Stormwater Activity Management Plan

2018

Stormwater Activity Management Plan Status

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1 Forward

1.1 Introduction

The Stormwater Activity Management Plan describes the stormwater activity. This covers the provision of systems for the collection, transmission and disposal of stormwater is a function of the Central Hawke's Bay District Council permitted by the Local Government Act 2002. Council has chosen to exercise this function to provide stormwater systems in Otane, Waipawa, Waipukurau, Takapau, Porangahau, Te Paerahi, Blackhead and Kairakau, and owns these systems on behalf of each of the communities serviced.

In general terms the stormwater management is done thru a network of pipes or open drains that collects stormwater from dwellings, commercial and industrial buildings and roadside sumps in the urban areas controlled by the Land Transport section of Council.

In addition Council provides other stormwater services throughout the district by means of roadside drainage systems e.g. rural roadside water tables, stormwater drainage in rural towns like Onga Onga etc., these are beyond the scope of this document.

1.2 Our Strategic Goals

Council's stormwater strategic goals to provide stormwater infrastructure that:

- To provide an effective stormwater system for residential, commercial and industrial properties within the urban limits of the District.
- To minimize the nuisance of flooding and to protect flood prone habitable buildings in identified stormwater catchment areas.
- To protect receiving environments and enhance the ecological and amenity values of our streams, rivers and the sea.
- Provide the continuity of service within the reticulated areas
- Minimal interruptions during maintenance and extension works
- Provide the service in a sustainable way.
- Protect the natural environment;

The objectives of this Asset Management Plan are:

- To demonstrate that our asset management strategies support the core social, economic, and financial outlined in the Financial Strategy.
- Environmental and cultural outcomes, identified through community consultation.
- To outline how Council will meet its legal and regulatory obligations.
- To describe the assessment, monitoring and mitigating of environmental effects
- To provide a long-term view on sustainable and cost-effective stormwater management.
- To support Civil Defence section of Council with their contingency planning that helps the community during flooding emergencies.
- To provide substantiated financial forecasts, projections and trends
- To identify improvement opportunities.

Whilst:

- educating the community about the benefits and role of stormwater supplies, treatment and reticulation;
- encouraging the community to participate in decision making processes and to be informed about changes or initiatives within the District regarding stormwater;
- The stormwater supply network will receive enough funding to continue to allow the efficient distribution of potable water throughout the district on the existing network at all times
- Minimal pipe leakage, broken pipes etc.
- The stormwater network is planned for, designed, managed, and maintained to meet the service levels agreed with the community and operated within relevant national standards and guidelines.

1.3 Our Stormwater System

The Council provides water systems in the following areas:

Waipukurau

The stormwater drainage system serving Waipukurau consists of a combination of piped drains, formed open channels and developed natural watercourses. The Tuki Tuki River is isolated from the township by stopbanks and all pipes passing underneath the stopbanks are protected against backflow by non-return flaps at the pipe outlet.

There are three main catchments within the Waipukurau stormwater system, a south eastern catchment which discharges by way of open drains and natural watercourses to Hatuma Lake, a smaller north eastern catchment which discharges into the Tuki Tuki River immediately downstream of the Rail Bridge and a much larger eastern catchment which discharges through the Pah Flat Stream into the Tuki Tuki River some 2km east of the town.

Within each of these catchments, stormwater flows by gravity through progressively larger pipes and drains to a final discharge point. There are no designated ponding areas but one overland flow paths has been added since the last AMP review for stormwater to follow during extreme flood events or when pipes or pipe entrances become blocked for any reason. This can result in localised flooding on private properties.

The Council has, over the years carried out a number of improvements to the stormwater system serving Waipukurau.

The Waipukurau stormwater system has been in operation since 1923 and has had numerous upgrades to enable the reticulation to meet its present and projected demands. The stormwater is collected from the residential, commercial and industrial areas of Waipukurau and carried to the treatment facility in Mt Herbert Road. The asset includes:

- Pipes (gravity mains) 26km
- Open Drains 10.4km
- Ponding Areas 3
- Retention Dams 0
- Manholes 406
- Inlet/Outlet Structures 130

Waipawa

The stormwater drainage system serving Waipawa consists of a combination of piped drains, formed open channels and developed natural watercourses. The Waipawa River is isolated from the township by stopbanks and all pipes passing underneath the stopbanks are protected against backflow by non-return flaps at the pipe outlet.

There are two main catchments within the Waipawa stormwater system, a southern catchment which discharges by way of an open drain through Coronation Park and into the Waipawa River and a much larger eastern catchment which discharges through the Bush Drain into the Waipawa River. A third small catchment including the northern part of Watts Road carries stormwater to a series of un-named streams flowing north of Racecourse Road.

Within each of these catchments stormwater flows by gravity through progressively larger pipes and drains to a final discharge point. There are no designated ponding areas or overland flow paths for stormwater to follow during extreme flood events or when pipes or pipe entrances become blocked for any reason. This can result in localised flooding on private properties. But Council in 2011 to over the control of a retention dam to manage the flow of stormwater from the Abbot Ave area of town.

- Pipes (gravity mains) 10.7km
- Open Drains 4.42km
- Ponding Areas 0
- Retention Dams 1
- Manholes 142
- Inlet/Outlet Structures 120

Otane

There is no formal reticulated stormwater system serving the township of Otane with stormwater generally being carried in open drains, open roadside drains and water tables. However, there is a section of 315mm diameter piped drain 185metres long which collects water from an open drain in Henderson Street and transmits it in a southerly direction to an open drain in Rochford Street. Also Council has formal acquired the open drain from Higginson Street to the Kaikora Stream.

- Pipes (gravity mains) 0.18km
- Open Drains 0.14km
- Ponding Areas 0
- Retention Dams 0
- Manholes 0
- Inlet/Outlet Structures 3

Takapau

There is no formal reticulated stormwater system serving Takapau Township with stormwater generally being carried in open roadside drains and water tables to the main branch of the Te Matau Stream (located to the north of the township) and to an un-named branch of the Porangahau Stream (located to the east and south of the township). However, there are two small sections of stormwater drain that are not associated with the roading asset plus a lagre cut off drain design to protect the town from surface flooding.

The first of these is a 22 metres long, 300mm diameter piped drain which collects water from the roadside drains in Sydney Street and St. Clair Street, crosses the eastern end of Sydney Street to a manhole and discharges, through a 15metres long, 750mm diameter pipe laid beneath the railway to an open drain on the eastern side of the railway line.

The second is an open drain on Tranz Rail land and begins at the north eastern end of Meta Street and falls to the north west for approximately 800m before discharging in to the Te Matau Stream

- Pipes (gravity mains) 0.06km
- Open Drains 0.8km
- Ponding Areas 0
- Retention Dams 0
- Manholes 1
- Inlet/Outlet Structures 2

Porangahau

A new reticulated stormwater system was constructed for Porangahau Township during 2005 consisting of an underground piped stormwater system in conjunction with an open 'V' drain system for surface water flows.

- Pipes (gravity mains) 2.22km
- Open Drains 0.3km
- Ponding Areas 0
- Retention Dams 0
- Manholes 69
- Inlet/Outlet Structures 8

Te Paerahi

There is no formal stormwater system serving the township of Te Paerahi Beach with stormwater generally being carried in open roadside drains and water tables. However, there is a section of 375mm diameter piped drain (approximately 241metres long) that collects water from a roadside drain in Beach Road and transmits it in a southerly direction before crossing the road to its discharge point on the foreshore.

- Pipes (gravity mains) 0.33km
- Open Drains 0km
- Ponding Areas 0
- Retention Dams 0
- Manholes 0
- Inlet/Outlet Structures 1

Kairakau

There is no formal stormwater system serving the township of Kairakau with stormwater generally being carried in open roadside drains and water tables. However, there is a section of 600mm and 900mm diameter piped drain (approximately 151m long) which collects water from an open drain in Mananui Street and delivers it through the residential area directly to the foreshore.

- Pipes (gravity mains) 0.38km
- Open Drains 0.5km
- Ponding Areas 0
- Retention Dams 0
- Manholes 6
- Inlet/Outlet Structures 4

Blackhead

There is no formal stormwater system serving the settlement of Blackhead but Council has over a number of years installed a small stormwater network to prevent flooding of neighbouring farm land. This network consist of a series of catch pits connected to by a gravity main which then discharges into an open drain in the beach front reserve.

- Pipes (gravity mains) 0.14km
- Open Drains 0.07km
- Ponding Areas 0
- Retention Dams 0
- Manholes 1
- Inlet/Outlet Structures 1

1.4 Why Council has Stormwater Systems

The provision of systems for the collection, transmission and disposal of stormwater is a function of the Central Hawke's Bay District Council permitted by Section 11A of the Local Government Act 2002 states that Council is required to provide core services as outlined below:-

11A Core services to be considered in performing role

In performing its role, a local authority must have particular regard to the contribution that the following core services make to its communities:

(a) network infrastructure:
(b) public transport services:
(c) solid waste collection and disposal:
(d) the avoidance or mitigation of natural hazards:
(e) libraries, museums, reserves, and other recreational facilities and community amenities.

Section 11A: inserted, on 27 November 2010, by section 5 of the Local Government Act 2002 Amendment Act 2010 (2010 No 124).
Section 11A(e): replaced, on 8 August 2014, by section 7 of the Local Government Act 2002 Amendment Act 2014 (2014 No 55).

