STORMWATER – WAIMARANGAI

ASSET MANAGEMENT PLAN

Masterton District Council 2024-34



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MASTERTON WHAKAORIORI DISTRICT COUNCIL

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Executive Summary

The Council provides systems, including use of natural channels and streams, to collect and dispose of stormwater from residential, commercial, and industrial properties in the urban area. The stormwater systems in the rural area are largely open drains.

This Stormwater Asset Management Plan covers those stormwater assets that the Masterton District Council currently owns and operates. This plan should be read in conjunction with the Long-Term Plan (LTP 2024-34) which is the districts overall plan for the next ten years to promote the social, economic, environmental, and cultural well-being of the community now and in the future.

The plan contributes towards achieving the Masterton District Councils stated community outcomes of being an easy place to move around, achieving a strong sustainable economy, having an active, involved and caring community. Making us a sustainable, healthy natural environment, and creating a knowledgeable resilient community. Strategic and tactical asset management also plays a role in improving social and environmental outcomes for Masterton.

The Council owned stormwater networks comprise of the following, approximately 55 km of pipes, 734 manholes/sumps, stop banks, and a retention dam. Records do not show how many properties are connected by drain to the stormwater channels but estimates on data collected to date show that there may be as many as 5000 private outlets.

The collection of stormwater water is funded through targeted location and usage rates per property. The total optimised replacement cost of stormwater assets as of 30th October 2023 was $63,060,805. With an optimised depreciated replacement cost of $36,819,933. Possible new stormwater assets are also funded from private developments.

There are risks associated with the collection of stormwaters and those stormwater assets, and the main risk identified that may pose a threat to the Councils stormwater assets is both possible climate changes and the resulting GWRC predictions for flooding extents.

Although the capacity of Masterton's reticulation is adequate to meet current and forecast demand for stormwater collection, a lot of its age and condition does vary considerably. The network has been programmed for progressive renewals and upgrades over the next 10 years with an average estimate of $600,000.00 budgeted per year.

Three key aspects determine the performance of Stormwater Asset management.

- Operation and maintenance of council owned Infrastructure.
- Stream and water course weed control.
- Sediment removal in streams and water courses.

Continued investigations on the risks including possible flooding estimations and condition assessment surveys by Council Staff will continue to provide greater detail on what maintenance and renewal requirements there are. Public education programmes and communication informing private property owners of their responsibilities regarding stream and water course maintenance and obtaining consents to remove sediment from watercourses are new aspects of this Asset Management Plan.

Development of our Stormwater Management Strategy is in progress and actions will be subject to any NRP appeals (due in 2024)

1 Introduction

1.1 Background

The purpose of this stormwater asset management plan ("the Plan") is to provide Masterton District Council ("Council") with a tool to assist with the management of its stormwater assets ("the assets"). This tool combine's management, financial, engineering, and technical practices and is intended to:

- Ensure that an agreed level of service is provided to defined standards at optimum cost.
- Be sustainable in the long term.
- Comply with regulatory requirements.
- Help Council to achieve the outcomes the community has defined.

This Plan was prepared in 2024, it supersedes Councils "Stormwater Asset Management Plan 2021 - 31.

1.2 Scope of plan

Council owns, operates, and maintains systems to protect properties from flooding and to collect and dispose of stormwater from properties in the Masterton urban area and the Castlepoint and Tinui settlements. Some privately owned assets such as 'kerb sockets and drainage are recorded in the Councils assets register but these are stored for information purposes only.

This Plan was developed to provide Council with a long-term view of:

- Where its stormwater facilities and services are currently at.
- What issues are likely to impact on it in the future?
- What level of service can be provided to the community in the future at a cost that can be afforded?

All of the figures in this Plan are expressed in New Zealand dollar values as of 30 June 2023 and unless noted otherwise, are in GST exclusive terms.

1.3 Asset Management Processes

Council's role in advocating on behalf of the region's stormwater users, ratepayers and residents is a key driver of the asset management process. It enables sound arguments to be put to the appropriate bodies to ensure equitable access to, and funding for, the stormwater networks. Asset management plans clearly define the communities, Council objectives and how these can be successfully delivered within any environmental constraints that are identified in the asset management plans.

1.4 Goals and objectives of asset ownership

- Council has adopted a funder-provider role delivering stormwater services using a combination of in-house and contracted labour. Council attaches a high priority to the role that it plays in the provision of these services.
- Councils' overall objective for the service is:

- To develop and maintain a drainage system to ensure the effective removal of stormwater to acceptable standards as outlined in the Wairarapa Combined District Plan, and do not exceed gully trap levels.
- The reasons why Council is involved in this activity are:
  - The effective management of stormwater is necessary to protect public safety and property.
  - The Health Act 1956 requires every territorial authority to improve, promote and protect public health within its district and to provide 'sanitary works'. Sanitary works include drainage works.
  - Part 29 of the Local Government Act 2002 empowers Council to provide, cleanse, repair and maintain all drainage works necessary for the efficient drainage of the district.
  - The Rating Powers Act 1988 empowers Council to levy a separate rate or uniform annual charge on properties connected, or able to be connected, directly or indirectly to a public drain.
  - The Building Code specifies that suitable appliances for the disposal of refuse water in a sanitary manner (by inference this includes the means of collection) are made available for the inmates of a dwelling.

1.5 Asset management systems

Council administers ongoing administration and monitoring of any works. This is to ensure the work is being carried out to Council's satisfaction in a cost-effective manner.

Council has installed an asset Management system called "Assetic – Data' which is a central strategic register and asset management system for all asset classes. It includes in-built reporting, works tracking and life-cycle costing. It is integrated with 'Predictor' for a complete Strategic Asset Management planning and operational system capable of holding all water asset information.

Council has also developed an Engineering Lifelines plan, which identifies vulnerable components of the stormwater assets and ways of mitigating the degree of disruption likely to be incurred in a civil emergency. Mitigating work identified in the plan will be progressively implemented.

1.6 Standards and guidelines

- In operating and maintaining its stormwater assets, Council currently use the following standards and guidelines on a regular basis as appropriate:
- New Zealand Water and Wastes Association (2006) New Zealand Pipe Inspection Manual 2nd Ed.
- Standards New Zealand (2003) NZS3910: 2003 Conditions of Contract for Building and Civil Engineering Construction.
- Standards New Zealand (2004) NZS4404: 2010 Land Development and Subdivision Engineering.

1.7 Summary of Assets

The stormwater system consists of 55km of pipes, 734 manholes, 149 soak-pits. Council also contributes to designated stop bank protection works on the Waipoua, Waingawa and Ruamahanga Rivers.

Appendix A contains plans showing the location and extent of the stormwater networks in the Masterton District.

The following table is a list of Masterton District current stormwater assets.

Masterton District Stormwater Assets				
Location	**Asset type**	**Unit**	**Quantity**	**Comments**
Urban areas	Pipes	Km	55.1	150- 1800mm dia.
	Manholes	No.	734	
	Soak pits	No.	149	
	Kerb sockets	No.	389	Although privately owned, these feed into the network
	Watercourses	No.	303	Approximate length and mixed type
Waipoua and Ruamahanga rivers	Weir drop structures	No.	3	On the Waipoua river only

1.8 Summary of asset management practice

The table below compares our current practice with appropriate and best asset management practice. (Based on International Infrastructure Management Manual - IIMM guidelines)

Stormwater Asset Management Processes			
Asset Management Activity	**Current practice**	**Appropriate**	**Best practice**
Level of service	Inventory of assets maintained. Supplemented by contractor/specialist reports on serviceability and condition.		√
Knowledge of assets	Inventory of assets maintained. Supplemented by contractor/specialist reports on serviceability and condition.	√	
Risk management	Strategic risk assessment 6 yearly. Operational risk assessment 3 yearly. Emergency response plans developed.	√	
Condition assessment	Contractors and specialist's assessments.	√	
Accounting / economics	NCS accounting system. Accrual based system.	√	
Operations	Contractors monitor and report any issues. Council staff carry out inspections		√
Maintenance	Contractors monitor and report any issues. Council staff carry out inspections		√
Performance monitoring	Reported monthly by contractor and annually by staff.	√	
Optimised lifecycle Strategy	Performance and condition assessments used to prioritise lifecycle strategy.	√	
Design project / management	Expertise is contracted as required.		√
Asset utilisation / demand modelling	Utilisation derived from use data. Demand forecasting reliant on historic records, staff knowledge, and demographics.	√	
Quality assurance / continuous improvement	Improvements identified and in Plan.	√	

1.9 Asset plan sophistication target level

The level of sophistication refers to the degree to which core and advanced criteria for asset management planning have been achieved. Criteria for core and advanced asset management planning are set out in the International Infrastructure Management Manual. (IIMM)

This plan sets out to achieve the minimum level of sophistication where corporate expectations are expressed informally and simply.

2 Levels of Service

2.1 Introduction

The service levels are designed to support community outcomes and meet strategic goals. It also includes information about customer research and legislative requirements that were considered while arriving at these service levels.

Asset activity plans can be readily aligned with strategic financial planning. Formalised asset management systems and practices provide the Council with key benefits, such as:

- Improved understanding of service level options and requirements.
- Minimum life cycle (long term) costs for an agreed level of service.
- Better understanding and forecasting of asset related management options and costs.
- Managed risk of asset failure.
- Improved decision making based on costs and benefits of alternatives.
- Clear justification for forward works programmes and funding requirements.
- Improved accountability over the use of public resources.
- Improved customer satisfaction and organization image.

Pursuing formal asset management planning enables council, as owners of a comprehensive range of assets, to demonstrate to their customers and other stakeholders that services are being delivered in the most effective manner.

The purpose of this Asset Activity Plan is to report on the current service levels for each asset stream and how council operates these on the community's behalf. Options to vary the level of service are also reported, resulting in the presentation of a series of possible options for future maintenance or improvement.

2.2 Customers and stakeholders

Council's stormwater service customers include, Ratepayers, Residents, Local industries and businesses, Health and Educational institutions, and Emergency services.

Council's stormwater service stakeholders include, Greater Wellington Regional Council, Rangitāne o Wairarapa, Ngāti Kahungunu ki Wairarapa, The Department of Conservation, Wairarapa Public Health, Ministry for the Environment, Ministry of Health, and Ministry of Agriculture and Fisheries

Council has considered the following factors for Stormwater in addition to those described in the 2023 Environmental Scan and 2024 Assumptions for the Long-Term Plan to assist in the prediction of future levels of service:

- The improvement in the level of service for stormwater may increase following the release of the 1 in 50 and 1 in 100-year predictions of flood levels by GWRC.

The Council had previously adopted the following residential stormwater drainage goals:

Previous residential Stormwater goals		
	Return period without nuisance	Return period without flood damage
Existing	10 years	50 years
New	10 years	100 years

The council achieves these standards for most of the district's properties. However, achieving 100% compliance is an ongoing stormwater management challenge for the council.

2.3 Public meetings on special projects

The Council's current policy is to ensure public consultation when undertaking any major special projects as per our significance and engagement framework.

2.4 Community outcomes consultation

Property and Community Facilities assets and services contribute to the community outcomes outlined in the table below. These will be reviewed every six years.

Community Outcomes	
Community Outcome	**How Stormwater Assets contribute**
A thriving and resilient economy	• Ensure a continuous stormwater service for industrial and/or commercial purposes
An engaged and empowered community	• Ensure a stormwater service that meets NZ standards and contributes to the health of the Community. • Ensuring services are provided in an equitable and culturally sensitive manner
A Sustainable Healthy Environment	• Providing stormwater services that help to reduce flooding risk and associated environmental damage
An Easy Place to Move Around	• Providing stormwater services that help to reduce flooding risk and surface water on roads

2.5 Legislative and other requirements

Statutory requirements set the framework for the minimum standards of service, which the assets must meet, and are generally non-negotiable. The key legislation relating to the management of stormwater services are listed below.

Relevant legislation affecting this activity

- Local Government Act 2002
- Health Act 1956
- Resource Management Act 1991

- Health and Safety in Employment Act 1992
- The Climate Change Response Act
- The Civil Defence Emergency Management Act 2002 (Lifelines amend 2018)
- The Local Government (Rating) Act 2002
- Public Bodies Contracts Act 1959
- Public Works Act 1981

Relevant regulations affecting this activity

- NZS4404: 2010 Land Development and Subdivision Engineering
- The Building Code

Council policies affecting this activity

- Rating and Financial Policies

Regional council policies and plans affecting this activity

- Regional Policy Statement for the Wellington Region
- Natural Resources Plan

Council strategic planning and other documents affecting this activity

- Long Term Plan 2024-34

Other planning and other reference documents

- Wairarapa Combined District Plan 2011

Other organisations and bodies which council intends to work with relating to this activity

- Central Government
- Greater Wellington Regional Council
- Rangitāne o Wairarapa
- Ngāti Kahungunu ki Wairarapa
- The Department of Conservation
- Wairarapa Public Health

Bylaws affecting this activity

- Masterton District Council Consolidated Bylaws 2019

Other corporate objectives include

- Providing our customers with a clear understanding of the services available, their standards and associated costs and therefore the ability to assess if their needs / aspirations are being met.
- Enabling Council to maintain a close link with its customers through providing clear information about its service provision.

- Enabling and encouraging our customers to give informed feedback to Councillors and/or officers as to the type of services and service levels.
- Transparency and accountability to our customers about what we provide and how we go about providing it.
- Provisions of benchmarks upon which Council can consult with customers on future service requirements.

The Local Government Act 2002 (Schedule 10) states that a purpose of local government is to promote the social, cultural, economic, and environmental well-being of its communities, now and for the future. Council's decision-making processes are structured to reinforce this sustainable approach and the table outlines how Council is guided by these principles.

2.6 Annual residents survey

2023 resident survey Stormwater

The most recent survey was done in 2023 (Keyresearch June 2023). Current performance based on recent survey results and compared to national and peer group averages is assessed as being adequate for the level of service desired by the community.

Introduction

The Masterton District Council has a requirement to measure how satisfied residents are with the resources, facilities and services provided by Council, and to priorities improvement opportunities that will be valued by the community.

Research objectives

To provide a robust measure of satisfaction with Council's performance in relation to service delivery to determine performance drivers and assist Council to identify the best opportunities to further improve satisfaction, including satisfaction amongst defined groups within the district.

To assess changes in satisfaction over time and measure progress towards the long-term objectives

Methodology

A statistically robust survey conducted online and via postal survey with a sample of n=490 residents across the Masterton District area

Post data collection the sample has been weighted so it is aligned with known population distributions for the Masterton District Council area, as per the Census 2018 results, based on age, gender and ethnicity.

A total of 3,200 invitations were posted. At an aggregate level the sample has an expected 95% confidence interval (margin of error) of +/ 4.1%.

Data collection took place between 20 Feb – 22 March (wave 1) and 3-31 May 2023 (wave 2).

*Note – Due to rounding, percentages may add to just over or under (+/ 1%) totals.

