,077.76	24.80%
Reinforced Concrete	900	1039	100	$826	$1,187.50	43.73%
Reinforced Concrete	930	0	100	$826	$1,218.75	47.51%
Reinforced Concrete	975	1134	100	$1,048	$1,362.02	30.00%
Reinforced Concrete	1050	1218	100	$1,028	$1,336.37	30.00%
Reinforced Concrete	1200	1371	100	$1,236	$1,606.68	30.00%
Reinforced Concrete	1300	650	100	$0		#DIV/0!
Reinforced Concrete	1350	1100	100	$0		#DIV/0!
Reinforced Concrete	1350	1523	100	$1,171	$1,687.50	44.12%
Reinforced Concrete	1500	0	100	$1,633	$2,000.00	22.51%
Reinforced Concrete	1500	700	100	$1,633	$2,000.00	22.51%
Reinforced Concrete	1500	750	100	$1,633	$2,000.00	22.51%
Reinforced Concrete	1600	1753	100	$1,633	$2,122.25	30.00%
Reinforced Concrete	1800	2005	100	$2,586	$3,361.83	30.00%
Reinforced Concrete	2100	0	100	$3,216	$4,180.62	30.00%
Steel	225	0	50	$264	$294.00	11.21%
Steel	300	0	50	$205	$432.80	111.61%
Steel	350	0	50	$0		#DIV/0!
Steel	600	0	50	$470	$810.00	72.27%
Steel	1800	0	50	$2,497	$3,361.83	34.65%
Trapezoidal	600	0	200	$672	$810.00	20.56%
Trapezoidal	1050	0	200	$1,028	$1,336.37	30.00%

Vitreous Clay	80	0	100	$157	$196.54	24.80%
Vitreous Clay	100	0	100	$156	$195.02	24.80%
Vitreous Clay	150	0	100	$227	$216.00	-4.69%
Vitreous Clay	300	0	100	$416	$432.80	4.00%
Vitreous Clay	350	0	100	$713	$540.00	-24.31%
Vitreous Clay	375	0	100	$335	$550.00	64.20%
Vitreous Clay	400	0	100	$533	$609.75	14.40%

Table 5-9 : Stormwater Pipeline costs per metre

Stormwater Point Features

Asset Type	ASSET SUB TYPE	Diameter	Width	Depth	Unit Cost	Proposed Unit Cost	% Diff
Fagan St & Farmer Rd Con	None	0	0	Surface	$0.00		#DIV/0!
Inlet	Not Applicable	150	0	Surface	$0.00		#DIV/0!
Inlet	Not Applicable	225	0	Surface	$0.00		#DIV/0!
Inlet	Not Applicable	300	0	Surface	$0.00		#DIV/0!
Inlet	Not Applicable	375	0	Surface	$0.00		#DIV/0!
Inlet	Not Applicable	450	0	Surface	$0.00		#DIV/0!
Inlet	Not Applicable	600	0	Surface	$0.00		#DIV/0!
Inlet	Not Applicable	675	0	Surface	$0.00		#DIV/0!
Inlet	Not Applicable	750	0	Surface	$0.00		#DIV/0!
Inlet	Not Applicable	825	0	Surface	$0.00		#DIV/0!
Inlet	Not Applicable	900	0	Surface	$0.00		#DIV/0!
Inlet	Not Applicable	1050	0	Surface	$0.00		#DIV/0!
Inlet	Not Applicable	1200	0	Surface	$0.00		#DIV/0!
Inlet	Not Applicable	1350	0	Surface	$0.00		#DIV/0!
Inlet	Not Applicable	1500	0	Surface	$0.00		#DIV/0!
Inlet	Not Applicable	1800	0	Surface	$0.00		#DIV/0!
Inlet	Scruffy Dome	600	0	< 1.5m	$0.00		#DIV/0!
Inlet	Scruffy Dome	1050	0	1.5m-3.0m	$4,354.39	$4,528.57	4.00%
Inspection Chamber	Concrete Precast	300	0	1.5m-3.0m	$2,937.90	$3,055.42	4.00%
Inspection Chamber	Concrete Precast	300	0	Surface	$2,937.90	$3,055.42	4.00%
Inspection Chamber	Concrete Precast	600	0	< 1.5m	$1,628.05	$1,693.17	4.00%
Inspection Chamber	Concrete Precast	600	0	1.5m-3.0m	$1,628.05	$1,693.17	4.00%
Inspection Chamber	Concrete Precast	600	0	Surface	$2,317.19	$2,409.88	4.00%
Inspection Chamber	Concrete Precast	900	0	< 1.5m	$2,500.75	$2,600.78	4.00%