This requirement implies the need for the Council to have Stormwater Activity Management Plans for core or major infrastructure activities, to define agreed levels of service, the expenditure required to maintain the agreed service levels for the period of the plan and the expenditure required to install new infrastructure. These are essential requirements of the LTP and Council has chosen to exercise this function to provide water systems in Otane,

Waipawa, Waipukurau, Takapau, Porangahau, Te Paerahi, Pourerere and Kairakau, owns these systems on behalf of each of the communities serviced.

An Activity Management Plan (AMP) is compiled to:

- Record the asset which is used to provide this activity – an inventory.
- Record Council's objectives for, thought processes about, and processes of implementation for providing the activity.
- Show the community and the auditors that Council is a prudent provider of activities.
- Meet Community expectation for Council to provide water services.
- Over previous generations and in the absence of any other viable options, the communities served by these water systems have called upon Council to provide these systems, and have contributed towards the capital involved in their installation and the on-going costs to maintain them.
- To ensure the community health, well-being and safety in each of these communities by providing for the collection, transmission, and disposal of stormwater.
- To ensure public access to water services.
- To ensure the public is adequately protected from the dangers of flooding in design storm conditions

Financial and accounting guidelines, such as Accounting for Property, Plant and Equipment, the Long Term Financial Planning process, all assume that a prudent Council would have Activity Management Plans.

1.5 Does this activity have any significant negative effects on Community Wellbeing?

Environmental – rapid stormwater removal may result in downstream areas being overloaded, sediment being carried away, and river bed erosion. The quality of run off can also adversely impact on coastal and surface water. Conversely retention of water on site (flooding) can cause property damage and health issues.

1.6 Key Issues for the Stormwater Systems

Council is facing a number of key issues over the life of this document and beyond. We are in a time of potentially significant change with the proposed development of new residential dwellings in the smaller towns like Otane creating the need for more formalised stormwater catchment and disposal systems.

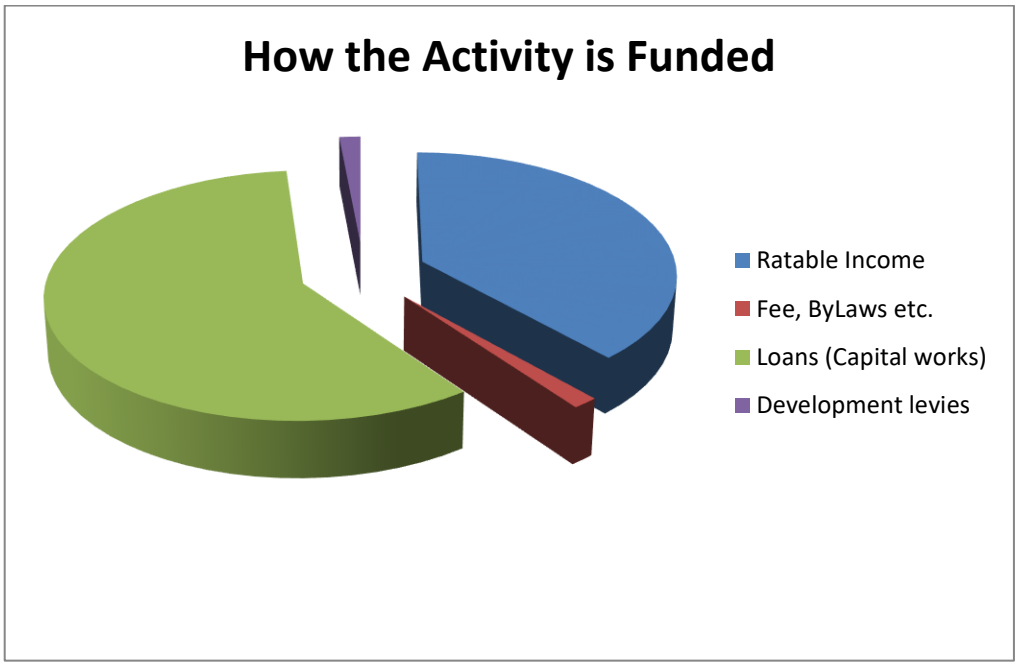
Also is the pressure from growth around the existing residential zone creating a need for stormwater reticulation to prevent nuisance issues with stormwater across boundaries. In short Council is facing a number of key issues when managing and plan improvements of this

activity over the next 30 years that will put pressure our ability to provide the expected service and the ability of the community to fund the work. Below is a short list of the issue which are dealt with in more detail further on in this document:-

- The capacity of the existing stormwater system to deal with increased development (greater areas of sealed or hard impenetrable surfaces) and increased rainfall intensities.
- Limits on funding available to carry out identified improvements that would address known flooding areas and cater for future development.
- The lack of funding available to carry out identified improvements that would address known flooding areas and cater for future development.
- Because few improvements are included in this Plan, Development Levies cannot be raised to help fund future required improvements.
- However the preparation of an Urban Growth Strategy is currently in progress, it is hoped that this will identify keys areas of development such as the Waipukurau industrial. This will aid future planning for additional stormwater infrastructure.
- The requirement of stormwater management for the Waipukurau industrial area was planned for 2017/18, and construction of the required infrastructure could potentially occur from 2019/20, but this has been deferred till completion of the Stormwater modelling and the review of the District Plan
- Changes in the demographic make of the District and its impact on the provision of this activity.
- The impact of aging infrastructure and its effect on the resilience of the networks.
- The impacts that global warming will/may have on the provision of stormwater systems
- Changes in land use/zoning.

1.7 How we Fund this Activity

Council funds this activity from a number of budget areas



Operating Cost

- Fixed charges from each separately services site or property (rating Unit)
- Half charges for non-connected properties where services are available
- Direct charges such as water metering

Capital Cost

- Loans for discrete projects
- Development levies pay for capacity for future demand
- Other funding sources such as Government subsidies where available
- Vested infrastructure.

A full summary can be found in the Financial Section which outlines in detail where Council will be spending fund in the next 3 years and in more general term for the next 30 years.

1.8 Key Achievements / Limitations of this AMP

Achievements of this plan include:

- Meets the LGA requirement and provides a link to the LTP and other Plans.
- Write the Infrastructure Strategy for the next 30years to highlight the difficulty's this Activity faces.
- Includes updated expenditure and 10 year renewal and expenditure forecast.
- Asset valuations have been completed by Council staff, giving more accuracy and certainty at a lower cost.
- Outlines Council's Asset Management practices.
- Ongoing GPS positioning of most manholes, outlet structure and sumps in Waipawa and Waipukurau and many in the other townships has been achieved.

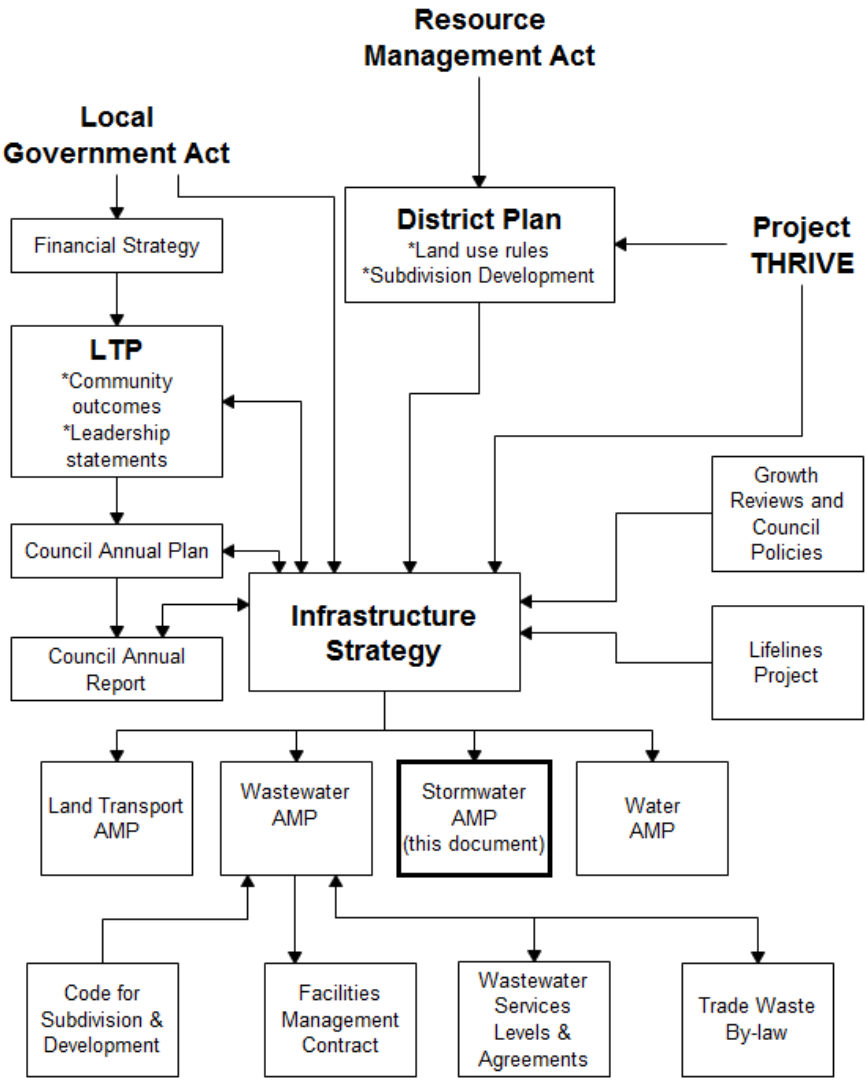
- Rewriting of this AMP has resulted in a simpler, easier to read and use AMP than the previous version.
- Strategies and tactics to manage the stormwater asset with a very limited budget have been better explained than previously.