2.7 Historical residential surveys

Council conducts a resident's survey and meets with focus groups to gain feedback on community perceptions of Council every year. The National Research Bureau (NRB) has carried out 'Communitrak' surveys for Council every year since 1993. This is a means of measuring Council's effectiveness in representing the wishes and viewpoints of our residents. It provides a comparison for Council on major issues, and on our performance relative to the performance of

our peer groups. It also compares Council to other Local Authorities throughout New Zealand and to previous Communitrak results, where applicable.

The following table shows the high-level results of the 2023 survey and the historical Communitrak Surveys rating the level of service for Stormwater.

Results of Masterton's Communitrak Survey for Stormwater Service					
Survey Year	**Very satisfied %**	**Satisfied %**	**Neutral %**	***Dissatisfied %**	**Very dissatisfied %**
2023	11	25	29	21	13
Survey Year	**Very satisfied %**	**Fairly satisfied %**	**Not very satisfied %**	**Very dissatisfied %**	**Don't know**
2020	11	38	26	20	4
2018	5	55	25	5	11
2017	6	58	23	2	12
2016	9	63	14	1	12
2015	7	62	14	3	14
2014	4	67	12	2	15
2012	24	45	19	N/A	12
2011	20	47	20	N/A	14
2010	14	39	34	N/A	13
Peer-group (size)					
National average	38	40	12	N/A	10

** Different survey provider for 2020 and different satisfaction scale.*
** Readings prior to 2014 had a different satisfaction scale. No survey in 2013,2019, 2021, and 2022.*

2.8 Levels of service and performance measures

Council developed the current stormwater asset levels of service, performance measures and targets shown in the below table to reflect:

- Industry standards
- Customer research and expectations
- Legislative and other requirements
- Strategic and corporate goals

Stormwater Performance Measures						
Levels of Service	**Performance Measure**	**Baseline Year 2023**	**Performance Targets**			
			2024/25	**2025/26**	**2026/27**	**Years 4-10**
Provide an efficient and effective stormwater system to minimise the impact of heavy rainfall and reduce flooding risk	Percentage of residents satisfied with stormwater services	Current 65% (2023 base line year)	Maintain satisfaction level over 3 years	Maintain satisfaction level over 3 years	Maintain satisfaction level over 3 years	Maintain satisfaction level over 3 years
			Average satisfaction is within 10% of the peer group average	Average satisfaction is within 10% of the peer group average	Average satisfaction is within 10% of the peer group average	Average satisfaction is within 10% of the peer group average
	Mandatory: The number of complaints received by a territorial authority about the performance of its stormwater system.	Current Measure 2023 Currently less than 10.11 in 1,000 properties (AP)	≤ 3/1000	≤ 3/1000	≤ 3/1000	≤ 3/1000

Levels of Service	Performance Measure	Baseline Year 2023	Performance Targets			
			2024/25	2025/26	2026/27	Years 4-10
Provide an efficient and effective stormwater system to minimise the impact of heavy rainfall and reduce flooding risk	**Mandatory:** • The number of flooding events that occur in the council's district • For each flooding event, the number of habitable floors affected	2023 • stormwater related incidents • Current Measure 0/1000 (properties)	• ≤10 events • Less or equal to 1/1000	• ≤10 events • Less or equal to 1/1000	• ≤10 events • Less or equal to 1/1000	• ≤10 events • Less or equal to 1/1000
Deliver stormwater services in a manner that is acceptable, safe and where possible enhances the environment	**Mandatory:** Compliance with the territorial authority's resource consents for discharge from its stormwater system, measured by the number of: • Abatement notices • Infringement notices • Enforcement orders, and convictions, received by the territorial authority in relation to those resource consents	No consent breaches that resulted in abatements, infringements, enforcements, or convictions	No consent breaches	No consent breaches	No consent breaches	No consent breaches
	Mandatory: The median response time to attend a flooding event, measured from the time that the territorial authority receives notification to the time that service personnel reach the site.	Current Measure 21 minutes	≤ 60 minutes	≤ 60 minutes	≤ 60 minutes	≤ 60 minutes

	Performance Measure	Baseline Year 2023	Performance Targets

Levels of Service			2024/25	2025/26	2026/27	Years 4-10
Percentage of stormwater renewal completed	Work complete to programme work for each financial year	2023 100 per cent of planned work	90% of planned work completed	90% of planned work completed	90% of planned work completed	90% of planned work completed

How Stormwater levels of service contribute to our community outcomes

Levels of Service	A strong resilient economy	A sustainable, healthy environment	An active, involved, and caring community	A knowledgeable community	An easy place to move around
Provide an efficient and effective stormwater system to minimise the impact of heavy rainfall and reduces flooding risk.	√	√	√		√
This level of service:	Aims to reduce the impact of heavy rainfall and the risk of flooding and consequent impacts, such as public health risks and damage to private and public property, industry, roads and infrastructure. This contributes to both the public health of the community; and the community's capacity for growth and economic development, now and in the future.				
Deliver stormwater services in a manner that is acceptable, safe and has minimal environmental impact		√	√		
This level of service:	Aims to ensure that services are provided in a way that is equitable and culturally acceptable, whilst maximising public health opportunities and minimising environmental impact.				

2.9 Desired levels of service

MDC uses the 2014 workshop as a basis for the different services councils offers. At each workshop, participants recorded what they liked and disliked about the service, and then listed suggestions for improvement. This feedback, along with information gathered from surveys, meetings, trends, Annual Plan submissions and a range of other sources was used to help Council review service delivery.

By further improving the effectiveness and efficiency of its systems Council could improve service delivery.

Through such reviews specific work and/or projects could be identified and assessed for affordability versus potential benefits.

Potential Options of Enhancements / Improvements for Stormwater Service			
Option to improve service	**Justification**	**Benefit**	**Cost implication**
Network condition assessment and implementation of potential enhancements identified as a result of this.	Customer feedback and risk management Opportunities to add value and enhance service	Improved service e.g. reduced flooding risk	The cost of improvements will be determined as specific projects are identified
	Opportunities to enhance knowledge and asset management systems:	Ensure targeted and efficient use of limited financial resources	The cost of improvements will be determined as specific projects are identified
Investigate/model an increase in the Level of Service from 1:50 to 1:100 Implementation of projects to increase LoS from 1:50 to 1:100 flood return	Flood protection	Identify options to reduce flooding risk	$410,000
Stormwater catchment discharge management strategy	Improve level of service for stormwater catchment and dispersion	Environment and manage discharge	$150,000
Establish Urban stream management schemes. Including sediment removal and erosion protection	Enhance flood protection and protect our stormwater stream network	Environment LoS	$410,000

2.10 Past performance measures

Following table shows the performance measures for the stormwater activities, and whether Council has achieved these, over the past 5 years. This information was obtained from the Annual Reports for each year. Note it gives a reasonably simplistic view of Councils performance and the reader is referred to the Annual Reports for further details.

Past Masterton District Stormwater Performance Trends							
Performance Measure	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**
Customer satisfaction with stormwater services and maintain satisfaction level.	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved
Proportion of reported stormwater ponding incidents cleared within two days of a rainfall event ending. 100% Achieved.	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved
Complete a three-yearly assessment of stormwater provision in the district	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved
Compliance with resource consents. 100% compliant	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved
Proportion of reported stormwater / flooding incidents that resulted in residual environmental effects. Less than 1%	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved
Percentage of stormwater renewal completed	N/A	N/A	Not achieved	Achieved	N/A	N/A	N/A

2.11 Financial summary

Current costs

In 2022/23 Stormwater Services, delivered at current levels of service, cost:

- Operating Expenditure $880,158
- Rates contribution: $842,041
- Proportion of Total Cost: 95.66%

To maintain current levels of service, further maintenance and renewal work may need to be undertaken. For more information re specific projects identified, please refer to sections: Future Growth and Demand; Risk Management and Life Cycle Management.

2.12 Cost of enhancing current levels of service (LoS)

A number of projects and activities have been proposed as suggested increases or decreases in the current service levels. None of the projects are required to maintain existing levels of service and have been included in this Plan to facilitate decision-making at Council.

Work and cost required to enhance current level of service

Action/Work	Driver	Estimated cost	Scheduling	How this is funded
Stormwater catchment discharge management strategy	To improve the level of service for stormwater catchment and dispersion	$150,000	2027/28	Rates
Establish Urban stream management schemes. Including sediment removal and erosion protection	Enhance flood protection and protect our stormwater stream network	$410,000 p/a	2024 - 2028	Rates

3 Future Growth and Demand

3.1 Introduction

The objective of asset management is to create, operate, maintain, rehabilitate, and replace assets at the required level of service for present and future customers in a cost effective and sustainable manner. This Plan must therefore forecast the needs and demands of the community now and in the future and outline strategies to develop the assets to meet current and future needs.

3.2 Population effect

With a reasonably low population increase (1.5% forecast growth), Council does not expect the demand on stormwater to change significantly. The household distribution and urban/rural split should continue to be monitored. If the rural population does continue to increase on the outskirts of the urban area, this growth could be accommodated by expanding existing urban facilities.

3.3 Changes in Customer Expectations

Customer expectations may influence service levels. Changes that are likely to impact on stormwater services include customers wanting increased levels of protection from flooding.

Increasing the provision for cleaning and maintenance of the stormwater system to restore its capacity, and planned renewals and upgrades, will provide enhanced flooding protection compared to current protection.

3.4 Demand Forecast and Response Strategy

Overall demand drivers are expected to have a low impact on future demand for stormwater services.

The impact of demand drivers on future stormwater services are summarised in following table.

Expected Impacts of Demand Changes for Stormwater Services

Demand driver	Future impact	Future demand (for the next 10 years)
Population	Low/med	Negligible to slight increase on demand
Climate changes	Moderate	Unknown
Demand for improvement in services	Low/moderate	Outcomes from public consultation and annual plan submissions will be considered
Changes in customer expectations	Low/moderate	Outcomes from public consultation will be considered

3.5 Cost of responding to growth and demand changes

The key actions and issues identified in this section that may require attention and/or intervention, and the costs associated with the proposed work, are outlined in the following table.

Stormwater Work required to meet Growth and Demand				
Action/work	**Driver for action**	**Estimated cost**	**Scheduled for**	**How this will be funded**
Climate change	It is possible that climate change impacts will require future work to mitigate and/or adapt. MFE estimates for Wairarapa are now available for climate change in the Wellington and Wairarapa region.	No specific climate change projects are planned though any new projects any upgrades will factor in the latest climate change estimates	On going	Investigative work will be covered by existing budgets,
Flood plain mitigation for the Waipoua stop bank.	South stop bank Waipoua.	$6,000,000	2024	GWRC has allocated funding.
	North stop bank Waipoua.	$2,000,000	2025 – 2027	Loan
Resilience	Review resilience options for the district plan stormwater strategies. Hydraulic neutrality. Designated overland flow paths.	Within existing budgets	2024	Within existing budgets

*Note*** The numbers in the table above are uninflated figures based on today's dollar.*

3.6 Conclusion for the future demand on assets

The existing stormwater system, especially following cleaning, has sufficient capacity to accommodate changes in demand discussed in this section. Trends and potential impacts will continue to be monitored and this Plan will be updated accordingly.

Further research is recommended to assess:

- Council will develop strategies for the various possible projections as to the likely risks of climate changes.
- Strategies required having the asset capacity to accommodate the GWRC 1:50 and 1:100-year flood prediction modelling.
- Council to work with GWRC toward the mitigation of the hazards that are possible through flooding of the Waipoua.

4 Risk Management

4.1 Introduction

Risk Management is the term applied to a logical and systematic method of establishing the context, identifying, analysing, evaluating, treating, monitoring, and communicating risks associated with any activity, function or process in a way that will enable organizations to minimize losses and maximise opportunities. Risk Management is as much about identifying opportunities as avoiding or mitigating losses.

Risk Management in asset management planning is a requirement of the Local Government Act 2002. It should be used when there are:

- Large potential damages/losses
- Changing economic conditions
- Varying levels of demand for services
- Investments that lie outside the ability to fund
- Important political, economic, or financial aspects
- Environmental or safety issues
- Threats or changes to service levels

The risk management process is defined as 'the systematic application of management policies, procedures, and practices to the tasks of identifying, evaluating, treating, and monitoring those risks that could prevent a local authority from achieving its strategic or operational objectives, or plans, or from complying with its legal obligations'.

In September 2019 MDC adopted a Corporate Risk Management Policy, which was updated in 2022. As per the policy the main policy objectives are to:

- enhance MDC's ability to achieve business objectives
- maintain the integrity of services
- safeguard assets, people, finances, and property
- create a culture where all employees accept responsibility for managing risk
- ensure that MDC can adequately and appropriately deal with risk and issues as they occur
- demonstrate transparent and responsible risk management processes which align with and demonstrate good governance
- identify opportunities and promote innovation and integration
- record and maintain a risk management framework aligned with the AS/NZS ISO 31000:2018 standard
- utilise risk management process outputs as inputs into MDC decision-making processes

Following are the processes involved in the risk management:

4.2 Risk management process

The process followed for this Plan was:

4.2.1 Strategic level risk assessment:

- Review of Masterton District Council Asset Management Processes Risk Management (Waugh Consultants, 2006) in conjunction with asset managers and production of a revised report: Masterton District Council Asset Management Processes Risk Management (Waugh Consultants, 2011)
- Risk Management Update (Waugh Consultants, 2014)
- The impact of the Waugh Update (2011 and 2014) was reviewed at a strategic level in conjunction with the risk assessments carried out by Council staff. The risk management analysis is now consistently incorporated into all respective asset management plans
- 2017 Council risk review undertaken following the Waugh Risk management assessments.
- Production of a report: Masterton District Council Asset Management Processes Risk Management (Waugh Consultants, 2020)

4.2.2 Risk review 2022

The 2022 risk management review process included:

- A review of the MDC Risk Management Policy and Corporate Risk framework
- Risk review workshops with Council's Infrastructure managers
- Review of and alignment of risk register format with the Corporate Risk Register
- Update of the risk registers.

4.2.3 Risk review objectives

The objectives of the 2022 Risk Management Review process include:

- Update the MDC risk assessments and mitigation measures reflecting latest MDC risk management policy and practice.
- Detailed risk registers that record latent (untreated) risk scores, current practise risk scores and residual risk (when identified improvement s have been implemented).
- Support the 2024-34 LTP financial programme development where risk is a driver for capital or operational funding.

4.2.4 Staff Workshops

The 2022 risk review process and results presented in this report are based on the opinions and perspectives of asset management on operational MDC staff. Risk assessments based on opinion are particularly useful in extracting perceived issues/problems relating to an activity, and in provoking discussion as to why one issue has a higher risk than another. Much of the value of this type of risk assessment exercise is gained when it is completed by groups of staff, as it tends to lead to questioning of assumptions surrounding the activity that may no longer be valid. The results presented should be challenged and reviewed as necessary within the wider corporate context and whenever additional asset information is obtained.

Qualitative asset condition and performance information is an important indicator of physical asset risk. Whilst specific asset condition has not been investigated in detail as part of work, asset condition and performance issues have been identified in the risk registers.