Inspection Chamber	Concrete Precast	900	600	Surface	$2,937.90	$3,055.42	4.00%
Manhole	Concrete Precast	1050	0	< 1.5m	$3,550.30	$3,692.31	4.00%
Manhole	Concrete Precast	1050	0	1.5m-3.0m	$4,535.30	$4,716.71	4.00%
Manhole	Concrete Precast	1050	0	3.0m-4.5m	$8,903.65	$9,259.80	4.00%
Manhole	Concrete Precast	1050	0	Surface	$3,618.77	$3,763.52	4.00%
Manhole	Concrete Precast	1200	0	< 1.5m	$8,478.67	$8,817.82	4.00%
Manhole	Concrete Precast	1200	0	1.5m-3.0m	$7,484.76	$7,784.15	4.00%
Manhole	Concrete Precast	1200	0	3.0m-4.5m	$4,630.45	$4,815.67	4.00%
Manhole	Concrete Precast	1200	0	Surface	$5,690.46	$5,918.08	4.00%
Manhole	Concrete Precast	1500	0	Surface	$5,589.95	$5,813.55	4.00%
Manhole	Concrete Precast	1650	0	1.5m-3.0m	$12,256.10	$12,746.34	4.00%
Manhole	Concrete Precast	1800	0	3.0m-4.5m	$21,280.82	$22,132.05	4.00%
Manhole	Concrete Precast	1800	0	Surface	$14,717.19	$15,305.88	4.00%
Manhole	Concrete Precast	2050	0	3.0m-4.5m	$13,154.71	$13,680.90	4.00%
Manhole	Concrete Precast	3000	0	> 6m	$81,162.09	$84,408.57	4.00%
Manhole	Concrete Precast	3000	0	3.0m-4.5m	$37,321.37	$38,814.22	4.00%
Manhole	Concrete Precast	3000	0	4.5m-6.0m	$55,965.73	$58,204.36	4.00%
Manhole	Manhole Conc Med Duty	900	0	< 1.5m	$3,555.93	$3,698.17	4.00%
Manhole	Sump Yard Med Duty	450	300	Surface	$1,111.04	$1,155.48	4.00%
Outlet	Not Applicable	0	0	Surface	$1,575.00	$1,638.00	4.00%
Outlet	Not Applicable	675	0	Surface	$3,750.00	$3,900.00	4.00%
Sump	Catchpit Back Entry HD	225	0	Surface	$2,609.30	$2,713.67	4.00%
Sump	Catchpit Back Entry HD	250	0	Surface	$2,609.30	$2,713.67	4.00%
Sump	Catchpit Back Entry HD	450	300	< 1.5m	$1,726.33	$1,795.38	4.00%
Sump	Catchpit Back Entry HD	450	300	Surface	$2,545.34	$2,647.15	4.00%
Sump	Catchpit Back Entry HD	675	450	< 1.5m	$1,505.19	$1,565.40	4.00%
Sump	Catchpit Back Entry HD	675	450	Surface	$1,505.19	$1,565.40	4.00%
Sump	Catchpit Flat Entry HD	225	0	Surface	$2,609.30	$2,713.67	4.00%

Sump	Catchpit Flat Entry HD	450	300	< 1.5m	$2,609.30	$2,713.67	4.00%
Sump	Catchpit Flat Entry HD	450	300	1.5m-3.0m	$2,609.30	$2,713.67	4.00%
Sump	Catchpit Flat Entry HD	450	300	Surface	$2,078.04	$2,161.16	4.00%
Sump	None	450	0	Surface	$1,839.37	$1,913	4.00%
Sump	Sump Yard Light Duty	300	300	Surface	$1,327.34	$1,380	4.00%
Sump	Sump Yard Light Duty	450	300	Surface	$1,583.35	$1,647	4.00%
Sump	Sump Yard Med Duty	300	300	Surface	$1,327.34	$1,380	4.00%
Sump	Sump Yard Med Duty	450	0	< 1.5m	$1,824.49	$1,897	4.00%
Sump	Sump Yard Med Duty	600	0	< 1.5m	$1,666.41	$1,733	4.00%
Sump Double	Catchpit Back Entry HD	450	300	Surface	$3,821.13	$3,974	4.00%
Sump Double	Catchpit Back Entry HD	600	450	< 1.5m	$3,005.20	$3,125	4.00%
Sump Double	Catchpit Flat Entry HD	450	300	Surface	$1,327.28	$1,380	4.00%
Wingwall	Wingwall None	300	0	Surface	$1,776.88	$1,847.96	4.00%
Wingwall	Wingwall None	1350	0	Surface	$1,975.33	$2,054.34	4.00%
Wingwall	Wingwall None	1800	0	Surface	$2,031.68	$2,112.95	4.00%

Table 5-10 : Stormwater Point Feature costs

*Note: sumps identified as a road network asset are excluded from this valuation as are privately owned assets.

Stormwater Pump Station Features

Asset Group	Asset Type	Asset Sub Type	Base Life	Unit Cost	Proposed Unit Rate	Notes	% Diff
Civil	Wet Well	Domestic	100	$3,662	$3,808.80	Sized for < 1kW pump	4.00%
Civil	Wet Well	None	100	$106,835	$111,108.32	Based on the Aru St Horizons Design	4.00%
Electrical	Electrical and control	None	28	$8,761	$9,111.92		4.00%
Mechanical	Pump	Submersible Pump 0 - 1kW	15	$1,858	$1,932.23	Each	4.00%
Pump Station	- Not Selected -	None	100	$0		Proxy Asset	#DIV/0!