Limitations of this plan include:

- Inspection and condition rating of some of the key assets is still required to form a better overall picture of the stormwater asset on which to base life cycle management decisions.
- A history of condition data needs to accumulate on assets in order to better understand their long term behaviour.
- Ongoing verification of stormwater Assets to ensure the Asset Register is accurate and maintained to the highest standard Council can provide with limited resources.
- The impact of the globe warming has not been assessed or taken into account as part of this review of the Stormwater AMP.
- No allowances have been included for major changes in levels of Activities within the District such as the development of water storage schemes or land use changes.

1.9 Relationship of Activity Management Plan to other Council Documents

This Stormwater Activity Management Plan is one of many documents compiled by Council to ensure an efficient and structure management of Council assets and ensure correct delivery of stormwater services to our Customers. The following diagram shows between this document and other Plan's and Policy's produced by the Council.



These documents fulfil the following roles:

- Infrastructure Strategy

  This document has been required by the recent amendments of the Local Government Act 2002 and sets out the direction of how the Council will provide this Activity for the next 30 years.

- Long Term Plan (LTP)

  A consultation document that sets out community identified outcomes, long terms plans for each Council activity, and long term financial requirements to undertake activities and meet identified outcomes.

- Stormwater Activity Management Plan (this document)

The document sets out the means to implement the strategies and outcomes identified in the Infrastructure Strategic Plan at a tactical level.

- Lifelines

  The lifelines report "Facing the Risks" 2001 Hawke's Bay Engineering Lifelines Project considers risks for earthquake, meteorological, flood, volcanic impacts, landslides, tsunami and aquifers and their potential for contamination. (*Within chapter 10 of that report, the impacts for the civil networks for Central Hawke's Bay District (water, sewer and stormwater) are discussed and some further investigations are suggested to obtain data to develop mitigation measures for these risks.)*

- Annual Plan

  Council's annual plan sets out the works to be actioned in the current financial year, the means of funding these and the performance measures to be met within each activity.

- Annual Report

  Council's annual report is produced at the end of each financial year and is a summary of financial and physical works performances as well as performance of each activity against the required performance measures of the relevant Annual Plan.

- Facilities Management Contract

  This contract is for the management, operation and maintenance of all public stormwater systems within the District.

1.10 Relationships with Stakeholders

The key stakeholder organisations and groups that have an interest in the Stormwater Activity are:

- External

  The Central Hawke's Bay community, including citizens, ratepayers and local businesses

  Hawke's Bay Regional Council

  Commercial and Business interest organisations

  Ministry of Health

  Ministry for the Environment

  Local Iwi

  Department of Conservation

  Fish & Game

  Consultants and contractors

New Zealand Transport Agency

Developers

- Internal

Councillors

Chief Executive

Asset Management staff

Financial Support staff

Information Technology staff

Regulatory staff

Council FM Contractor

2 Strategic Environment and Legal Framework

This section looks at the Strategic goals and aims of the Council and how the Stormwater Activity impacts or supports the Council in achieving these goals. It also looks at how the District will change over the next 30 years and what impact this will have on the delivery of water supplies.

2.1 Council's Mission Statement

Council's Mission Statement is:

"Our vision for Central Hawke's Bay District is a proud and prosperous district made up of strong communities and connected people who respect and protect our environment and celebrate our beautiful part of New Zealand."

2.1.1 Community Outcomes

Council has determined that the stormwater activity contributes to three of the community's desired outcomes.

Community Outcome	Commentary
A lifetime of good health and wellbeing	The provision of adequate stormwater management and systems ensures that the collection and treatment of stormwater flows causes the least risk to public health.
An environment that is appreciated, protected and sustained for future generations	The provision of adequate stormwater management and systems minimises the adverse impacts of stormwater on the environment.
A strong, prosperous and thriving economy	The provision of adequate stormwater management and systems meets growth needs to best serve the community.
Provide the management and disposal of the stormwater systems in a sustainable way	Council works to provide the stormwater system in the most cost effective and stainable way by using the latest technologies and looking for outside the square opportunities.

Wellbeing	Community Outcome	Commentary
Social and Cultural - A healthy, safe place to live	Risks to public health are identified and appropriately managed	The provision of adequate stormwater management and systems ensures that the collection and treatment of stormwater flows causes the least risk to public health.
Economic - -A place with a thriving economy	Central Hawke's Bay District has an efficient and affordable Stormwater infrastructure	The provision of adequate stormwater management and systems meets growth needs
Environmental - A place that is environmentally responsible	We plan proactively to minimize environmental impact, while facilitating growth and development.	The provision of adequate stormwater management and systems minimises the adverse impacts of stormwater on the environment.

2.1.2 Corporate Stormwater Activity Goal

In contributing to the Mission Statement and Community Outcomes, the stormwater activity goal is:

Collecting stormwater and directing it to appropriate outfalls to mitigate flooding or erosion and minimising any impact on the community and the environment."

Strategic Result

The Strategic Result required to achieve the stormwater activity goal is:

Reliable, safe and cost effective collection and disposal of stormwater, by

- Collecting and controlling stormwater to an acceptable standard (1 in 50 year return period).
- Ensuring the provision of a cost effective stormwater system that protects public health and the environment, and that is affordable to the community.
- Ensuring the stormwater system is planned for, designed, managed and maintained to meet the service levels agreed with the community and is operated so as to prevent any undue nuisance, disturbance or damage to property, within the financial constraints set by Council.
- Conforms to all relevant national standards and guidelines.
- Ensuring the incidence of any flooding is not shifted from one area to another.
- Supporting Council's Development Strategies and Council's environmental Goals.
- Maintaining open drains at a level that maximises safety and ensures their appearance is acceptable.

- Maintaining piped reticulation at a level that optimises the economic life and performance of the asset.

2.2 Key Performance Measures

The key performance measures for monitoring achievement of the Activity Goal and Strategic Results for the stormwater activity are:

Strategic Action	Key Performance Measures (KPMs)
Achieve defined levels of service.	• the agreed measures are achieved each year when reported in the annual report
Protect the health and safety of the community and of the maintenance and operational personnel.	• No confirmed report of ill health due to contaminated stormwater • No confirmed report of health problems due to stagnation or retention of stormwater encouraging insect infestation as a result of defective stormwater assets covered by this AMP.
Manage and maintain services so as to ensure any adverse impacts on the environment and/or on the communities are minimised.	• Resource consent compliance at all times • Action is taken within 24 hours of end of flood event to mitigate adverse impacts and direct flood waters to drains quickly
Ensure the capacity of all stormwater systems is sufficient to prevent undue nuisance and disturbance or damage to property.	• Current system can managed the flow of event that it was designed for (stormwater capacity modelling) • Downstream capacity allows unhindered flow of stormwater in a normal event (1 in 50 year return period)
Comply with statutory requirements.	• No negative opinion from audit of this Activity Management Plan
Achieve compliance with appropriate technical standards.	• New works are designed to cope with 1 in 50 year return period storm events
Implement Council's policies.	• Council Policy is clear and enforced at all times
Promote development within the Central Hawke's Bay District.	• Contribution Fees/Development Levies are applied according to rules set out
Achieve defined standards of system management.	• Processes/methods and system requirements are achieved as set out in this Activity Management Plan

2.3 Legislative and Regulatory Requirements

2.3.1 General

The stormwater activity is required to comply with all applicable legislation and regulations. These form the minimum standards of service that the stormwater activity must meet.

2.3.2 Legislation and Planning Documents

Some of the acts and strategic documents that will have some application and relevance to the stormwater activity are:

Legislation or Regulation	Council Responsibilities
The Local Government Act 2002	• Erect, construct, and maintain any public work, which in the opinion of the Council may be necessary or beneficial to the District. • May make bylaws with regard to stormwater services within the District. • Comply with certain financial management practices. • Consult with communities. • Complete assessments of stormwater services within the District.
The Resource Management Act 1991	• Sustain the potential of natural and physical resources to meet the reasonable needs of current and future generations. • Comply with the District and Regional Plans. • Avoid, remedy, or mitigate any adverse effect on the environment and structures.
Hazardous Substances and New Organisms (HSNO) Act 1996	• To protect human health and the environment from persistent organic pollutants. • Requiring that decisions are made on the basis of the environmental, health and safety effects of hazardous substances and new organisms.
Building Act 2004 as amended in March 2012	• Ensure all buildings and facilities constructed for the stormwater activity comply with the Act. • Produce Project Information Memoranda (PIM's), which supply all available information relating to an individual property. For stormwater services the relevant information may include details of access restrictions to reticulation, approvals, leases, plans, relevant records, notices, flood hazard and or historical flood records etc. • Require provision of stormwater facilities.
The Health and Safety in Employment Act 1999	• Ensure that its employees, contractors, and general public are protected from injury as a result of its activities. • Notify the Occupational Safety and Health Department of serious harm or fatal accidents as a result of its activities within seven days. • Maintain a hazard register.
The Health Act 1956	• MOH can require local authority to provide stormwater works for the benefit of its district where the lack of stormwater control is adversely affecting sewerage systems and impacting of public health. • Government grants and subsidies may be made available from time to time for stormwater works in relation to the impact of stormwater on sanitary works. • Local Authorities may make bylaws for improving, promoting, or protecting public health, and preventing or abating nuisances, regulating drainage and the control, collection and disposal of stormwater. • MOH has the power to forbid the discharge of stormwater drainage where this contains insanitary matter.
The Public Works Act 1981	• Set requirements for the acquisition of land by local authorities for stormwater works.
The Local Government (Rating) Act	• May rate for provision of stormwater services.
The Climate Change Response Act 2002	• provide for the implementation, operation, and administration of a greenhouse gas emissions trading scheme in New Zealand that

	supports and encourages global efforts to reduce the emission of greenhouse gases
The New Zealand Coastal Policy Statement	• To protect the character and qualities of the coastal environment
Employment Relations Act 2000	• The control of stormwater relating to the public systems within the District is an essential service and strike action and lockouts are not permitted in regard to this service provision except in accordance with special conditions of the Act.
The Civil Defence Emergency Act 2002	• Establish and be a member of a Civil Defence Emergency Management Group. • Coordinate, through regional groups, planning, programmes, and activities related to civil defence emergency management across the areas of reduction, readiness, response and recovery, and encourage cooperation and joint action within those regional groups. • Improve and promote the sustainable management of hazards in a way that contributes to the public's well-being and safety and to property protection. • Ensure that it is able to function to the fullest possible extent, even though this may be at a reduced level, during and after an emergency (Lifeline Plans).

2.4 Future Demand

Council is required under the recent amendments to the Local Government Act 2020 to look at the any future requirements of the water networks. This is a difficult issue with the impending construction of the irrigation dam and the expected population increase. Without the dam Council could be faced with a decline in population in the short term which could significantly impact of the affordability of the water activity. Because of the significance of this and the major impact it will have on how and where Council provides the water activity it is discussed in more detail in a separate section of this document.

Council is required under the recent amendments to the Local Government Act 2020 to look at the any future requirements of the stormwater networks. This is a difficult issue with the impending construction of the irrigation dam bring an expected population increase covered in scenario 2. Or as covered in scenario 1 the difficulties of maintaining the networks without the dam, Council could be faced with a decline in population in the short term combined with a possible slight increase in the numbers of dwellings connected to the Waipawa and Waipukurau networks which could significantly impact of the affordability of the stormwater activity. Because of the significance of this and the major impact it will have on how and where we provide the stormwater activity it is discussed in more detail in a separate section of this document.

2.5 Council Policy for Development Levies.

Council has an existing policy of the taking and use of Development Levies as allowed in the Local Government Act 2002. Because of the recent amendment Council has review and amending the policy as part of the LTP 2018 - 28. The Policy, which was first adopted on 29 June 2006, is included in the LTP. In summary, the Policy:

- Charges development contributions under the Local Government Act 2002.
- Requires developers to fully fund all changes to the infrastructure caused by their development.
- Describes areas within which the contributions will apply.
- Charges for the effects that developments have on the infrastructure.
- Council also resolved that no stormwater connections to the Council stormwater networks from properties which are outside the approved stormwater areas will be allowed.
- Development levies are only raised for identified improvement projects that are listed in Council's forward works programmes and included in the LTP.

2.6 Bylaws

The main bylaw for this activity is the Central Hawke's Bay District Council No: 21 Stormwater Bylaw 2018.

2.7 Policies

Council has a number of policies for the management of their assets and activities. These policies are maintained and managed in the CHBDC Policy Manual. Policy documents relating to stormwater activities include:

- Stormwater Laterals and Sewer repairs Policy – *clarification of responsibility*
- Levels of Asset Management Plan Preparation Policy. - *clarification of level of AMP*

Council has a number of policies for the management of their assets and activities. These policies are maintained and managed in the CHBDC Policy Manual. Policy documents relating to stormwater activities include:

- Stormwater Drainage Policy – scope and standards of service provided
- Stormwater Laterals and Sewer repairs Policy – *clarification of responsibility*
- Te Aute Drainage Area Policy – scope and standards of service provided

2.8 Property Information

2.8.1 Resource Consents

Resource consent is required for discretionary activities covered in the Regional Resource Management Plan. If there is any doubt as to whether a consent will be necessary, HB Regional Council Environmental Consents Officers are able to advise.

Any earthworks which may modify or destroy an archaeological site will require separate approval from the Historic Places Trust.

Land use consent is required for any activities, such as earthworks, reclamation, dumping and construction of structures, within the bed of a lake, river or stream, (see Section 13 of the Resource Management Act 1991). Any proposed activity in a lake, river or streambed will

require land use consent. In all situations where land use consent is a requisite, no earthworks can proceed until the consent has been obtained from the Regional Council.

Council holds the resource consents listed below.

Stormwater System	Permit No.	Purpose	Expiry Date
Waipukurau	HKB790212	Divert stormwater from Pah Flat Stream to Mangatarata Stream catchment.	In perpetuity
Waipukurau	HKB790213	Increase the discharge capacity into the Mangatarata Stream.	In perpetuity
Waipukurau	WP921583D	Divert water from the College Drain to the new drain thence to the Pah Flat Drain	31 May 2027
Waipukurau	DP921584W *expired*	Discharge of water via new drain to Pah Flat Drain	Permitted Activity
Waipukurau	WP040049M	Divert water from Chambers Street area to Pah Flat Stream	In perpetuity
Te Aute	WP921502M	To dam the Te Aute main drain to retain water during summer and to prevent flooding from the Papanui Stream	31-May-2025
Rural	HKB760352	Divert un-named stream on Blackhead Road for road culvert	In perpetuity
Rural	HKB780104	Divert Mangaorapa Stream around a slip	In perpetuity

Stormwater System	Permit No.	Purpose	Expiry Date
Waipawa	DP110176W	to discharge stormwater into the Bush Drain and then into the Waipawa River (Tamumu Road)	31 May 2037
Waipawa	DP110178W	to discharge stormwater into the Bush Drain and then into the Waipawa River (McGreevy Street)	31 May 2037
Waipawa	DP110179W	to discharge stormwater from a property behind Harker Road into Harker Road Drain and then into the Waipawa River	31 May 2037
Waipawa	DP110180W	to discharge stormwater into the Coronation Park Waterway and then into Waipawa River from a site adjacent to Stephenson's Yard. (Coronation Park Waterway)	31 May 2037
Waipukurau	DP110181W	to discharge water into Coughlan Road Drain and then into the Tukituki River from a discharge point located at the end of Coughlan Road (Coughlan Road Drain)	31 May 2037
Waipukurau	DP110182W	to discharge stormwater into Coughlan Road Drain and then into the Tukituki River from a point located at the end of Coughlan Road east and downstream of the No 1 culvert (Coughlan Road Drain)	31 May 2037
Waipukurau	DP110183W	to discharge stormwater from a point located at the end of James Street into the Harris Street Drain and then into Tukituki River (Harris Street Drain)	31 May 2037
Waipukurau	DP110184W	To discharge stormwater from a point located past the Rail Bridge into Harris Street Drain and then into the Tukituki River.	31 May 2037
Waipukurau	DP110185W	To discharge stormwater from a point adjacent to Mount Herbert Road into the Pah Flat Stream and then into the Tukituki River.	31 May 2037

2.9 Property Designations

A designation is recorded in the Central Hawke's Bay District Council's District Plan for the following site.

Site	Designation number	Map number
Drainage Reserve - Mt Herbert Rd	31	42

The need for designations for stormwater purposes needs to be researched further as access to the system for the purpose of maintenance is considered as one of the most significant issues for proper management and maintenance of the system.

2.10 Drainage Reserves

The following sites are recorded in the Central Hawke's Bay District Council's District Plan as Drainage Reserves.

Valuation No.	Land Area (ha)	Legal Description	Comments
1074046801	3.2574	Lot 1 DP 25893	Reserve set aside for drainage of the hill side, Limbrick Street, Waipawa.
1074028900	0.2077	Drainage Reserve	Commonly known as the Bush Drain, Waipawa.
	0.0728	Lot 4 DP17923	Drain between McGreevy St and Guy St, Waipawa.
109038535	0.662	Lot 35 DP337580	Commonly known as the Pah Flat drain. Includes drain off Belgrove Drive, Waipukurau.
1092004209	0.1195	Lot 4 DP 382735	Local Purpose Reserves to protect the open drain from Higginson Street to the Kaikora Stream

2.11 Public Drains

Public Open drains are the most visual front of the Stormwater network because in a number of cases these drain flow through or adjacent private property. So these drains can be considered as the window to the management of the Stormwater network and hence how well Council's Level of Service is performed or measured.

2.12 Storage Ponds.

Council has taken over the management and control of 1 stormwater storage pond in Waipawa. This facility is covered by legal easements which allows ensure Council access for management of the site and maintaining the structure.

3 Stormwater Asset Description

3.1 What does the Activity Involve?

Council undertakes this Activity to identify and manage the risks of Stormwater flows and minimise the risk stormwater has to Public Health, provide benefits to the community through reliable, safe, effective and efficient management of collection and disposal of sewage and trade waste to the urban residents of CHB, and both commercial and industrial activities in CHB. The management of this activity also minimises the effects on the environment from adverse discharges.