4.2.5 Risk Register Update

Improvements

The updated risk registers have been further developed to include likelihood and consequence scorning for the following, three stages of risk exposure:

- Un-treated risk,
- Current or existing [E] risk rating, recognising existing processes that manage or mitigate the risk,
- Residual risk or proposed [P] risk rating, a proposed process that if implemented will manage or mitigate the risk to its lowest level. Current risks with a score of 12 or higher, have been included in the improvement plans. The residual risk actions help to define the improvement actions.

4.2.6 Risk Methodology and Scores

Risk Stages

As mentioned, the risk registers have 3 risk scores 1 for each stage, i.e. untreated, current practice and residual risk.

Risk Scoring Process

Step 1:

Every risk is scored by assessing and allocating a score for both the likelihood and consequence of each score the scoring is based on the following tables:

Consequence Table and Scores	
Likelihood	**Score**
Insignificant	1
Minor	2
Moderate	3
Major	4
Catastrophic	5

Likelihood Table and Scores	
Likelihood	**Score**
Rare	1
Unlikely	2
Moderate	3
Likely	4
Almost certain	5

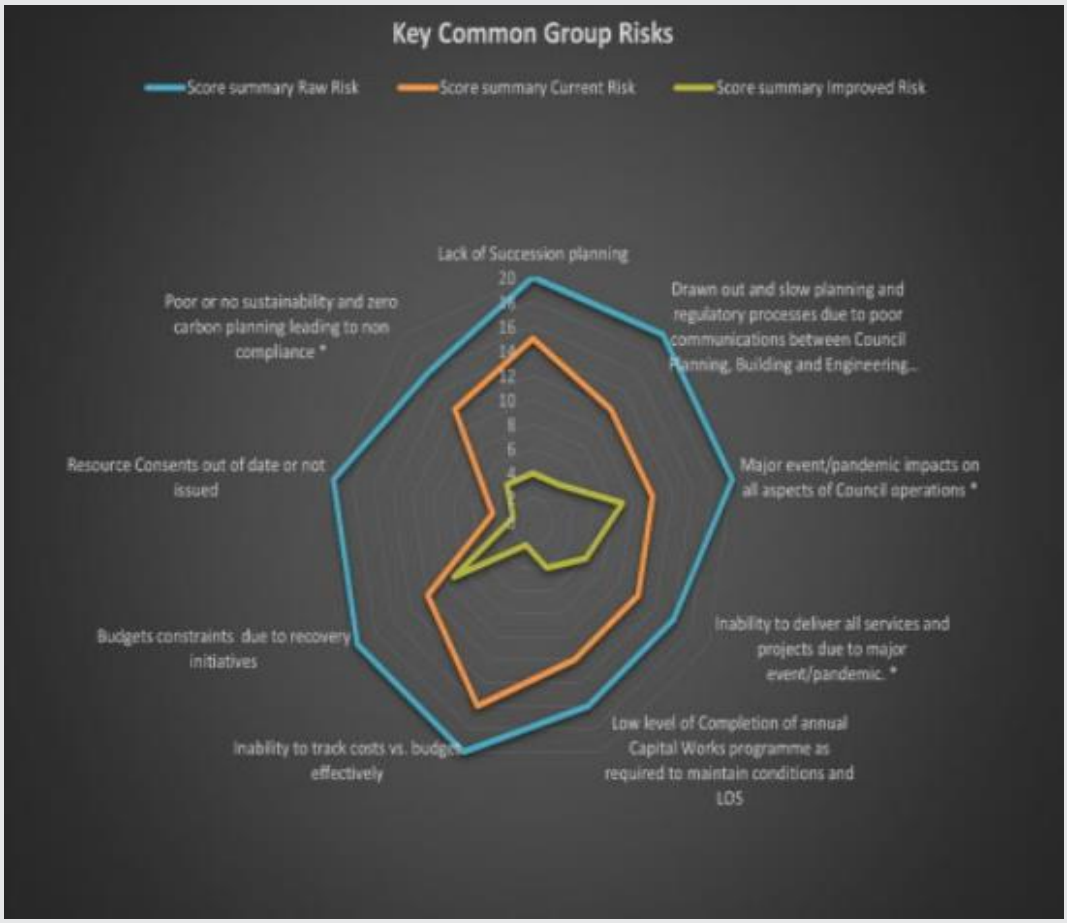
Step 2:

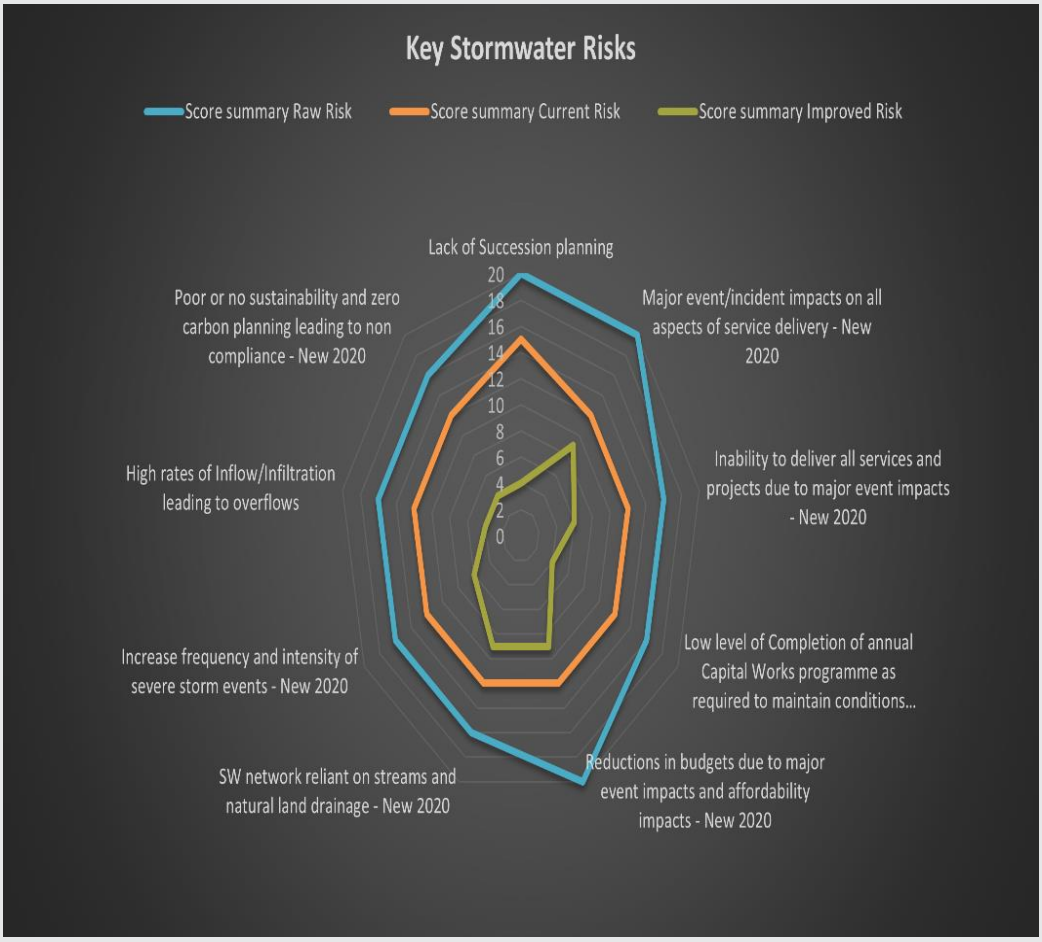
The risk score is calculated by multiplying the 'likelihood' score by the 'consequence' score.

Likelihood score x consequence score = Risk score

This scoring process is repeated for each of the 3 risk stages.

The table below details the Risk Rating categories and potential implications for the following areas legislation, Community expectation financial and environmental.





Risk Rating Categories					
Risk Rating	**Risk Scores**	**Legislation**	**Community Expectation**	**Financial**	**Environment**
Critical (4)	> 19	Commissioners Appointed	Expectations not obtainable	Detrimental effects > $0.5m	Widespread long-term effect
High (3)	12 to 19	Adverse Audit Opinion or Disclaimer	Expectations not obtainable medium term	Detrimental effects > $50k	Long term effect
Moderate(2)	5 to 11	Qualified Opinion; Warning over non- compliance	Expectations not obtainable in short term	Detrimental effects between $10k - $50k	Short term reversible effect
Low(1)	3 to 4	Minor non-compliance	Faults within agreed LoS	Detrimental effects < $10k	Reversible and contained effect
Insignificant (0)	2 or lower	Compliance	Expectations reached	No effect	No effect

4.2.7 Risk review outcomes

This section of the report provides an overview of the critical and high risks per activity, with the detailed risk registers attached as appendices.

Assets and Operations Group Risks

A number of Assets and Operations Group risks common to all the activities were identified. These risks have been grouped together as common group risks in this section of the report. Doing this reduces duplication of these risks in each individual activity risk register, streamlining the management and reporting of these risks.

Some of these common Group risks have different responses and mitigations measures in the different activities. Where this is the case, the risks are included in the activity specific risk registers.

Key Risks and Group improvement items

The tables below summary the Assets and Operations Group key risks, highlighting the raw risk , current risk and potential improved risk scores if improvement actions are implemented:

The table below also summarises the improvement actions that if implemented reduces the individual risk scores:

Stormwater Improvement Items				
Risk Description	**Score Summary**			**Improvement Items**
	Raw Risk	**Current Risk**	**Improved Risk**	
Lack of Succession planning	20	15	4	[P] develop robust succession plans for key positions. Develop staff recruitment/retention strategies
New – Pandemic impacts on all aspects of service delivery	20	12	9	[P] Ongoing pandemic response planning and reviews
New – Inability to deliver all services and projects due to pandemic impacts	16	12	6	[P] monitoring impacts and revision responses and budgets
Low level of Completion of annual Capital Works programme as required to maintain conditions and LoS.	16	12	4	[P] Obtain executive agreement so that desire to employ locally is balanced against need to attract resource from outside of MDC to deliver on time. [P] Capital delivery process and procurement planning review and improvement.
Risk Description	**Score Summary**			**Improvement Items**

	Raw Risk	Current Risk	Improved Risk	
New – Reductions in budgets due to pandemic and affordability impacts	20	12	9	[P] monitoring impacts and revision responses and budgets.
New – SW network reliant on streams and natural land drainage	16	16	9	[P] Review SW LoS and design standards [P] identify SW improvements [P] Review land development SW design standards/SW neutrality
New – Increase frequency and intensity of severe storm events	16	12	6	[P] Upgrade of SW network
Lack of Succession planning	20	15	4	[P] develop robust succession plans for key positions. Develop staff recruitment/ retention strategies
New – Pandemic impacts on all aspects of service delivery	20	12	9	[P] Ongoing pandemic response planning and reviews
New – Inability to deliver all services and projects due to pandemic impacts	16	12	6	[P] monitoring impacts and revision responses and budgets
Low level of completion of annual capital works programme as required to maintain	16	12	4	[P] Obtain executive agreement so that desire to employ locally is balanced against need to attract resource from outside of MDC to deliver on time.
High rates of inflow/ infiltration leading to overflows	16	12	4	[P] WW I/I from property flooding (e.g. into gully traps or vents) may require SW management.
New – Poor or no sustainability and zero carbon planning leading to non-compliance	16	12	4	[P] Develop activity plans and actions based on Council objectives and policy.

4.3 Cost of mitigating identified risks

The key actions and issues identified in this section that may require attention and/or intervention, and the costs associated with the proposed work, are outlined in the following table.

Stormwater work required to mitigate risks				
Action/work	**Driver for action**	**Estimated cost**	**Scheduled for**	**How this will be funded**
Climate change	It is possible that climate change impacts will require future work to mitigate and/or adapt. MFE estimates for Wairarapa are now available for climate change in the Wellington and Wairarapa region.	No specific climate change projects are planned though any new projects any upgrades will factor in the latest climate change estimates	On going	Investigative work will be covered by existing budgets
Flood plain mitigation for the Waipoua stop bank.	South stop bank Waipoua.	$6,000,000	2024	GWRC has allocated funding.
	North stop bank Waipoua	$2,000,000	2025 - 2027	Loan
Resilience	Review resilience options for the district plan stormwater strategies. • hydraulic neutrality • designated overland flow paths	Within existing budgets	2021	Within existing budgets

*Note*** The numbers in the table above are uninflated figures based on today's dollar.*

4.4 Climate change and stormwater protection

Climate change will increase the risks from natural hazard events that already occur within the district, particularly as a result of:

- sea level rise, exacerbating the effects of coastal erosion and inundation and of river flooding in low lying areas, especially during storm surge.
- increased frequency and intensity of storm events, adding to the risk from floods, landslides, severe wind, storm surge, coastal erosion, and inundation; and
- increased frequency of drought, placing pressure on water resources and increasing the wildfire risk.

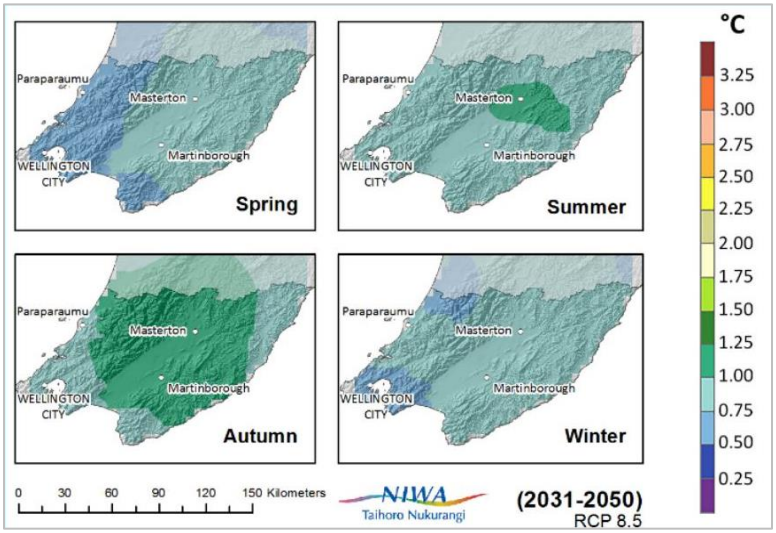
More frequent droughts may also affect the security of water supply. Currently we rely on adequate water flows from the Waingawa River and have no stored water for a prolonged drought.

Our overall approach in response to these effects is to manage through mitigation of causes and adaptation to effects. Policies and responses will need to be robust to a range of possible futures, rather than relying on a single 'forecast'.

Climate change is projected to have the impacts shown in the table below on the Masterton district coast. These are expressed as a range, as there are several scenarios considered when making projections.

We have based our planning on the NIWA modelled regional climate change projections (known as the Whaitua tables). The scenarios are expressed as a range, from higher emissions to lower emissions for a few climate related parameters.

Council is preparing a Climate Change mitigation strategy during 2021/22. Projects from investigations as this strategy to being developed may change current and forecast project, work and maintenance programmes.