Table 5-11 : Stormwater Pump Station costs

Note not all pump station assets obtain their replacement value from the table above. Bespoke items use an Optional Unit Rate field to provide their value.

Rural Drain Pump Costs per metre

Material	Diameter	Height	Base Life	Unit Cost	Proposed Unit Rate	Notes	% Diff
Natural Open Drain	0	0	200	$0		Natural undulating and serpentine depressions derived from original GIS dataset and inspection of Aerial Photos.	#DIV/0!
Open Channel - Class 1	1	0	200	$6	$6.58	Up to 1 m wide channels and up to 0.9m2	4.00%
Open Channel - Class 2	0	0	200	$25	$26.36	1 to 2 m wide channels and up to 1.8m2	4.00%
Open Channel - Class 3	0	0	200	$101	$105.46	2 to 4 m wide channels and up to 6.2m2	4.00%
Open Channel - Class 4	0	0	200	$264	$274.21	4 to 6 m wide channels and up to 14.4m2	4.00%
Swale	2000	0	70	$209	$217.65		4.00%
Trapezoidal Unlined	0	0	70	$25	$26.36	<1m wide channel	4.00%

Table 5-12 : Stormwater Rural Drain costs per metre

Rural Open Drains are considered to be non-depreciating earthworks.

6. Technical Appendix

This appendix describes in further detail some of the technical checks, calculation processes and system settings mentioned in this report which may assist persons requiring a deeper understanding of the valuation procedures Manawatu District Council endeavours to follow when producing the Utility Infrastructure Valuation Report.

6.1. Data Confidence

AssetFinda records data confidence of each asset on a 5 point scale with 1 being Excellent and 5 is Very Poor. This is comparable to the NZ Infrastructure Asset Valuation and Depreciation Guidelines – Edition 2, Table 4.3.1: Data confidence grading system which uses a 4 level grading scale. The following table shows the NZIAVDG guidelines on recording data confidence grades.

Confidence Grade	General Meaning
A	**Highly Reliable** Data based on sound records, procedure, investigations and analysis which is properly documented and recognised as the best method of assessment.
B	**Reliable** Data based on sound records, procedure, investigations and analysis which is properly documented but has minor shortcomings; for example the data is old, some documentation is missing and reliance is placed on unconfirmed reports or some extrapolation.
C	**Uncertain** Data based on sound records, procedure, investigations and analysis which is incomplete or unsupported, or extrapolation from a limited sample for which grade A or B data is available.
D	**Very Uncertain** Data based on unconfirmed verbal reports and/or cursory inspection and analysis

At Manawatu District, the confidence for asset attributes that would materially impact on the valuation (i.e. quantity, age, size, replacement costs etc) has been assessed for each asset class as follows:

Asset Class	Water	Wastewater	Stormwater	Comments
Pipeline	**10% A** **80% B** **10% C**	**20% A** **80% B**	**10% A** **70% B** **20% C**	Since 2010: High accuracy in terms of quantities, descriptions, location and initial recognition of costs 2000-2010: Good accuracy in terms of quantities, descriptions and location Pre 2000: Good accuracy in terms of location and quantities but average descriptions
Points	**40% A** **60% B**	**40% A** **60% B**	**20% A** **70% B** **10% C**	See comments for Pipeline above
Plant Equipment	**20% B** **60% C** **20% D**	**10% B** **60% C** **30% D**		Since 2010 Average accuracy. Components described at a high level only. 2000-2010 Good accuracy. Adequate component descriptions, but initial purchase costs not recorded. Pre 2000 Average Accuracy, little supporting documentation.
Pump Stations		**30% A** **60% B** **10% C**	**60% A** **40% B**	

Open Drains	**100% C**	Data sourced from old GIS data and inferred in part by desktop aerial photo survey.

6.2. Condition Remaining Life and Age Remaining Life

The software procedures for running a valuation using AssetFinda are detailed in the internet manual located at http://assetfinda.com/websystemdocuments/. A printed copy of the manual is kept by the Council.

Asset Group	Asset Classes	Age Weighting	Condition Weighting
Water	Water Line	100	0
	Water Point	100	0
	Water Plant	100	0
	Water Land	100	0
Wastewater	Wastewater Line	100	0
	Wastewater Point	100	0
	Wastewater Plant	100	0
	Sewer Pump Stations	100	0
	Wastewater Land	100	0
Stormwater	Stormwater Line	100	0
	Stormwater Point	100	0
	Storm Pump Stations	100	0

Rural Drains	100	0

Table 6-1 : Age versus Condition based remaining life

7. Unit Rates Approval

The unit rates described in the tables of this addendum have been reviewed and found to be acceptable for use in the calculation of the Utilities Valuation 2018.

.... Date ....

James Torrie
Asset Management Officer, Manawatu District Council

.... Date ....

Darryn Black
Asset Management Team Leader, Manawatu District Council

.... Date ....

Glenn Young
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