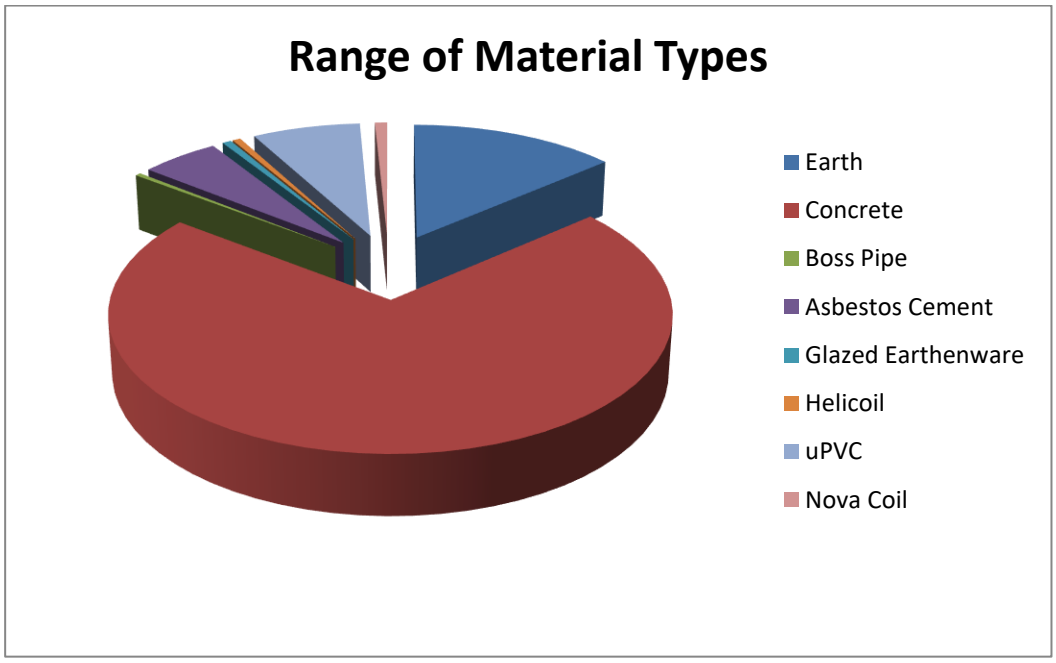
Council manages and maintains the collection and disposal of stormwater in the built up areas of Central Hawke's Bay District. The Network comprise of two larger systems servicing the two main towns of Waipawa and Waipukurau. Plus four smaller networks that provide coverage for the Townships of Otane, Takapau, Porangahau, and Te Paerahi. The following gives a general break down of the water assets and detail description of each network.

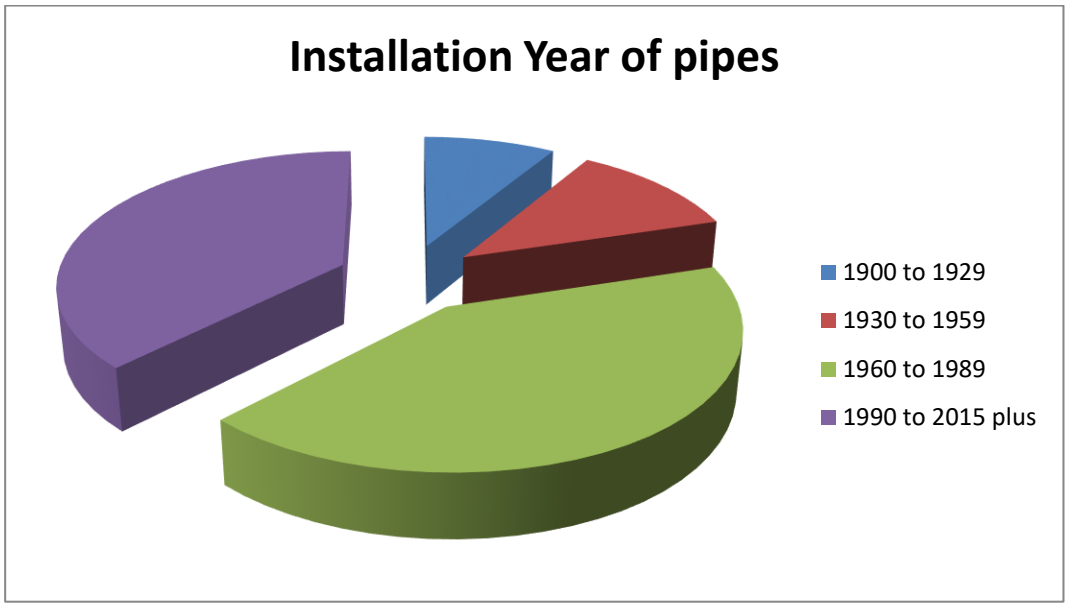
Council undertakes this Activity to identify and manage the risks of storm water flows and flooding to Public Health, minimize the effects of flooding on the urban residents of CHB and their properties. The management of this activity also minimises the effects on the urban environment from adverse storm water flows and surface flooding. The reduction of storm water infiltration into the sewer network such as Waipukurau and Waipawa will however be an important future focus to reduce the volume of sewerage discharges.

Council Stormwater Section manage and maintain the disposal of stormwater in the urban of built up areas of Central Hawke's Bay District. The Network comprise of two systems servicing the two main towns of Waipawa and Waipukurau. There are also six smaller network providing varying levels of coverage for the Townships of Otane, Takapau, Porangahau, Te Paerahi, Kairakau, and Blackhead Beach. The management or control of stormwater flows elsewhere in Central Hawke's Bay falls under the control of Council's Land Transport section, The Hawke's Bay Regional Council or the private land owner. A detailed description of the Stormwater Systems in covered in Section 10 in Part B of this Activity Management Plan

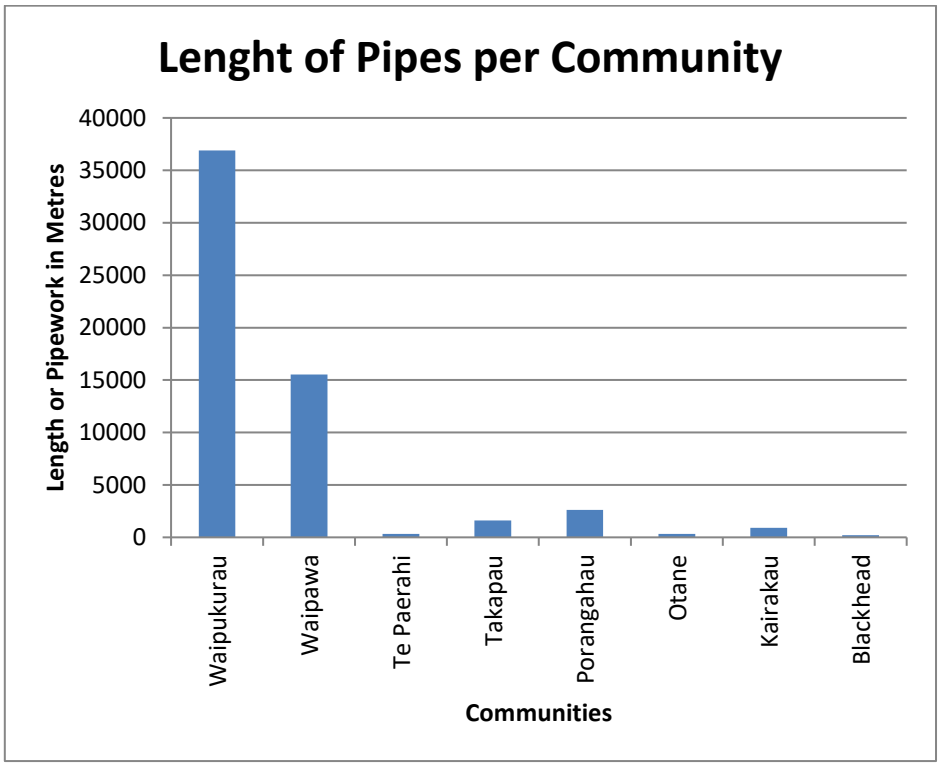
3.2 Overview of the Stormwater systems

The pie chart below indicates the type of pipes materials used in the stormwater network and the range of installation year.