Notes - https://www.gw.govt.nz/assets/Uploads/WhaituaClimateChangeprojections.pdf

By 2040, Wellington is projected to warm by up to 1°C in all seasons except autumn, where over 1°C of warming is projected for most areas and, by 2090, at least 2°C of warming is projected everywhere in all seasons, with up to 3.5C of warming projected around Masterton in autumn.

Climate Change Wairarapa

By 2040, seasonally the region could expect*:			Impacts	
Ruamahanga	• 0.7°C to 1°C temperature rise • Up to 30 Increased hot days over 25°C	• Between 5 % less rain, to 5 % more rainfall • 0.12 to 0.24 metres above present	• Increased human heat stress and mental health issues, rurally and in urban centres • Increased temperatures in urban centres due to human activities, large areas of concrete, buildings and vehicles • Increased risks of pests (such as wasps, rodents and fruit flies) and diseases (including risks to human health) and biodiversity losses • Increased air pollution and seasonal allergies • Higher demand for drinking water at times when water is likely to be scarcer • Stress on ecosystems and associated impacts on health and economy • Range and habitat of native plants and animals will change-extinction of some species • Higher temperatures may allow for different crops to be grown. • Timing of seasonal activities such as flowering, breeding and migration will change. • Several fold increase in urban and rural wildfire risk – a particular concern for water supply	• Increased prevalence of drought delivering urban and rural water shortages, and increased pressure on water infrastructure, including water storage • Saltwater intrusion on groundwater • Decreased water quality and increased levels of toxic algae which impacts biodiversity, recreation and drinking water sources • Increased flooding, slips and landslides affecting land, houses, roads and other assets, public transport and rural productivity • Flood protection infrastructure Levels of Service reduced overtime • Impacted rural community due to reduced agricultural production • Reduced soil fertility • Regional parks negatively affected by both drought and flooding • Higher stress on indigenous ecosystems, plants and animals, especially with drought • Reduced workplace productivity
	• 0.5°C to 1°C temperature rise • Up to 30 Increased hot days over 25°C	• Between 0 % less rain, to 5 % more rainfall • 0.12 to 0.24 metres above present		
By 2090, seasonally the region could expect*:				
Ruamahanga	• 1.2°C to 3°C temperature rise • Up to 80 Increased hot days over 25°C	• Between 0 % less rain, to 10 % more rainfall • 0.68 to 1.75 metres above present		
Wairarapa Coast	• 1°C to 3°C temperature rise • Up to 60 Increased hot days over 25°C	• Between 10 % less rain, to 5 % more rainfall • 0.68 to 1.75 metres above present		

Source: MFE, GWRC and NIWA climate change summaries. Updated 2020

** Projected changes are relative to 1995 levels. The numbers provided are mid-range estimates of what the change is projected to be and should not be taken as definitive values.*

4.5 Increased flood risk

As well as the main township of Masterton, our district has other smaller communities such as Castlepoint, Taueru, Tinui, Mauriceville and Riversdale. Two of these communities are situated along its coastal edge. The urban developments are subject to flooding from the many streams and rivers which drop fast out of the ranges and then slow down and spread out on the plain on their way to the sea.

In high rainfall events, the volume and rate of flow of the water coming down the waterways rises quickly and residual ponding, once the waterway levels have dropped, can be significant.

The climate change projections suggest that very heavy rainfall events are likely to become more frequent, especially in the Tararua ranges during north-westerly storms and the Wairarapa during southerly storms. This will present very significant challenges in how we manage our assets.

Stormwater eventually finds its way to the sea. The level of the sea at the time the stormwater is flowing down the rivers influences how fast and how much of the stormwater can drain away. If the sea level is high enough, it can prevent the water flowing away out to sea causing it to back up and overflow inland. The rise in base sea level is caused in part by rising ocean temperatures – heated water expands.

In addition to this effect, rising ocean temperatures mean that storms generated at sea will contain more energy, for example be more intense. This in turn means that storm surges and wave heights will be higher. All these factors combine to significantly increase the risk of inland flooding on the district's coastal plains.

GWRC has recently collated data gathered from 20 years' research and new data using aerial photos, electronic flood mapping tools and a range of analytical techniques to identify hundreds of Masterton properties as being at potential increased risk of flooding.

We are working with GWRC to confirm predictions for flood events. The overriding issue is to ensure timely protection measures are in place against a 1 in 100-year flood to preserve our community and our economy. Until levels are confirmed, and any mitigation required is in place, there may be implications for any proposed developments in the town centre, the library project and the town's overall economic development.

4.6 Earthquake resilience risks

Parts of Masterton are built on old flood plains that could be subject to liquefaction in a major earthquake. Part of MDC's bridge and reticulation renewals programme involves using different construction methods and materials to provide greater earthquake resilience in pipelines.

We do not consider that this risk is so great that the renewals programme should be brought forward. Instead, we will address resilience at the time pipes and bridges are replaced.

4.7 Three Waters Reform

The Three Waters Reform was a process conducted by the previous central government to determine the future of the three water services councils and to identify who would be best suited to provide them in the future. This reform was implemented through the Water

Services Entities Act of 2022 and aimed to establish 10 water services entities that were aligned with regional boundaries. The main goal was to improve the efficiency of water service delivery by the local government.

However, the Three Waters legislation introduced by the previous Government was repealed on February 14, 2024.

The Coalition Government has developed a new policy called "Local Water Done Well" which will introduce two bills this year. The first introduced and enacted by mid-2024, while the second bill was introduced in December 2024 and enacted by mid-2025.

"Local Water Done Well" recognizes the significance of local decision-making and flexibility for communities and councils to determine how their water services will be delivered in the future. It ensures emphasis on meeting water quality rules and long-term investment in infrastructure.

More information on the Government's reform strategy and timeline is available at https://www.dia.govt.nz/Three-Waters-Reform- Programme

4.8 Cyclone Gabrielle

Severe Tropical Cyclone Gabrielle was a severe tropical cyclone that devastated parts of the North Island of New Zealand and affected parts of Vanuatu and Australia in February 2023. Cyclone Gabrielle followed closely timed severe weather events, including floods. Cyclone Gabrielle had a significant impact on Masterton, NZ, in February 2023. Tinui homes were flooded, leading to discussions between affected owners and Masterton Council. Coastal communities in Wairarapa faced isolation due to slips and flooding, prompting support from the Horowhenua District Council. The aftermath prompted the Wairarapa mayors to establish a Relief Fund for those impacted by Gabrielle.

4.9 Conclusion

Risks, at a strategic level, relevant to the wastewater assets were identified and assessed by both Council staff and Waugh Consultants Ltd.

Risks, at an operational level, relevant to the Wastewater assets have been identified as a result of this work, the 2014 PHRMP review, 2020 risk workshops, Leak Detection Studies, and Condition Assessment. Operational risks identified through these projects have been assessed and incorporated into this Plan.

5 Life Cycle Management Plans

5.1 Introduction

Life cycle management plans were prepared for the stormwater asset group, and they include the following information:

- Asset description (including physical parameters, capacity/performance, condition, valuation, historical expenditure, critical assets, significant negative effects, resource consents, data confidence levels)
- Design standards
- Maintenance plan
- Renewal/replacement plan
- Asset creation plan
- Financial forecast
- Disposal plan

Over time a network of culverts, pipes, drains and sumps has been established to assist in the timely removal of stormwater. In rural areas these are largely open drains but in urban areas a network of both piped and open drains are formed. Council's role is to ensure that the reticulation continues to operate in a manner that minimise the effects of stormwater on property.

This plan covers the stormwater assets in the Masterton urban area that Council owns and maintains. This includes, Pipes, Manholes, Outfall weirs, Stop-banks, and the erosion protection seawall at Castlepoint.

Council contributes financially to the maintenance of the stop-banks that protect the Masterton urban area and Council assets only. Other stop-banks in the district are currently maintained by GWRC.

The stormwater system has relied largely on the small streams, creeks, etc. which flow from west to east as a means of disposing of stormwater, with piped sections used to transfer water to these outlets. Council has a policy of requiring buildings to dispose of roof water on the sections via soak pits in the first instance before discharging to the stormwater system.

Historically flooding of dwellings has not occurred largely due to the presence of secondary flow paths (i.e. roads). However, in July 2017 due to extreme rainfalls (over 100mm in 2 days, the second major wet weather event in 2017 - 114mm in 2 days April 2017) a few properties were impacted by flood water. These were mainly the result of local stormwater facilities not functioning fully due to blockages.

Note:

- Road channels, sumps and sump leads are considered roading assets and as such their maintenance and operation are covered in the Roading Asset Management Plan.
- Maintenance of the myriad open channels within the Masterton urban area has traditionally been the responsibility of the property owner. This still applies to most open channel drains and creeks/streams, the exception being the Upper Plain cut off drain to which Council has undertaken maintenance.

5.2 Asset description

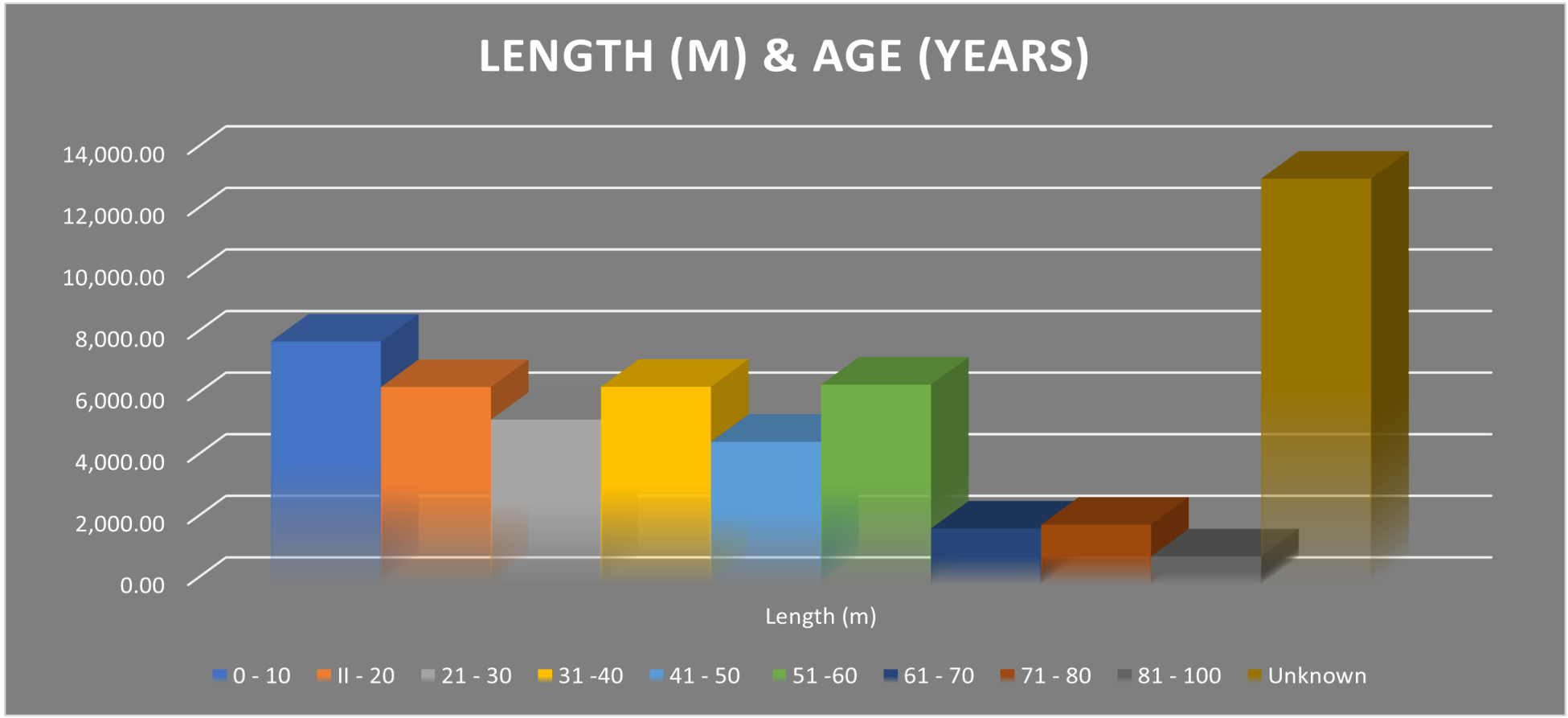
5.2.1 Physical Parameters

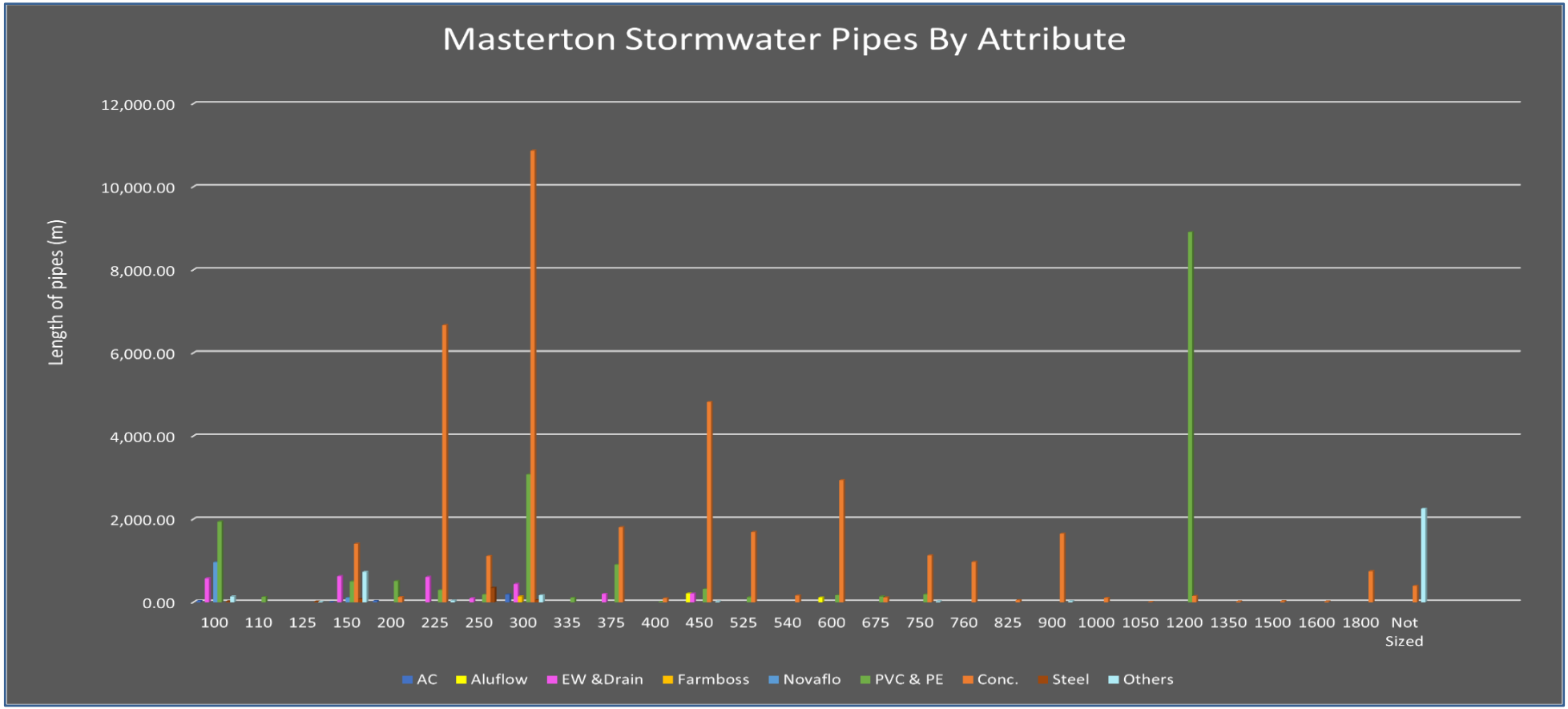
The stormwater reticulation varies in size from 75mm diameter up to 1,800mm diameter and uses pipes made of earthenware, concrete, steel, aluminium, PE, and PVC. Overall length of pipework is approximately 55,182m. The earliest pipes were laid in the 1920s.

The following table summarizes the stormwater network in Masterton. Masterton's open channel network is approximately 107,009m long and comprises of both natural and modified watercourses.

Masterton Stormwater Network									
Diameter mm	AC m	Alu m	EW and Drain m	Farmboss m	Novaflo m	PVC and PE m	Conc. m	Steel m	Others m
75			72.79						9.48
85						55.63			
100	27.41		574.24		959.89	1,940.50		18.50	136.93
110						127.28			
125								15.26	12.91
150	2.53		625.32		107.12	498.86	1,407.33	74.77	729.67
160						151.29			
200	29.90					508.06	123.35		
215						9.82			
225			607.26			293.12	6,669.56		41.05
230							90.02		
250			97.02			183.09	1,111.44	346.35	
300	186.60		438.36	138.78		3,075.58	10,868.35	48.24	166.80
315							259.38		
335						108.61			
Diameter	AC	Alu	EW and Drain	Farmboss	Novaflo	PVC and PE	Conc.	Steel	Others

mm	m	m	m	m	m	m	m	m	m
355						112.00			
375			198.99			903.41	1,804.24		
380							165.14		
400						10.15	94.27		
450		209.52	208.22			315.86	4,819.12		16.76
500							12.07		
525						119.34	1,688.86		
540							159.32		
600		112.83				166.67	2,936.43		
675						137.63	114.22		
720							41.02		
750						189.43	1,126.40		20.70
760							970.56		
825							47.64		
900							1,650.46		25.33
1000							102.42		
1050							5.52		
1200						8,906.33	148.36		
1350							17.97		
1500							25.61		
1600							18.18		
1800							745.23		
Not Sized							393.96		2,253.25
Total	**246.43**	**322.34**	**2,822.20**	**138.78**	**1,067.01**	**17,812.67**	**37,616.43**	**503.12**	**3,412.88**


LENGTH (M) & AGE (YEARS)
14,000.00
12,000.00
10,000.00
8,000.00
6,000.00
4,000.00
2,000.00
0.00
Length (m)
0 - 10
II - 20
21 - 30
31 -40
41 - 50
51 -60
61 - 70
71 - 80
81 - 100
Unknown


Masterton Stormwater Pipes By Attribute
Length of pipes (m)
12,000.00
10,000.00
8,000.00
6,000.00
4,000.00
2,000.00
0.00
100 110 125 150 200 225 250 300 335 375 400 450 525 540 600 675 750 760 825 900 1000 1050 1200 1350 1500 1600 1800 Not Sized
AC
Aluflow
EW &Drain
Farmboss
Novaflo
PVC & PE
Conc.
Steel
Others

Masterton District Council Stop banks			
Location	**Length m**	**Earthworks volume m^3**	**Armouring Volume m^3**
Waipoua River left bank	1,185	5,960	928
Waipoua River right bank	1,395	7,993	740
Ruamahanga River	1,500		0
Total	**4,080**	**13,953**	**1,669**

5.3 Asset condition

The condition of the stop banks is checked on an 'as required' basis.

Council continues to CCTV the stormwater network and grade as detailed in NZPIM, accumulating reasonably consistent records of condition.

The condition grading of each pipe comprising the stormwater network will be recorded, from 1 (very good) to 5 (very poor). These grades are based on the NZ Gravity Pipe Inspection Manual

Where no information existed, the pipe was default graded '3'.

There is less known about the condition of the stormwater pipes than either the sewerage or water networks as they only flow intermittently and have in practice necessitated much less maintenance.

It is also recommended that these grades be shown on plans of the reticulation to assist with planning maintenance and renewal work.

5.4 Resource Consents

Council does not currently hold any resource consents pertaining to stormwater reticulation in the district. However, it is likely that GWRC will require consents to discharge in the future.

5.5 Significant negative effects – Stormwater

The significant negative effects of stormwater systems in the Masterton district are outlined in the following table.

Significant Negative Effects of Stormwater Services		
	Significant negative effects	**How we do/will mitigate this**
Social	Failure or blockages could contribute to overloading and potentially contribute to flooding.	Maintenance and renewals aim to minimise failures and blockages
Cultural	None identified	
Environmental	Failure or blockages could contribute to overloading and potentially contribute to flooding.	Maintenance and renewals aim to minimise failures and blockages
Economic	Failure or blockages could contribute to overloading and potentially contribute to flooding.	Maintenance and renewals aim to minimise failures and blockages

5.6 Asset Valuation

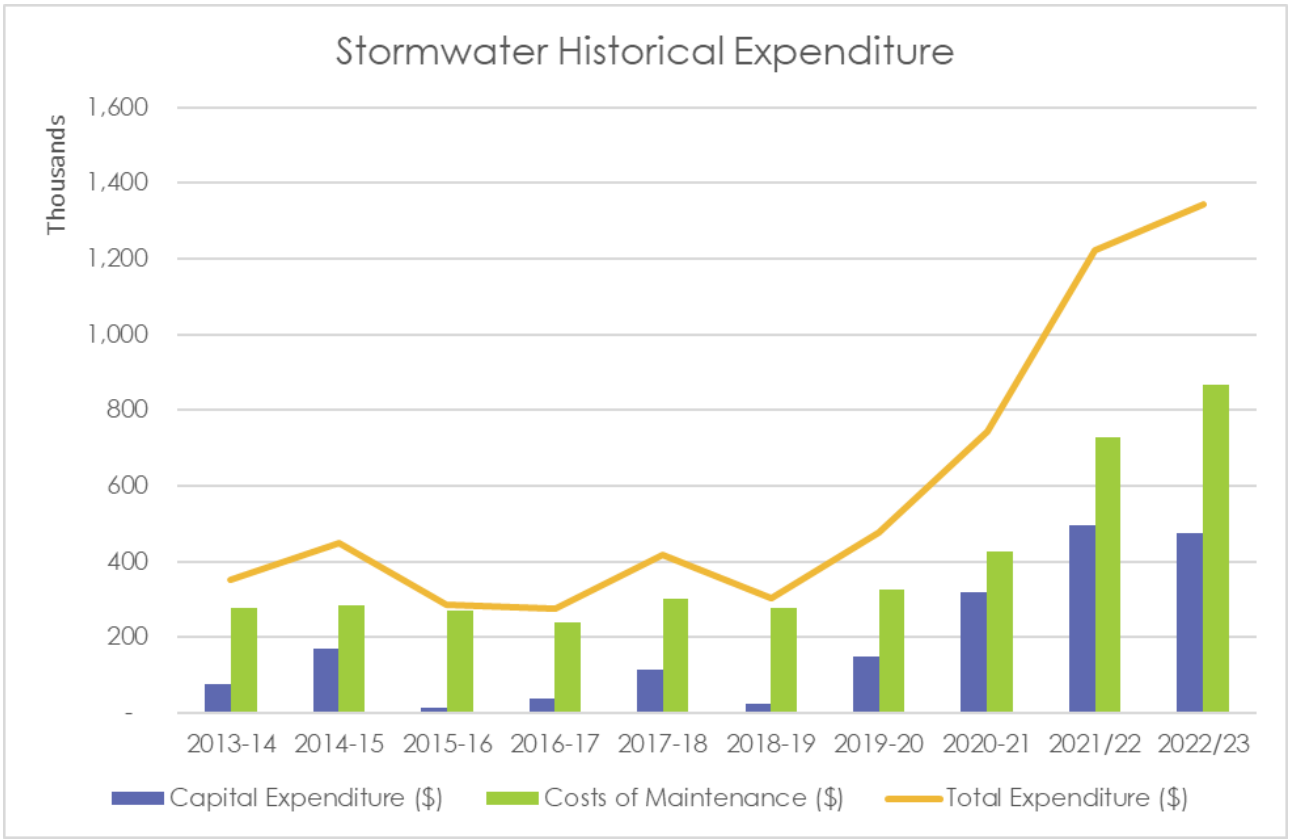
The Stormwater asset components were valued as follows, as of 30th October 2023. Data was sourced from the MDC Annual Report 2023.

Stormwater Asset Valuation			
Item	**Optimised Replacement Cost ($)**	**Optimised Depreciated Replacement Cost ($)**	**Annual Depreciation ($)**
Stormwater Reticulation	56,429,493	31,508,143	606,701
Riversdale Stormwater	2,690,382	2,254,810	27,036
Castlepoint Stormwater	908,972	660,235	9,090
Stop banks and weirs	3,023,076	2,392,570	22,519
Wainuiomapu Diversion	1,793,155	941,667	26,896
Castlepoint Foreshore Seawall	3,043,742	2,425,597	37,831

5.7 Historical Expenditures

Refer to Council's Annual Reports for more detailed information on the historical operating and maintenance costs of the stormwater reticulation.

Historical Expenditure – Masterton Stormwater			
Year	**Capital Expenditure ($)**	**Costs of Maintenance ($)**	**Total Expenditure ($)**
2013/14	74,280	278,618	**352,898**
2014/15	167,672	282,445	**450,117**
2015/16	14,346	270,952	**285,298**
2016/17	37,308	237,419	**274,727**
2017/18	115,135	301,990	**417,125**
2018/19	25,052	277,565	**302,617**
2019/20	148,543	326,709	**475,252**
2020/21	317,975	427,017	**744,992**
2021/22	497,355	726,757	**1,224,112**
2022/23	475,351	868,188	**1,343,539**



5.8 Future Projections

Future depreciation expense will be based on existing depreciation that flows out of infrastructural valuations, plus the additional depreciation that is generated by new capital expenditure and the three-yearly revaluations, as required by accounting standards. The following graph shows the rate at which we will accumulate depreciation reserve funds will not be fast enough to meet our large, planned capital expenditure projects. This means that for those significant capital projects loan funding will be utilized.

5.9 Critical Assets

Council has identified the critical water supply assets as being.

- The Chapel Street (Town) Drain, and stormwater connections to the Waipoua Stop bank.
- Fifth Street retention pond

5.10 Data Confidence Level

The data confidence levels for this asset are shown in the following table where, A = Highly Reliable, B = Reliable, C = Uncertain, and D = Very uncertain.

Stormwater Data Confidence Levels				
Attribute	**D**	**C**	**B**	**A**
Physical parameters				
Asset capacity				
Asset condition				
Valuations				
Historical expenditures				
Design standards				

5.11 Design Standards

Current engineering MDC prescribed design standards for all new Stormwater assets are built and installed to the Representative Concentration Pathway (RCP) 6 - emissions peak around 2080, then decline.

Our assumed climate change emissions range is RCP 4.5 to RCP 8.6

Pipes

Council's stormwater design standards are summarized in the following tables for existing developments and for new developments.

Minimum Acceptable Drainage Standards for Existing Developments (MDC, 1995)			
Zone	**Primary System Return Period (yrs)**	**Total System Return Period (yrs)**	**Freeboard (mm)**
Residential	10	50	200
Commercial	10	50	50
Industrial	10	50	50

Stop Banks

Design and construction of any new stop banks on rivers would be managed by GWRC, with input from Council where required.

5.12 Maintenance Plan

Maintenance of the stormwater system and stop banks in the Masterton district includes the following items, Blockage clearance, Stormwater pipe CCTV and cleaning, Outlet inspections and clearing, Stopbank inspections and maintenance, Weed and debris monitoring and clearing, and Rock walls.

Property owners are responsible for maintenance of open channels in Masterton apart from the Upper Plain cut off drain to which Council has undertaken maintenance.

5.12.1 Blockage clearance

Outlet inspection and cleaning Council's Stormwater maintenance contract is held by City Care Ltd. This contract covers maintenance functions on an 'as required' basis.

The contract's term has been extended every 3 years, as the Contractor has met the performance requirements specified in the contract.

Masterton District Council will review the cost-effectiveness of the current arrangements for meeting the needs of the community within the district for good-quality local infrastructure, local public services, and the performance of regulatory functions according to the LGA act 2002 (section 17a) in March 2024.

5.12.2 Stormwater pipe CCTV and cleaning CCTV of stormwater pipes

This has occurred in the past and it is recommended that CCTV and that grading of the stormwater network in Masterton continues. Stormwater pipes and culverts will be CCTV inspected if poor condition and/or performance are suspected.

5.12.3 Stop bank inspections and maintenance

This is carried out by City Care on an 'as required' basis and funding for this work is currently shared with GWRC.

5.12.4 Rock wall maintenance

Council's maintenance contractor City Care carries out this function on an 'as required' basis.

The council policy is to repair and reinstate rock walls, but where there is a significant cost premium, repairs would be made with modern materials. New drains and walls use modern materials.

5.13 Renewal/Replacement Plan

The Waipoua River stop bank is proposed to be upgraded in conjunction with the Greater Wellington Regional Council. A provision is identified in the plan for this upgrade work. When details of the planned upgrade are available, this Plan will be updated.

The renewal/replacement programme of stormwater network is based on estimates to replace or repair key assets (such as the rock walls), and to other components or structures, based on historical performance data and cost (refer to table 6.9). These estimates will be revised based on incorporating the asset condition assessment work included in this plan. All project work priorities regarding timing of renewal or replacements are based on the optimised renewal decision-making (ORDM) framework outlined in section 6.2.6 below.

5.13.1 Renewal Strategy

Optimised renewal decision- making (ORDM) framework. The ORDM process is a risk-based methodology which assesses the probability of each failure mode (including structural, hydraulic capacity, performance, operational and performance) and the consequence (or damages) of the failures.

A scoring system of 1 to 5 is employed to quantitatively assess the risk components. For example, structurally failed sections will attract a failure mode probability of 5. The risks of failure (for each failure mode) of each section are assessed and calculated by quantifying the product of their probability and consequence of failure.

Sections with a high risk of failure are then ranked and the top group is included in the priority 1 list.

However, it must be noted that the ongoing programme of collecting further asset information and variation of market prices for renewal/replacement, as well new technology advances in the industry, mean that the priority list is provisional and will be subject to change with new information.