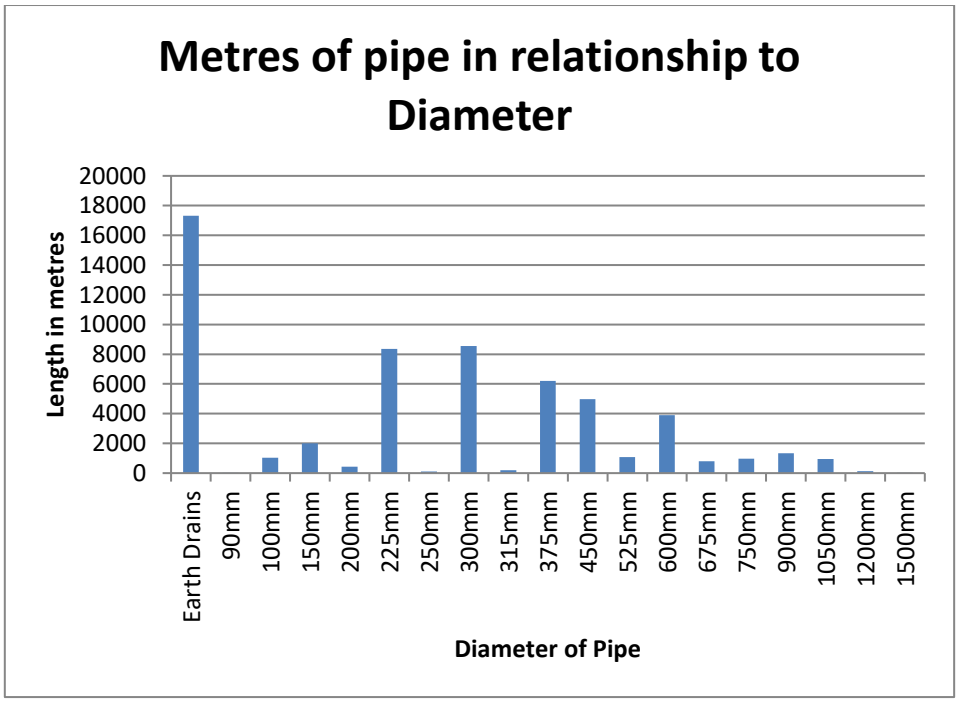

Range of Material Types
Earth
Concrete
Boss Pipe
Asbestos Cement
Glazed Earthenware
Helicoil
uPVC
Nova Coil


Installation Year of pipes
1900 to 1929
1930 to 1959
1960 to 1989
1990 to 2015 plus

The diagram below gives an indication of the number of metres of pipework in each Community.



This chart show the number of metres used in the total system compared to pipe diameter through the Central Hawkes Bay District



3.3 General Overview

Council Stormwater Section manages and maintains the disposal of stormwater in the urban or built up areas of Central Hawke's Bay District. The Network comprise of two systems servicing the two main towns of Waipawa and Waipukurau. There are also six smaller network providing varying levels of coverage for the Townships of Otane, Takapau, Porangahau, Te Paerahi, Kairakau, and Blackhead Beach. The management or control of stormwater flows elsewhere in Central Hawke's Bay falls under the control of Council's Land Transport section, The Hawke's Bay Regional Council or the private land owner. The following table gives an outline of sizes of the various networks:-

Central Hawke's Bay District Council Stormwater Networks					
	Inlet/Outlet Structures	**Pipes**	**Manholes**	**Open Drains**	**V Drains**
Towns	**Number**	**Metres**	**Number**	**Metres**	**Metres**
Waipukurau	129	25,997	406	10,404	0
Waipawa	120	10,718	142	4,420	819
Otane	3	185	0	136	0
Takapau	2	60	1	802	0
Porangahau	8	2,220	69	391	0
Te Paerahi	1	330	1	0	0
Kairakau	4	380	5	0	0
Blackhead	1	140	0	70	0
Total	**268**	**40,030**	**624**	**16,223**	**819**

3.4 General Description of Asset Types

3.4.1 Inlet/Outlet Structures

Inlet structures provide controlled entry of stormwater into the stormwater system, and outlet structures controlled exit out of stormwater out of the stormwater system. The structures range from kerb sumps to grated wing wall structures located at the inlet and outfalls of the systems into rivers and streams.

For demarcation purposes, all kerb sumps and leads associated with taking stormwater runoff from the road carriageway in the urban areas are deemed to be part of the Land Transport Activity and are therefore not included in the Stormwater Activity Plan (in rough terms the lead s are normal 225dia. And approx 10m long).

3.4.2 Piped Network

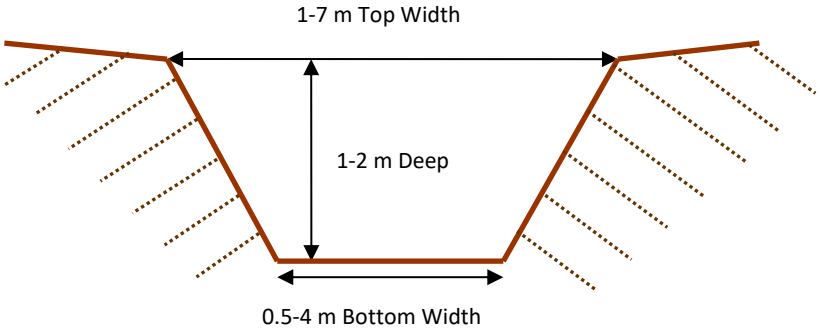
The stormwater piped network carries the water away from the point of entry and delivers the water to designated outfall points. In all cases in the district these pipes rely on gravity to channel the storm flows from the appropriate out fall.

3.4.3 Manholes

Manholes provide junctions and access into the piped network to allow cleaning and inspection operations.

3.4.4 Open Drains

Open drains are generally significant sized drains, as distinct from water tables or 'V' drains, and are designed to accommodate larger flows of water. They are generally 1-2 metres in depth and 2-7 meters in width at the top of the drain.



Typical Open Channel Cross Section

Open drains perform a number of functions. They provide outfall locations for the stormwater network. They also act as interceptor drains to take overland flood waters from piped systems that have exceeded capacity in large storm events or have been designed to intercept stormwater to prevent flood waters entering developed areas.

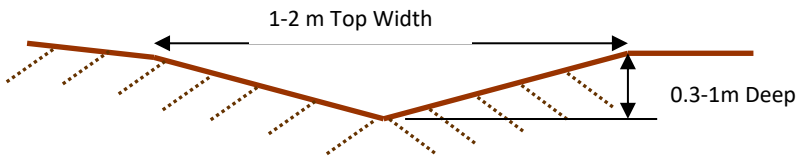
Council has determined which open drains will be maintained by Council. All other drains will be maintained by the property owners upon whose property the drain is situated.

3.4.5 Services Pipes

Service pipes or laterals are the piped connections from properties to the Council stormwater system. Council maintains these items where they are in the Road Reserve or other Council controlled land such as easement in favour of Council. At the change from Council controlled land to the private property this point is demand the point of supply under the Stormwater By-law and beyond (upstream) this point Council considers the pipe as private and Council will not maintain the infrastructure.

3.4.6 'V' Drains, Channels or Roadside Drains

'V' drains form the minor flow path for stormwater. 'V' drains undertake a similar function to open drains but do not have the same capacity. 'V' drains are typically shallow and as the name suggest are a flat 'V' in cross section typically 0.3 to 1 meter in depth with a top width of 1 to 2 metres.



Typical 'V' Drain Cross Section

The larger majority of 'V' drains are located alongside the road carriageway and are the maintenance responsibility of the Land Transport Activity. Note also that not all roadside drains are 'V' drains. Some larger roadside drains are classified as open drains (typically due to their size).

For determination of management of the roadside drain where the drain is within the road reserve then the management is the responsibility of the Land Transport Management Activity.

3.4.7 Other "Non Stormwater Asset" Drains or Pipes

There are number of other type's stormwater conduits such as Private piped drains, Private unmaintained open drains and Reserve drains which make up the whole stormwater networks. These items are record on the asset register to improve the understanding of how each part of the stormwater system interconnects and distributes the stormwater thru the catchment. Council does not maintain, control or otherwise manage these items as part of its duties under the Stormwater Asset Management Plan.

3.5 Description and Assessment of the Stormwater Assets

The following sections describe the stormwater assets included in this activity. As well as the summary of the physical assets, the assessment of assets' capacity, condition and performance is also summarised.

Full details for each asset component are found in the AssetFinda database.

3.5.1 Asset Condition

Condition assessment of the stormwater assets has been based on inspections by the follow groups:

- FM Contractor's operational and maintenance staff
- Council staff task to manage the stormwater networks
- Private external contractors (CCTV specialist etc)

These people are experience in the management of these types of systems or have been brief by experienced Council staff to enable them to carry out the appropriate review.

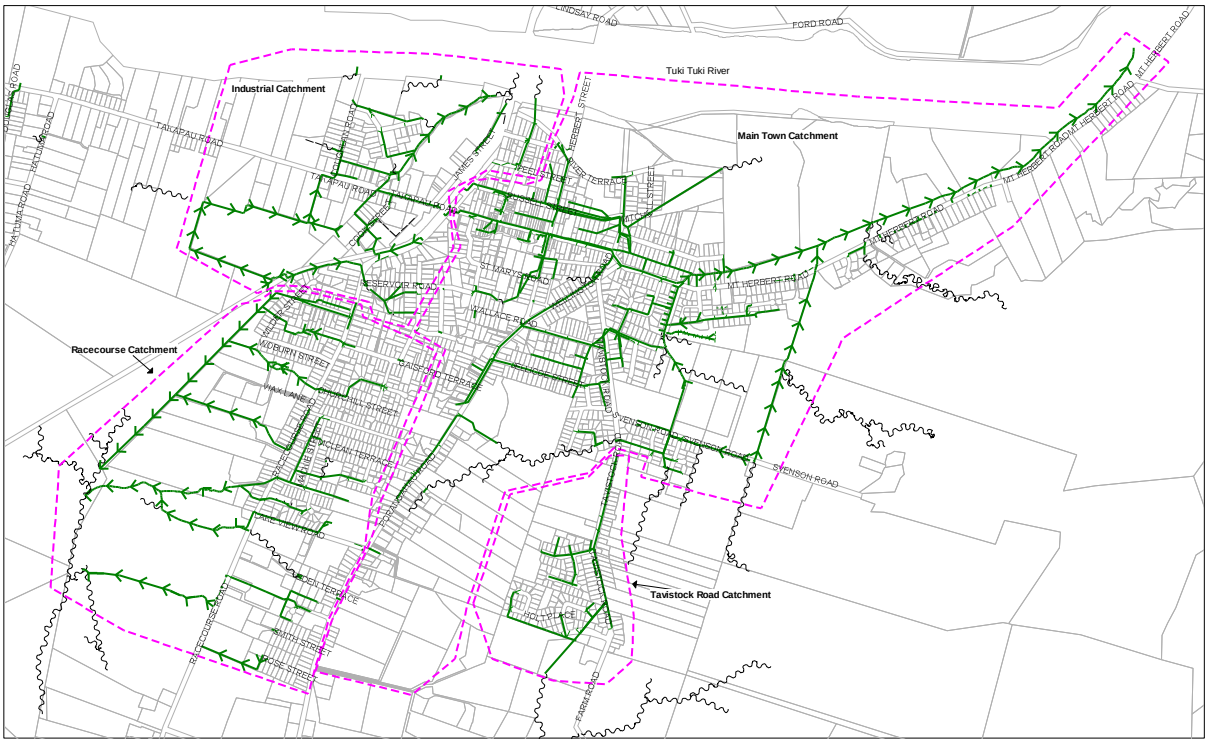
3.5.2 Asset Capacity / Performance

The adequacy of stormwater assets in terms of their required performance standards has not been calculated. However, a reasonable indication can be gauged from complaints during moderate storm events. Areas that are regularly prone to flooding are unlikely to have adequate stormwater systems immediately downstream of them. A consistent performance grading of Average has been given the majority of the assets. As new asset have been loaded a performance of Excellent has been allocated. As all assets are inspected from time to time any changes in the performance of condition is recorded in the data base. A network model is being constructed for the Waipawa stormwater systems and for Waipukurau, but this has not been complete at this point in time. These models will help Council understand the stormwater systems, identify significant shortcomings in the systems, and allow various improvement scenarios to be trialled to optimise improvements and costs.

3.5.3 Condition Grading

The condition grading assigned to assets is based on assessments by operational personnel and Council staff and generally within the framework provided in the NZ Infrastructure Asset Grading Guidelines and the AssetFinda Data Entry Manual.

3.6 Waipukurau Network



The Waipukurau Stoirmwater Network

3.6.1 General Description of Network

The stormwater drainage system serving Waipukurau consists of a combination of pipes drains, formed open channels and developed natural watercourses. The Tuki Tuki River is isolated from the township by stopbanks and all pipes passing underneath the stopbanks are protected against backflow by non-return valves at the pipe outlet. Ownership (and associated maintenance responsibility) of the stopbanks, the pipes beneath them and the non return flaps at the pipe ends, is with the Hawke's Bay Regional Council.

The age of the network ranges from 1930 to present day with great construction period being 1950, 1960 and 1970.

Within each of these catchments, stormwater flows by gravity through progressively larger pipes and drains to a final discharge point. There are no Council designated ponding areas or overland flow paths for stormwater to follow during extreme flood events or when pipes or pipe entrances become blocked for any reason. This can result in localised flooding on private properties. To help resolve this issue Council has worked with a private land owner who has created some small but effective private ponding area on their development to try a protect the head waters of the eastern section of the Main Town Catchment. The Council has, over the years carried out a number of improvements to the stormwater system serving Waipukurau.

There are three main catchments and one small minor catchment within the Waipukurau stormwater system (catchment boundaries shown in pink on map).

3.6.2 Main Town Catchment

This is the largest of all the catchment and service the Business centre of the town as well as the majority of the residential development of Waipukurau. It discharges through the Pah Flat Stream into the Tuki Tuki River some 2km east of the town. This includes a small but significant stormwater retention drain adjacent to Russell Park. This has been constructed to alleviate the flooding issues around River Terrace/Russell Park entrance.

3.6.3 The Racecourse Catchment

This covers the south western portion of the town and drains mainly residential site, which discharges by way of open drains and natural watercourses to Hatuma Lake.

3.6.4 The Industrial Catchment

This is a smaller in the north western part of the town which discharges into the Tuki Tuki River immediately downstream of the Rail Bridge. This catchment mainly services the airdrome and the Industrial part of Waipukurau.

3.6.5 Tavistock Road Catchment

This is a small catchment which drains the southern part of Tavistock Road south thru an un-named open drain to the south of the town. The catchment is fed from stormwater from Residential properties, but at is point of discharge does combined with the stormwater discharge from a Trucking Company.

3.6.6 Drainage Reserves

The following sites are recorded in the Central Hawke's Bay District Council's District Plan as Drainage Reserves in Waipukurau.

Valuation No.	Land Area (ha)	Legal Description	Comments
109038535	0.662	Lot 35 DP337580	Commonly known as the Pah Flat drain. Includes drain off Belgrove Drive, Waipukurau.

3.6.7 Asset Capacity, Condition and Performance

Asset Capacity and Performance

For inlet, pipe and outlet structures asset capacity/performance relates to:

- Ability of the structure to increase the efficiency of water intake.
- Protect infiltration of large objects that may cause blockages in the system.
- Protect the outlet areas and dissipate stormwater flow to minimise erosion
- Prevent property or road flooding in design rainfall events.
-

What is unclear at this stage is what capacity should the piped network be able to handle based on the size and specific detail of the catchment areas that are contributing stormwater to the network. The computer model will help improve this understanding.

This winter has seen the asset cope with the normal rain events, but in some case the asset has failure to cope with flash flood events. These events are considered being outside normal design rain falls and therefore considered extreme circumstances. Fortunately these events are only short in during and drain quickly away without an major impact.

There are some areas that suffer poor performance if regular maintenance is not undertaken. Such areas are the Russell Park car park adjacent to the swimming pool where the soak away sumps need to be cleaned to ensure the efficiency of soakage from these sumps. Under the terms of this AMP these sump should be considered as car park sumps and the regular maintenance is part of the Land Transport Asset Management Planning. Council has improved Stormwater disposal with in this area over the past few years by constructing of a long “soak away” open drain. This has helped with elevate the ponding around River Tce adjacent to the Park. To ensure the efficiency of the open drain it must be regularly maintained.

Other areas where Council has noted a lack of performance is the intersection of Leeton and Tavistock Roads. In heavy rain events Council has been advised by the local residents that they experience some property flooding. This may be an issue of capacity but until further investigation is done Council is not in a position to resolve the problem.

The majority of the Waipukurau stormwater system s considered has a performance rating of average or better.

Asset Condition

The Councils has assessed the asset condition of the network as being good or better. The only know area of issue is the heli-coil pipe in Mt Herbert Road where the pipe is failing prior to theoretical life span, and is due for urgent replacement.

3.6.8 Open Drains

Installation dates range from 1950 to present, with most construction occurring during the 1960's and 1980's. The physical dimensions and capacity of open drains vary significantly throughout the network. Some of the drains are natural water course altered by man to form open drain system while other are more formalised channels thru private property.

The table below is a list of the open drainage network in Waipukurau giving the common name approximate length and installed date.

Waipukurau Open Drain Network		
Address	Total Length in metres	Install Year
AERODROME DRAIN	1249.47	2006
BELGROVE DRAIN	93.51	2004
BISHOP DRAIN	326.11	1970
COOK STREET DRAIN	151.56	2006
DUCK CREEK	265.06	1970
EASTERN INTERCEPTOR DRAIN	852.43	1970
HARRIS STREET DRAIN	610.03	1970
JOCKEY CLUB DRAIN	1328.34	2009
NORTHERN ELLMRS DRAIN	467.38	1970
PAH FLAT STREAM	2218.13	1970
RACECOURSE DRAIN	1040.29	1970
RACECOURSE ROAD DRAIN	207.27	1970
RAILWAY DRAIN	424.62	1970
ROSE STREET DRAIN	316.17	2008
SOUTHERN ELLMERS DRAIN	373.7	1970
SVENSON ROAD DRAIN	213.47	1970
WILDER STREET	134.12	2006

3.6.9 Asset capacity/performance

For open drains capacity and performance relates to:

- Capacity of open drains to cope with catchment area.
- Clear flow path with minimal friction.