5.13.2 ORDM inputs for stormwater reticulation

ORDM used the following information to assess the probability of water reticulation failure:

- Structural Failure: CCTV records, age profiles, material profiles, soil type profiles.
- Hydraulic/Capacity Failure: Catchment (current/future) flow monitoring.
- Performance Failure: System performance, flooding/ponding drainage incidents.
- Operations and Maintenance Failure: Flooding/repair records, maintenance records and costs.

Currently the ORDM for stormwater reticulation failure probability assessment include the following factors:

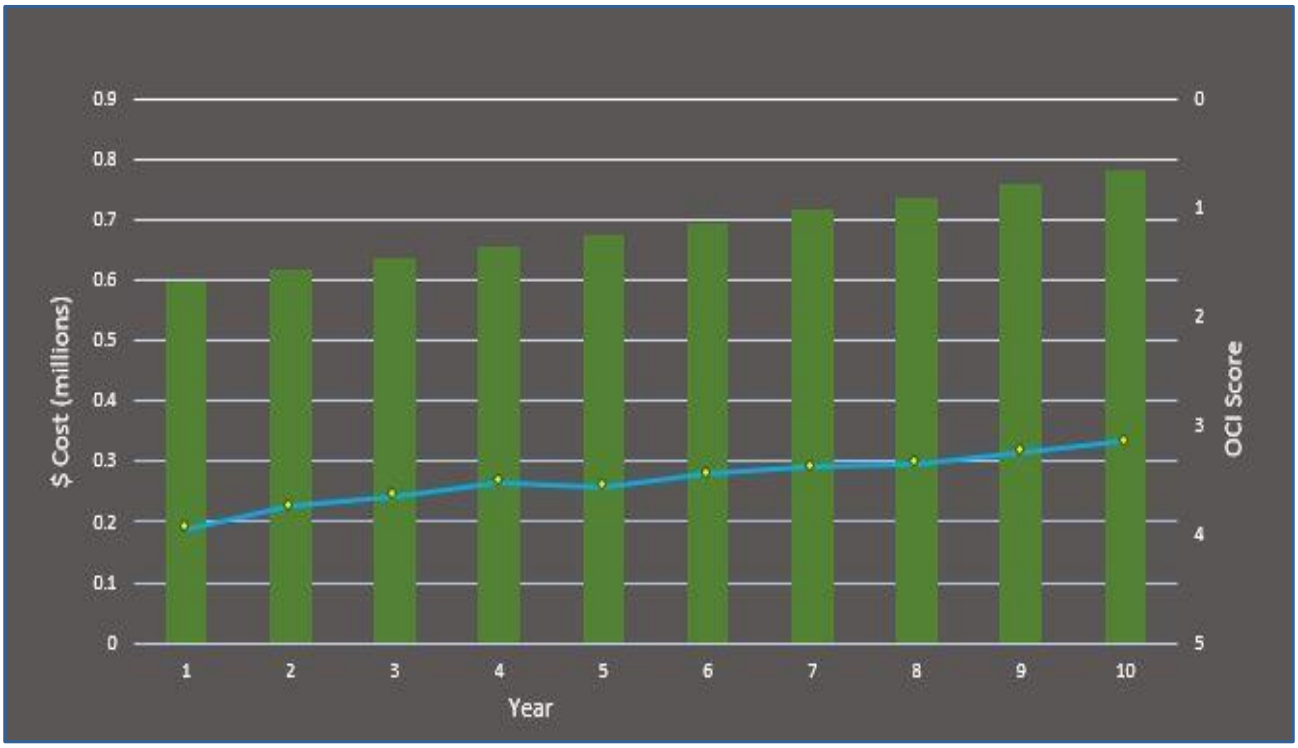
- Structural consideration based on CCTV (number and major/nature of faults, etc.)
- Capacity considerations (current observation, future subdivision potential)
- Performance considerations (ponding/flooding, dips etc.)
- Maintenance considerations (blockage, frequency of flooding, tree roots etc.)

The above probability rating is then multiplied by the consequence of failure rating to obtain the overall risk score. The utility service department maintains and updates a database on the reticulation network. Each year the highest ranked sites are considered for renewal/replacement.

5.13.3 Predictor models and data

In 2017, Council have started to implement and provide Life Cycle models using Assetic Predictor.

The objective of this prediction modelling analysis is to model the deterioration of Council's Stormwater reticulation pipe network assets by developing a simulation model using



Assetic Predictor. The model does not include significant project renewals.

The graph below demonstrates Renewal Cost vs Overall Condition Index (OCI). Using the LTP forecast Stormwater renewal spend of $600,000 in 2024/25 dollars per annum.

(NB: Stormwater pipe assets only)

10-year Scenario Modelling for Stormwater Reticulation Pipes Condition Score and Spend 2024 – 2034

5.14 Asset Creation Plan

Council does not currently have any plans for creation of any significant stormwater reticulation over the next 10 years.

Subdivision development may occur over this time with Stormwater asset vested (transferred) to Council; however, it is not expected to be significant.

There are currently no plans for new stop bank construction. Some upgrading of the Waipoua Stop bank is proposed in conjunction with GWRC.

5.15 Reticulation Modelling

The use of catchment modelling to assist with asset management and improvements in levels of service will be reviewed with this AMP and implemented if cost benefits are identified.

5.16 Financial Forecast

Council has made a strategic decision to maintain the current levels of service for this activity. Maintenance and renewal work identified in this section to enable maintenance of current Levels of Service is outlined in the following table.

Stormwater operations, maintenance and capital costs identified

Action/Work	Driver for action	Estimated costs	Scheduled for	How this will be funded
Stormwater renewals and upgrade	It is known that maintenance and renewal work is required to ensure current levels of service are maintained.	$600,000 pa	From 2024 - 2034	Depreciation funds and externally funded
Continued condition assessment	Ongoing work to assess the assets condition using tools such as CCTV.	BAU	From 2024/25	Rates
Stormwater consents	To comply with compliance requirements	$150,000	From 2027/28	Depreciation funds
Stormwater treatment	To improve the level of service	$400,000 pa	From 2027/28 – 2030/31	Rates / Loan

*Note*** The numbers in the table above are uninflated figures based on today's dollar.*

5.17 Disposal Plan

Council does not have a disposal plan for its stormwater assets. This is not considered necessary given the nature of the assets involved.

6 Financial Summary

6.1 Introduction

This section summarises the forecast level of expenditure required to enable the proposed level of service and action the proposed projects set out in this Asset Management Plan. Here we also discuss historical expenditure, funding sources (past and future) and the implications of these for Council's financial sustainability.

Estimates of future costs and revenues have been developed using best available information and expected flow on effects calculated using established financial assumptions and policies in the Long- Term Plan 2024.

We summarise in the tables and graphs below historical financial performance of Stormwater to place in context our current 10-year projections.

Past spending must be considered when we make our forecasts as it impacts our current financials through interest, depreciation and maintenance costs that arise when we make capital asset purchases, and the appropriateness of past operational spending influences the required maintenance programme going forward and available reserve funding.

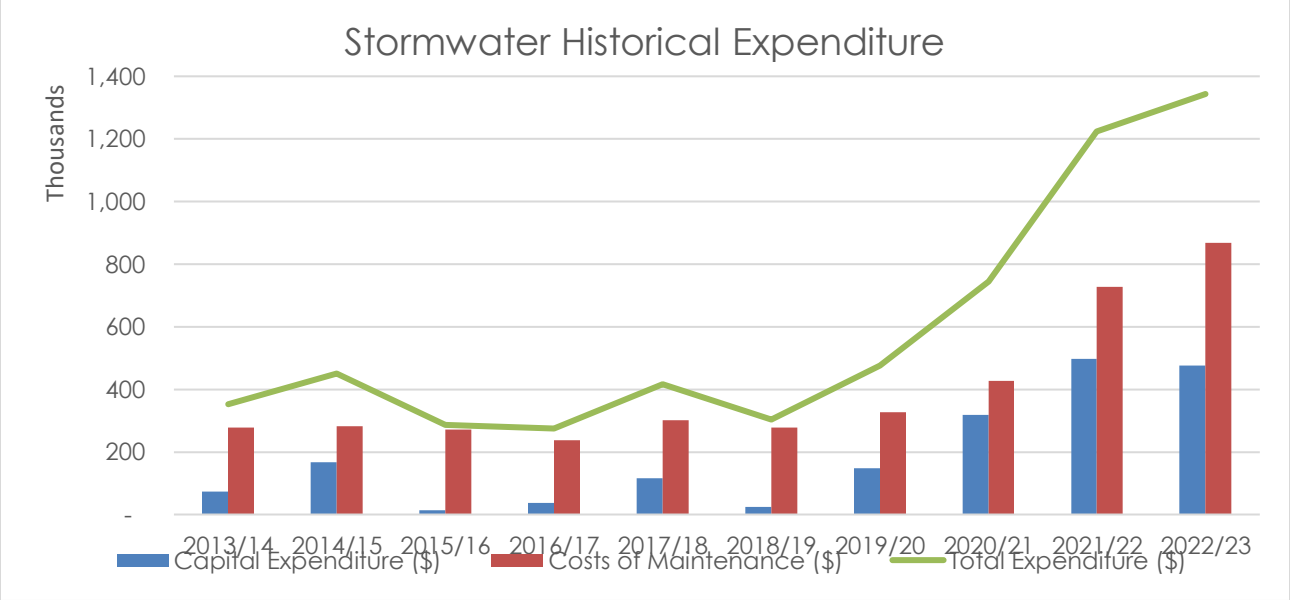
The following graph summarises the previous operating expenditure for the last 10 years for stormwater services. This information was sourced from Council's Annual Reports.

6.2 Historical Financial Performance

We summarise in the tables and graphs below historical financial performance of Stormwater to place in context our current 10-year projections.

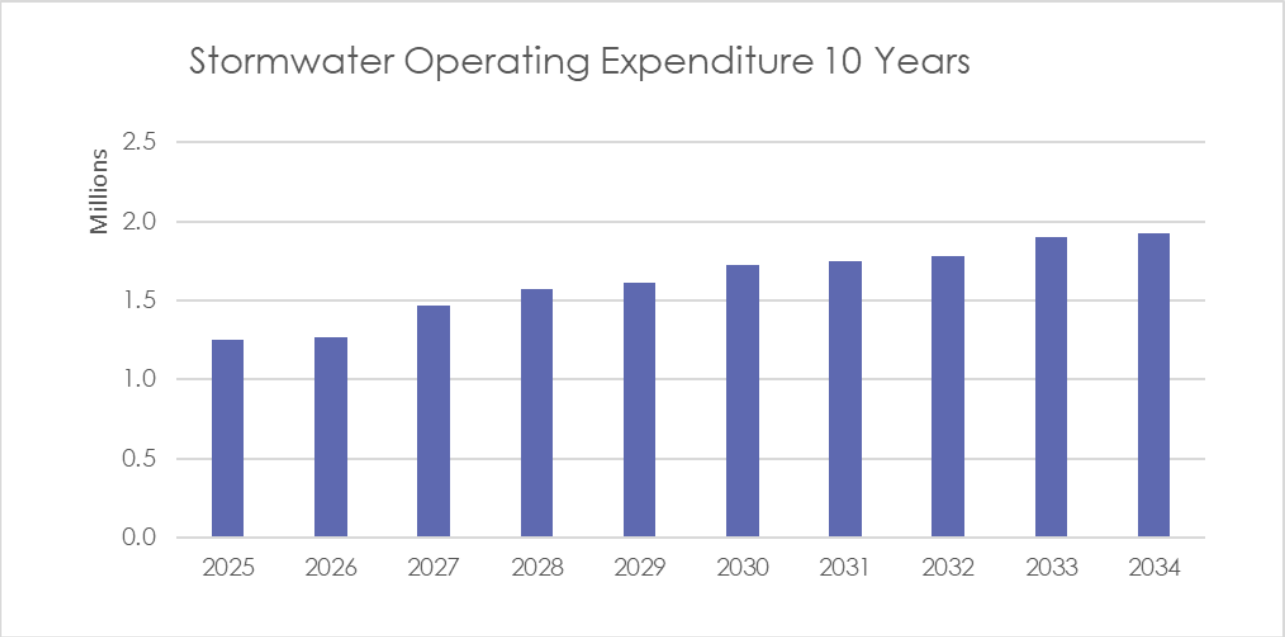
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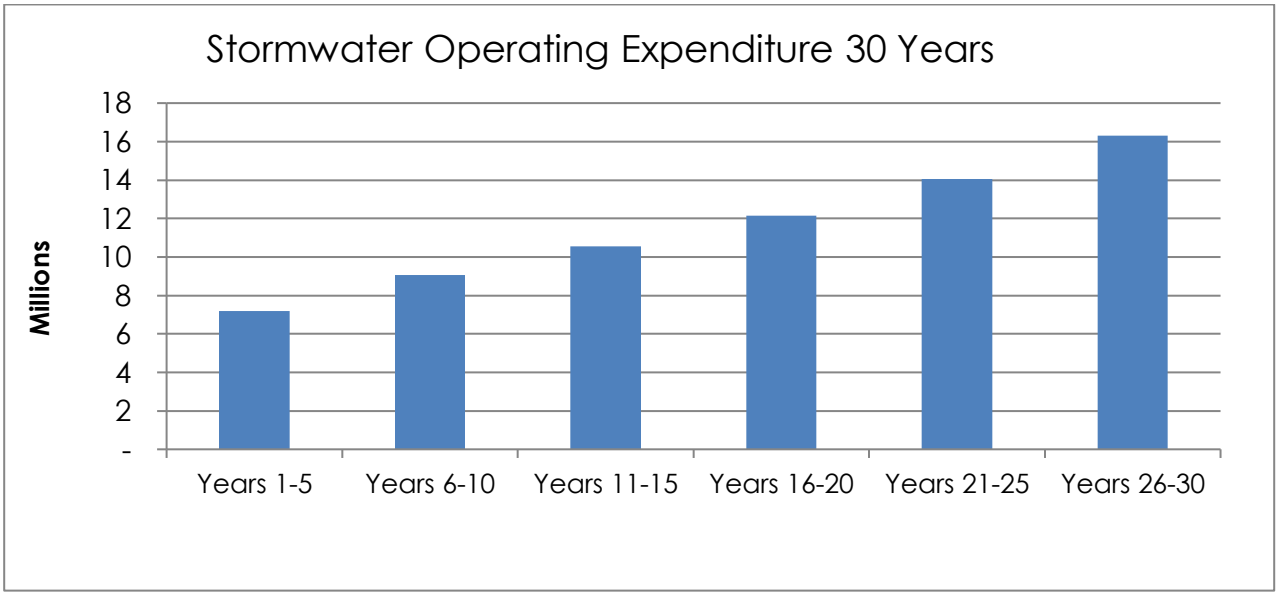


Forecast Operating Expenditure										
Stormwater	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**
Operating expenditure	638,754	652,772	741,368	806,725	818,892	840,829	845,710	857,400	881,591	888,484
Depreciation	609,538	619,705	728,173	764,875	792,821	883,962	904,028	924,562	1,014,251	1,027,121
Total Operating expenditure	1,248,292	1,272,477	1,469,541	1,571,600	1,611,713	1,724,791	1,749,738	1,781,962	1,895,842	1,915,605

Forecast Stormwater Operating expenditure 2024 – 2034



Forecast Stormwater Operating expenditure 2024 – 2054

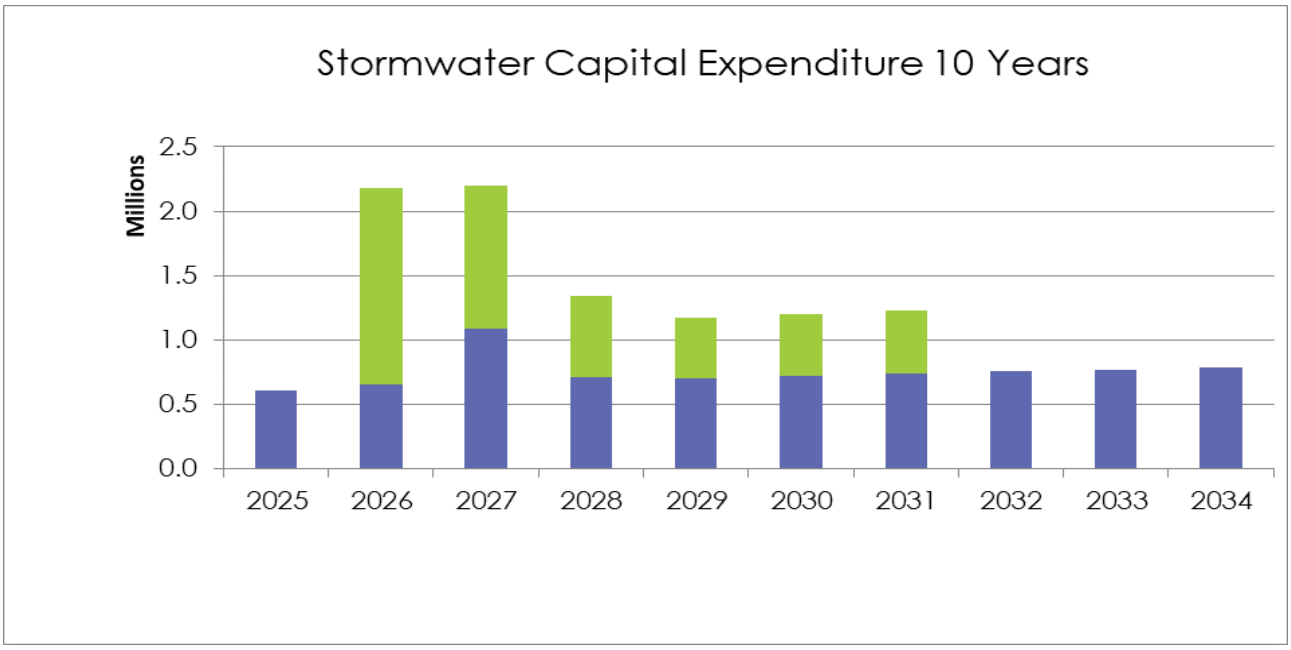


6.3 Capital Expenditure

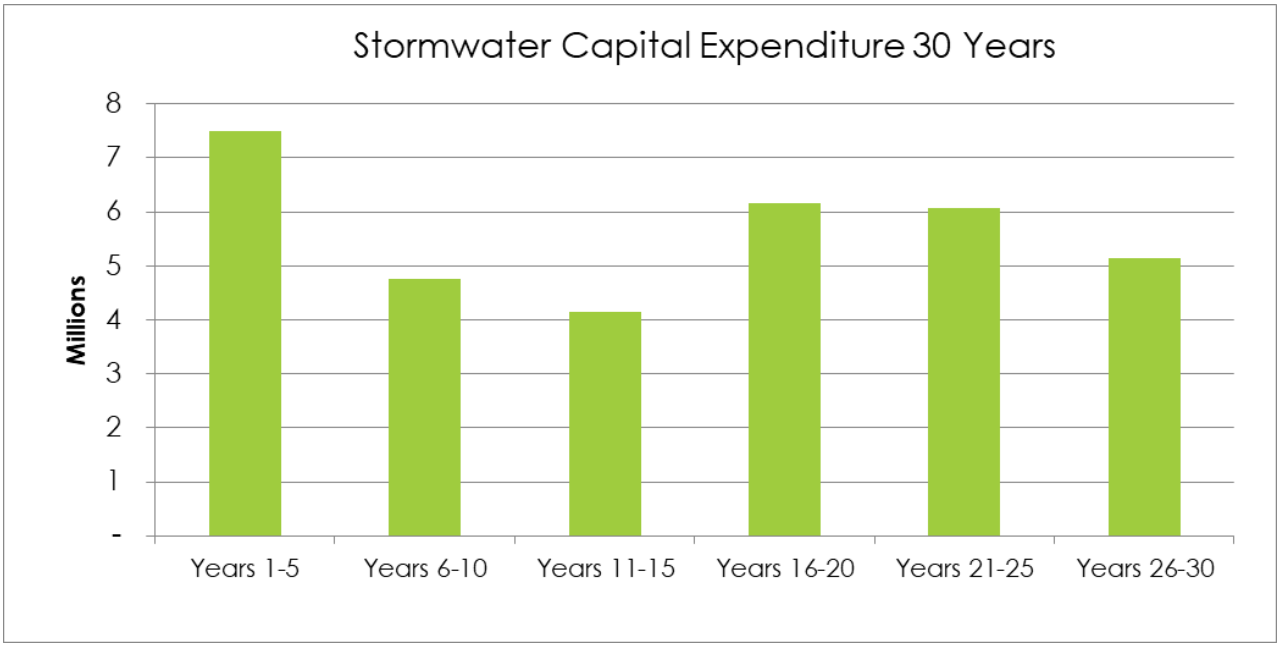
Investment in long life assets is essential to our Stormwater activities and responsibilities as it stands as a core component of our overall infrastructure.

Over the current LTP 2024-34 we are projecting to invest a total of $10.56 million is proposed to be spent on stormwater assets.

Forecast Capital Expenditure 2024 – 2034



Forecast Capital Expenditure 2024 – 2054



Forecast Stormwater Capital Expenditure Summary 2024-2034

STORMWATER												
Annual Plan 2023/24	Capital Expenditure Summary	Source of Funds	LTP Year 1 2024/25	LTP Year 2 2025/26	LTP Year 3 2026/27	LTP Year 4 2027/28	LTP Year 5 2028/29	LTP Year 6 2029/30	LTP Year 7 2030/31	LTP Year 8 2031/32	LTP Year 9 2032/33	LTP Year 10 2033/34
$	**Capital Projects**		$	$	$	$	$	$	$	$	$	$
	Stormwater											
319,500	Stormwater renewal & upgrades	Depn Reserve	600,000	652,800	669,000	687,000	705,000	722,400	739,200	756,000	772,200	789,000
213,000	Stopbank - associated pipe work upgrade	Loan	-	1,088,000	1,115,000	-	-	-	-	-	-	-
-	Urbanisation of Millard Ave	Development Contributions/Loan	-	435,200	-	-	-	-	-	-	-	-
-	Stormwater consent	Depn Reserve	-	-	-	167,700	-	-	-	-	-	-
159,750	Improve flood protection	Depn Reserve	10,000	-	418,125	28,625	-	-	-	-	-	-
-	Stormwater treatment	Loan	-	-	-	458,000	470,000	481,600	492,800	-	-	-
692,250	**Total Stormwater**		**610,000**	**2,176,000**	**2,202,125**	**1,341,325**	**1,175,000**	**1,204,000**	**1,232,000**	**756,000**	**772,200**	**789,000**
	Capital Funding											
(213,000)	Loan funds		-	(1,262,080)	(1,115,000)	-	-	-	-	-	-	-
-	External funds		(300,000)	-	-	-	-	-	-	-	-	-
(479,250)	Transfer from reserves		(310,000)	(913,920)	(1,087,125)	(1,341,325)	(1,175,000)	(1,204,000)	(1,232,000)	(756,000)	(772,200)	(789,000)
($692,250)	**Total capital funding**		**($610,000)**	**($2,176,000)**	**($2,202,125)**	**($1,341,325)**	**($1,175,000)**	**($1,204,000)**	**($1,232,000)**	**($756,000)**	**($772,200)**	**($789,000)**
$0	**Rates Requirement (Capital)**		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

N.B. The figures in this table are inflated.

6.4 Key Projects by Activity

Over the next 10 years we are planning to invest in continuous renewals and projects to increase our current level of service later in the 10-year period to meet the needs of our growing population and economy. We set out here key projects by activity and show in graphical form the past, current budget and future forecast total spend by year.

- Stormwater renewals Years 1-10, $7.1M
- Flood protection work Years 1-10, $457K
- Stormwater consents Year 4, $168K
- Stormwater treatment Years 4 -7, $1.9M

The Forecast Stormwater capital expenditure summary above details the values and specific projects which we have included in our financial forecast in the Long-Term Plan. These numbers above are uninflated figures based on today's dollar.

6.5 Estimated Future Public Debt

New borrowings are proposed to fund future capital projects. Details of the proposed new borrowings are shown on The Forecast Stormwater capital expenditure summary.

6.6 Insurance Coverage

The Council is a member of the Local Authority Protection Programme (LAPP). LAPP is a mutual insurance fund which provides for disaster insurance cover over Council's underground and generally uninsurable assets, to the extent of 40% of their value. The Government's Disaster Recovery Fund is expected to cover 60% of the replacement cost of assets in the event of a disaster.

6.7 Estimated Future Loan Repayment and Loan Interest Cost

Future borrowing requirements are shown under the capital funding section in the Forecast Stormwater Capital Expenditure Summary table above. Loan repayments costs on any existing borrowings are included within the activity budgets.

6.8 Financial Forecasts

The Forecast Operating Expenditure table and Forecast Stormwater Capital Expenditure Summary show the financial forecasts for operational and capital expenditure for the next 10 years.

6.9 Future Depreciation Projections

Future depreciation will be based on existing depreciation that flows out of infrastructural valuations, plus the additional depreciation that is generated by new capital expenditure.

6.10 Changes in Service Potential

Council maintains the assets to retain their condition and overall value at nationally accepted levels. A programme of routine maintenance, where and when required, is used to achieve this.

6.11 Assumptions and Confidence Levels

6.11.1 Basis of Preparation

The financial information in this plan has been prepared following the provisions of Public Benefit Entity (PBE) Standard - Financial Reporting Standard 42 'Prospective Financial Statements' (PBE FRS 42). The purpose of the financial forecasts in this long-term plan is to provide "best endeavours" costing of Masterton District Council's plans to enable it to achieve its Community Outcomes, in collaboration with other stakeholders, over the 10-year period 2024- 2034.

6.11.2 Basis of Assumption

Prospective information is based on several assumptions. Risks and uncertainties surround these assumptions. The basis of the assumptions surrounding the information is found in Planning Assumptions in the LTP. The information should therefore be used carefully, with these best endeavours purpose in mind. The Local Government Act 2002 Schedule 10 (1)(e) requires that information relating to levels of service, estimated expenses and revenue be provided in detail for three financial years, and indicative for the subsequent seven financial years. Over time, information becomes increasingly indicative from the time it was first prepared.

The approach taken to budget development has been that of preparing 'forecasts' on a best estimate basis. In this case, a forecast refers to financial information based on assumptions on future events the Council expects to occur and based on Council's expected response to these events. The Council has not taken an approach where hypothetical "what-if" projections are used.

The figures presented are budgeted. However, the opening balance of the 2023/24 year is based on the estimated actual result, with this estimation having been made in June 2024.

The major limitation of the forecasting approach, as with any approach, is that events may change over time and undermine the accuracy of assumptions made. The actual financial results achieved for the period are likely to vary from the information presented and the variations may be material.

The review of assumptions underlying the financial information was undertaken in preparation of the Long-Term Plan (LTP). However, the assumptions themselves were adopted by Council resolution to approve the Draft LTP for public consultation in 2023/24.

6.11.3 Assumptions and Risk Assessments

Several assumptions were made in preparing the 2024-2034 Long Term Plan (LTP). These assumptions are necessary as the planning term is for 10 years and the stating of assumptions ensures that all estimates and forecasts are made on the same basis. There are four categories of planning assumptions in this document:

- Demand Assumptions
- Resident population
- District growth
- Political Environment
- Policies
- Governance

- Operating Environment
- Resource consents
- Natural disasters
- External factors
- Human resources
- Financial Assumptions

(Please see the full LTP document for the assumptions detail.)

6.12 Funding Mechanism

Operating costs are to be funded by rates and user charges as per the Council's Revenue and Financing Policy. Capital renewals should be funded from depreciation reserves to the extent that the reserve funds can sustain the renewals programme. Upgrade projects should be loan funded to ensure intergenerational equity i.e., those receiving benefits should pay.

7 Plan Improvement and Monitoring

7.1 Introduction

There are areas that require more detail while preparing this plan. This will be phased in, with continuous improvement of management confidence.

This further work will have the effect of:

- Enhancing analysis for planning purposes.
- Improving operational efficiency.

7.2 Current amp improvement programme

Recommendations for improvement were made throughout the below Plan.

Stormwater Asset Management Plan Improvement Plan				
No	**Item**	**Plan Section**	**Year**	**By Whom**
1	Complete stormwater strategy	LoS	2024- 2026	MAO -
2	Monitor trends identified in the Growth and Demand section and update this Plan accordingly.	Growth and Demand	To update with LoS review (item 1)	USM
3	Undertake further monitoring and analysis work to better understand the effect of climate changes on demand.	Growth and Demand	To update with LoS review (item 1)	USM
4	Research expected changes in stormwater flows and their inputs.	Growth and Demand	To update with LoS review (item 1)	USM
5	Review of risk management for all services/activities.	Risk	2025/26	MAO/USM
6	Following the review, undertake further work, training, and assessment re risk management	Risk	2023/24	USM
7	Review valuation replacement costs for assets	Lifecycle	2023/24 and yearly	FM
8	Incorporate data re condition of stormwater pipes once the CCTV data has been collated and results available.	Lifecycle	2024/25 and ongoing	Asset Engineer
9	Include details of the planned Waipoua river stop bank upgrade once available	Lifecycle	From 2024	MAO / USM
10	Develop an accurate inventory of assets, and their capacity and condition	Lifecycle	Ongoing	Asset Engineer

7.3 Monitoring and review

The above ‘Improvement Plan’ should be monitored and reviewed once in every 12 months. Appropriate actions then can be taken for further improvement. This Plan will be reviewed every three years.

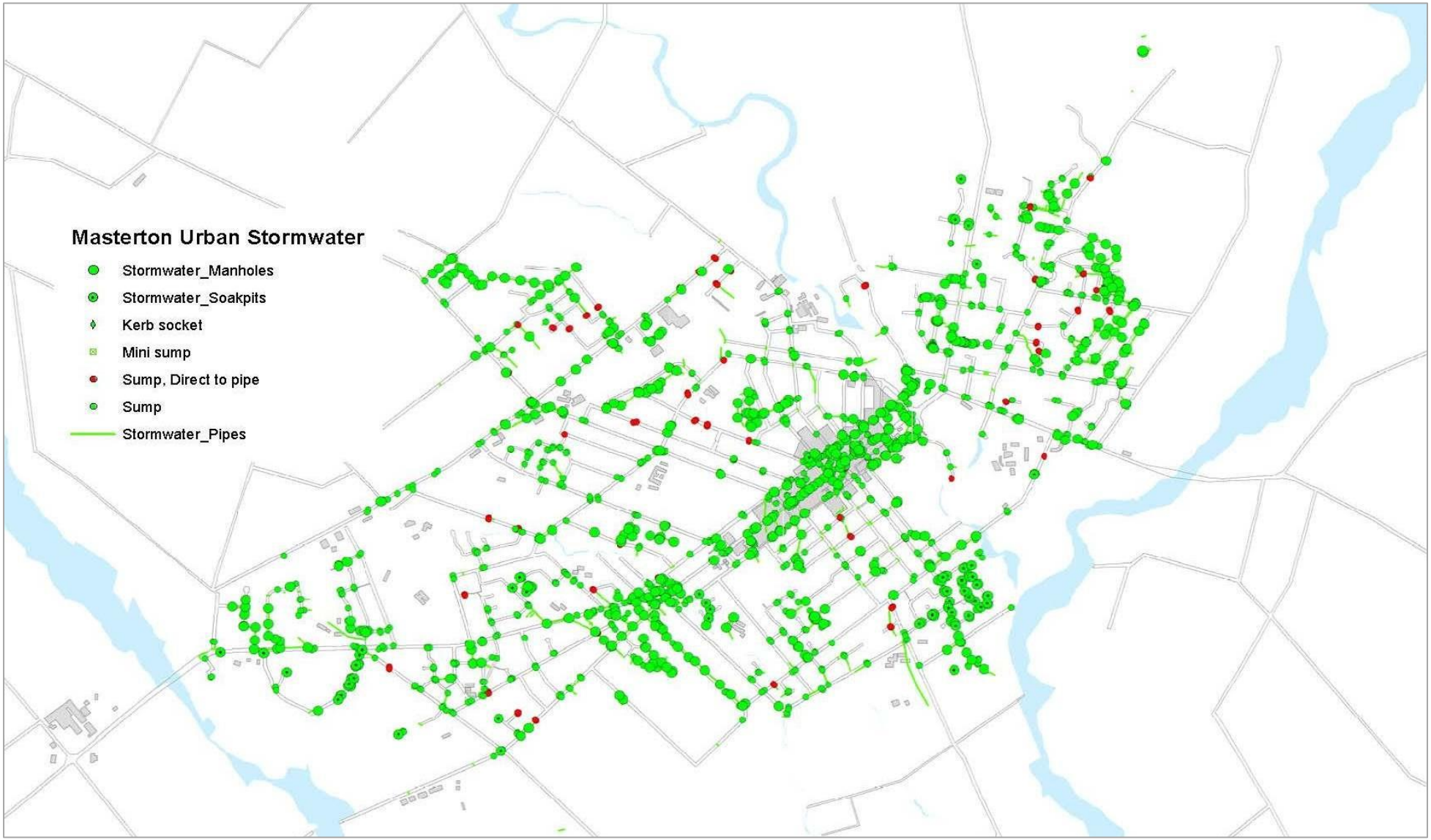
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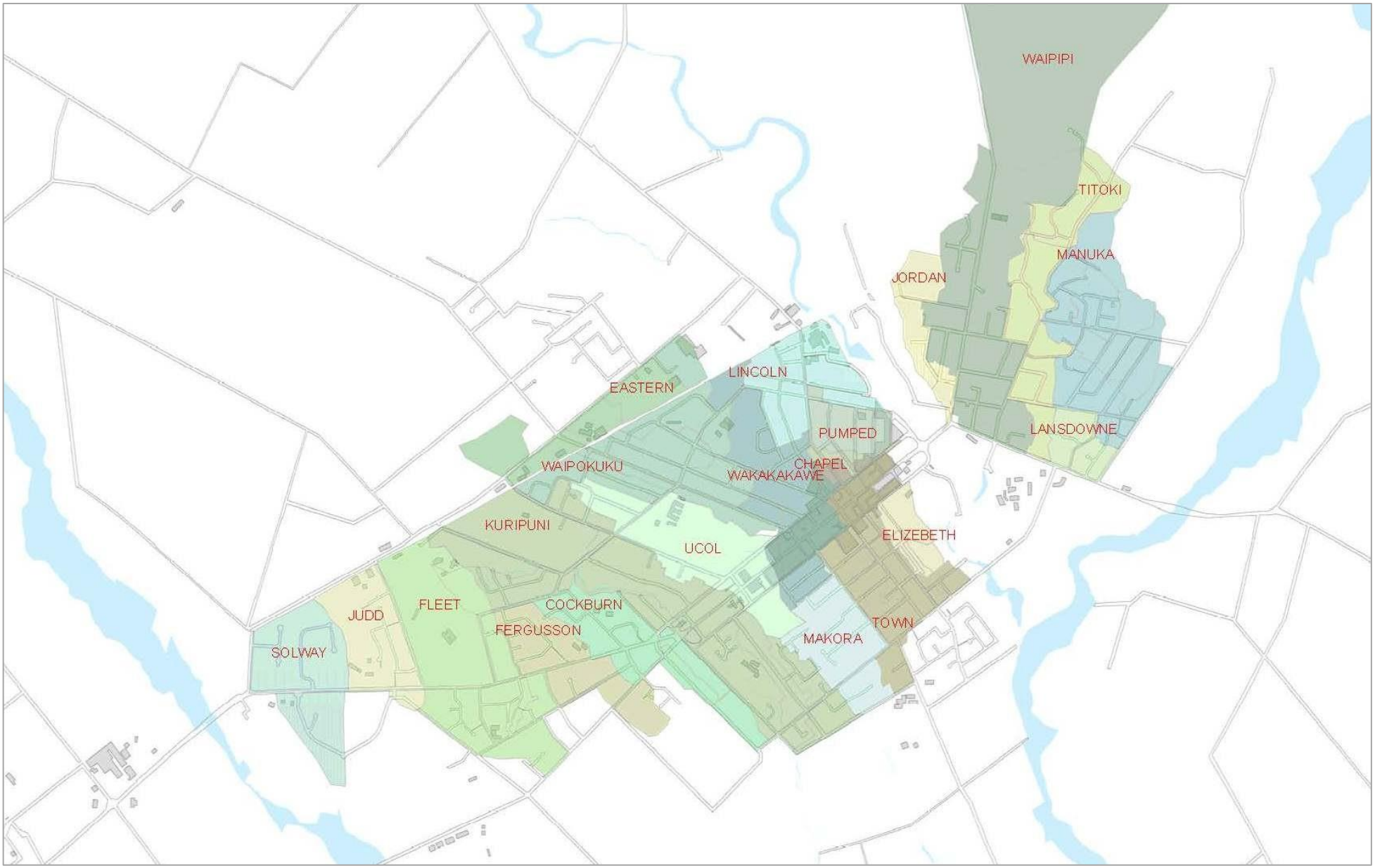
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- Opus International Consultants Ltd (2005) Masterton District Council Infrastructural Asset Valuations, June 2017.

9 Appendices and Maps

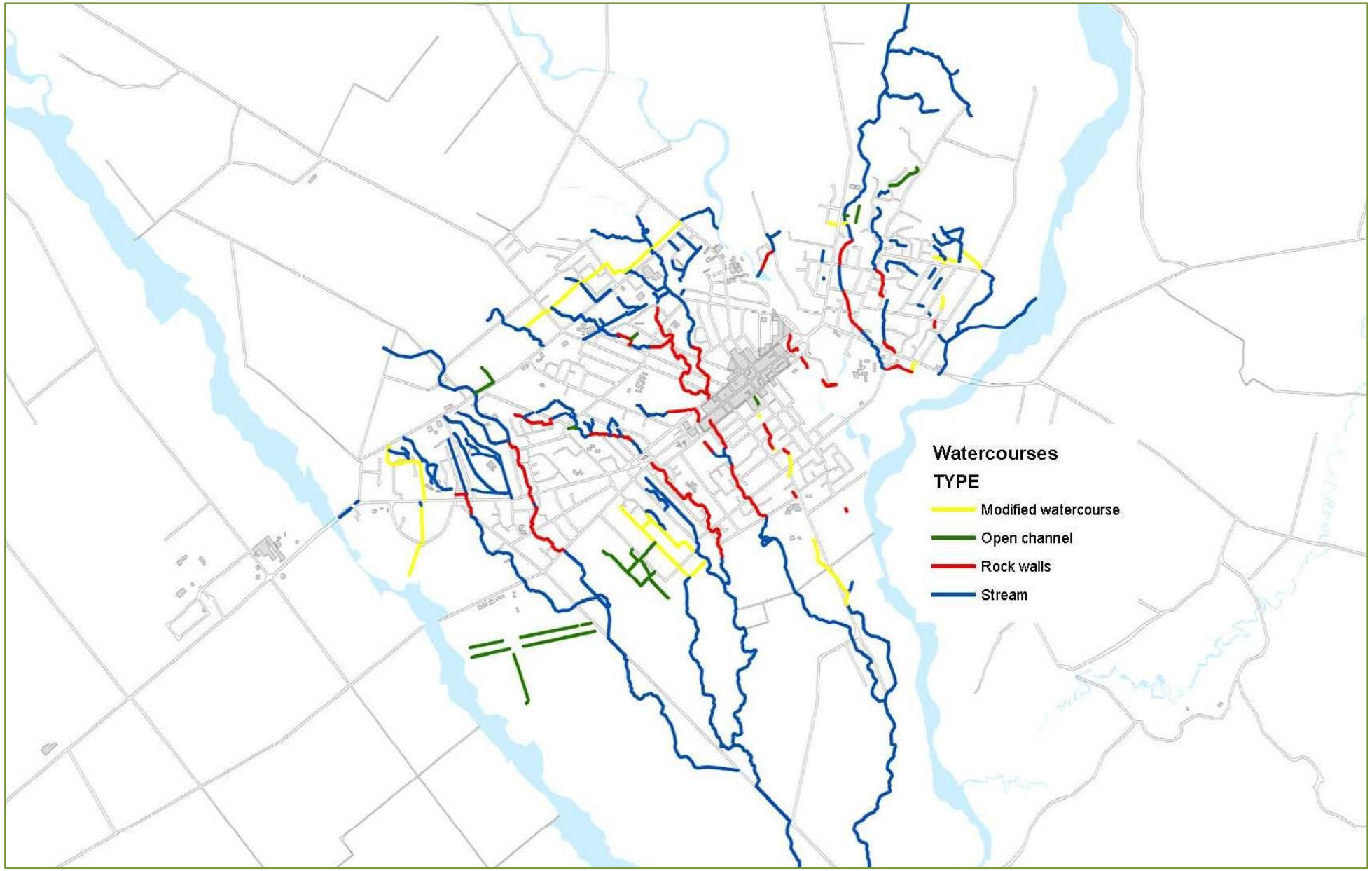
Layout plans



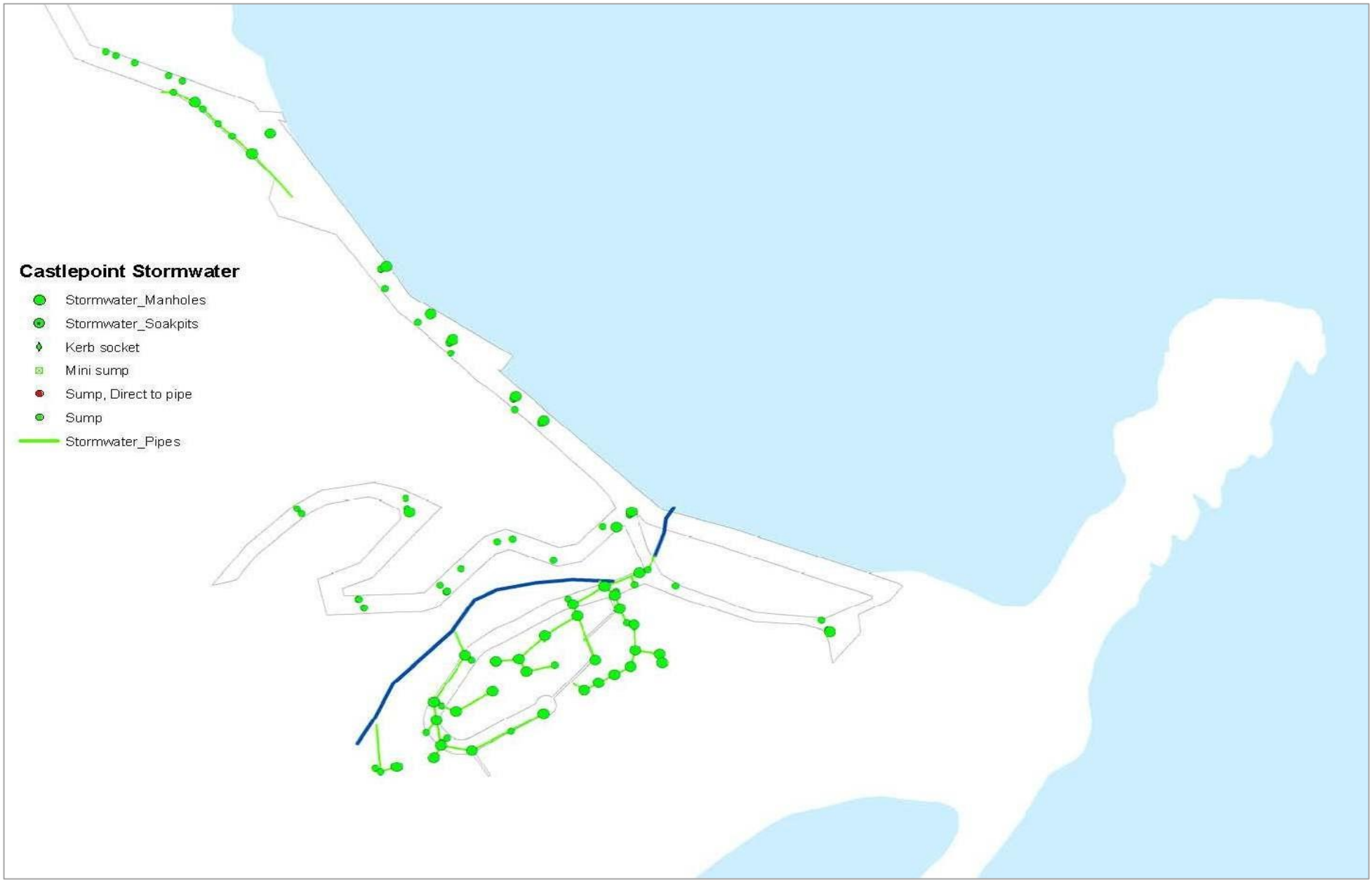
Urban Catchment Areas



Urban Water Courses



Castlepoint Stormwater



Riversdale Stormwater



Waipoua Stop Bank