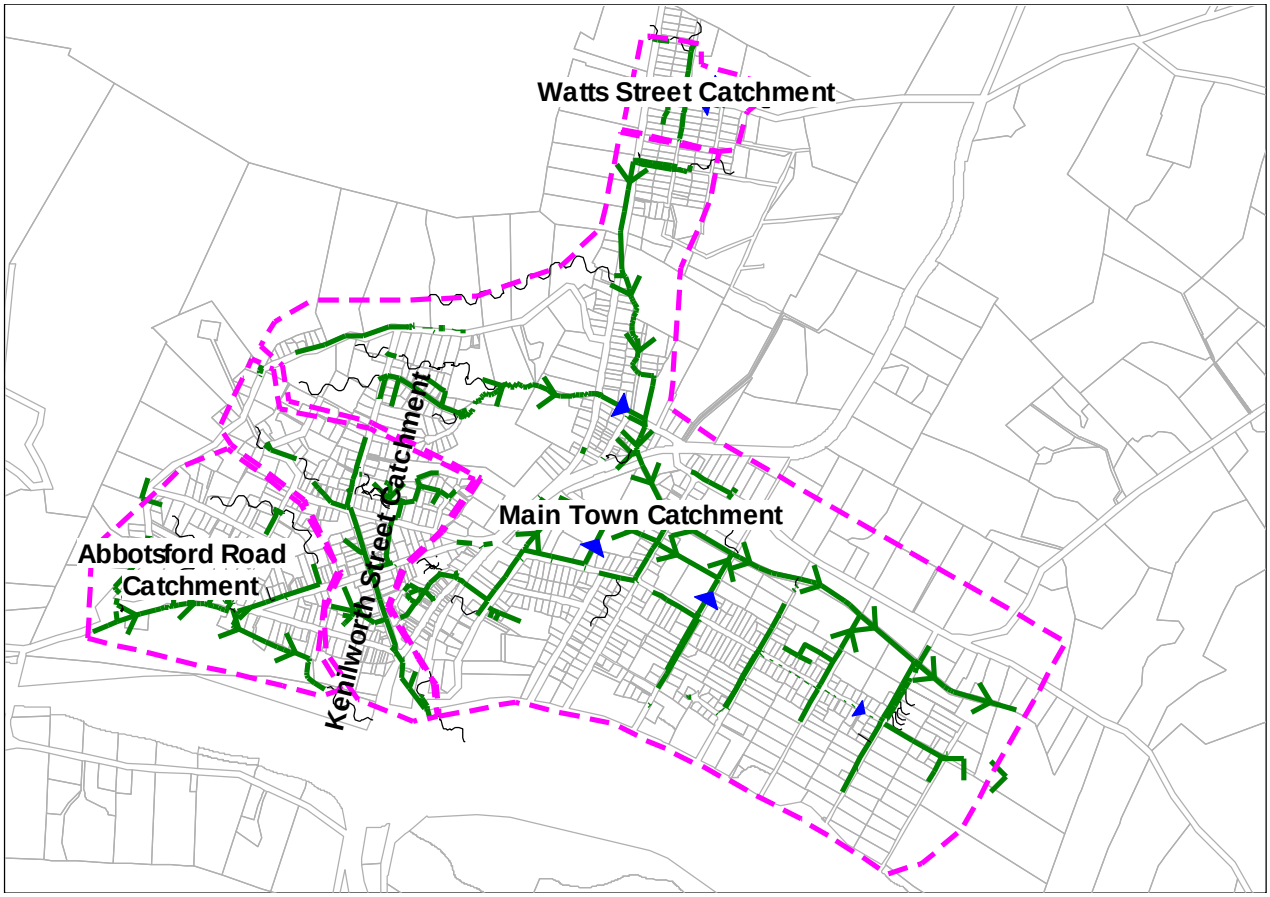
The performance of open drains is significantly affected by the level of routine maintenance and varies from month to month. However, a reasonably accurate grading for performance can be related to the general size of the drain along with a coefficient representing the degree of maintenance and therefore risk of low performance or non-performance due to blockages, debris, sludge or silt build up, side collapse of drain and/or weed over-growth restricting flow capacity.

The majority of the Waipukurau open drain system considered have a performance rating of average or better.

3.6.10 Condition

The open drains condition is good.

3.7 Waipawa Network



Waipawa Stormwater Network

3.7.1 General Description of Network

The stormwater drainage system serving Waipawa consists of a combination of piped drains, formed open channels and developed natural watercourses. The Waipawa River is isolated from the township by stopbanks and all pipes passing underneath the stopbanks are protected against backflow by non-return valves at the pipe outlet. Ownership (and the associated maintenance responsibility for maintenance) of the stopbanks, the pipes beneath them and the non return valves at their end, is with the Hawke's Bay Regional Council.

There are a number of catchments within the Waipawa stormwater system (catchment boundaries shown in pink on map). The biggest catchment called the Main Town Catchment covers the most of Waipawa and discharges through the Bush Drain into the Waipawa River. There is another two smaller catchment (Abbotsford Road and Kenilworth Street Catchments which collect the stormwater from the western side of town and discharge it into the Waipawa River via non-return flaps either side of the bridges This catchment includes a stormwater retention dam at the end of Abbot Avenue, which controls the flow of stormwater down the hill.. The fourth and smallest catchment (Watts Street Catchment) collects run-off from the

northern urban part of town and discharges into a natural drainage system heading north-east from Waipawa.

Within each of these catchments stormwater flows by gravity through progressively larger pipes and drains to a final discharge point. There are no Council designated ponding areas or overland flow paths for stormwater to follow during extreme flood events or when pipes or pipe entrances become blocked for any reason. This can result in localised flooding on private properties. Council is aware of one ponding area in Bibby Street but this is on private land and does not form part of the Council network.

3.7.2 The Stormwater Network

The Waipawa piped network (this includes the manholes, outlet structures etc) was installed between 1970 and present day with the major times of construction being 1970 and 2005. 2010 has seen the start of more insensitive work on the Waipawa network as a result of upgrades to the Stormwater and Water networks.

3.7.3 Drainage Reserves

The following sites are recorded in the Central Hawke's Bay District Council's District Plan as Drainage Reserves in Waipawa.

Valuation No.	Land Area (ha)	Legal Description	Comments
1074046801	3.2574	Lot 1 DP 25893	Reserve set aside for drainage of the hill side, Limbrick Street, Waipawa.
1074028900	0.2077	Drainage Reserve	Commonly known as the Bush Drain, Waipawa.
	0.0728	Lot 4 DP17923	Drain between McGreevy St and Guy St, Waipawa.

3.7.4 Asset capacity/performance

From discussions with staff has indicated that the network is function as designed. This recorded in the register by giving the performance assessment for the piped network has been graded with the majority of the network rating as between good to excellent (the newer sections), but some minor parts of the network have been graded as poor and very poor. This indicates that a formal inspection has been undertaken and provided feedback on a particular section of the network to be graded poor thus identifying the section of pipe as due for replacement of major upgrade.

The only area where Council Staff has identified flooding as a problem is the Bush area of town, this is due to it flat nature similar to a river flood plain. Here the stormwater system is generally in the form of roadside channel etc and no significant pipe stormwater system is available. Modelling is planned to quantitate the problem and formulate/test suitable solutions.

3.7.5 Condition

The condition of the overall network has been assessed as good to excellent with some sections of poor and very poor. These poorer sections of the network warrant further inspection to assess the possibility of future or eminent failure.

3.7.6 Open Drains

All open drains for the Waipawa network are recorded as being constructed in 1970. This fits with the earliest date of the piped network.

The list below sets out the open drain managed by the Council in Waipawa. On average the depth of the drains is 2 metres; average bottom width is 2 metres and average top width of 4 metres.

Waipawa Open Drain Network		
Address	Total Length in Metres	Install Year
ABBOT AVE DRAIN	384.21	2005
ABBOTSFORD ROAD	39.92	1970
BENNETT STREET DRAIN	46.22	1970
BUSH DRAIN	1339.84	1970
COLINS STREET DRAIN	182.89	1970
CORONATION PARK DRAIN	644.66	1970
DOMAIN ROAD	69.84	2001
GREAT NORTH ROAD DRAIN	636.77	1970
GREAT NORTH ROAD PIT	7.44	1970
GUY STREET DRAIN	88.64	1970
HARKER STREET DRAIN	41.91	1970
HIGH STREET DRAIN	26.62	1970
MCGREEVY STREET DRAIN	202.52	1970
PARKLAND DRIVE	16.57	2005
SHANLEY STREET	114.27	1970
TIKOKINO ROAD	30.59	1970
VICTORIA STREET DRAIN	471.29	1970

3.7.7 Asset capacity/performance

The open drains' performance is rated as good or better.

3.7.8 Condition

The open drains' condition is good.

3.8 Otane Network

There is no formal reticulated stormwater system serving the township of Otane with stormwater generally being carried in open roadside drains and water tables. However, there is a section of 315mm diameter piped drain 185metres long which collects water from an open drain in Henderson Street and transmits it in a southerly direction to an open drain in Rochford Street. As this pipe has a number of sumps and household connections attached to it, it is considered to be stormwater asset rather than a roading asset. Council has also recently taken over control and management of a small open drain system stretching from Higginson Street to the Kaikora Stream in the North Western corner of Otane.

3.8.1 The Piped Network

Otane has a single line carrying stormwater from both the road carriageway and households. The line was constructed in 1994 and is 315mm diameter PVC 185 metres long. The pipe has a calculated remaining life of 24 years.

3.8.2 Open Drains

Otane Open Drain Network		
Address	Total Length in metres	Install Year
HIGGINSON STREET DRAIN	135.92	2007

There is one open drain system in Otane located are in Higginson Street which drains the residential area at the main entrance to Otane. This drain has been taken over by Council as a result of continuous flooding of the surround residential properties. Council has acquired the land the surrounding the drain to ensure the drain is adequately maintained thus protecting the properties from localised flooding during heavy storm events.

Any open drains or 'V' drains in the Otane Township that are within the roading reserve and deemed to be under the management of the Land Transport Activity.

3.8.3 Asset capacity / performance

The Otane reticulation asset components have been assessed for performance grading of:

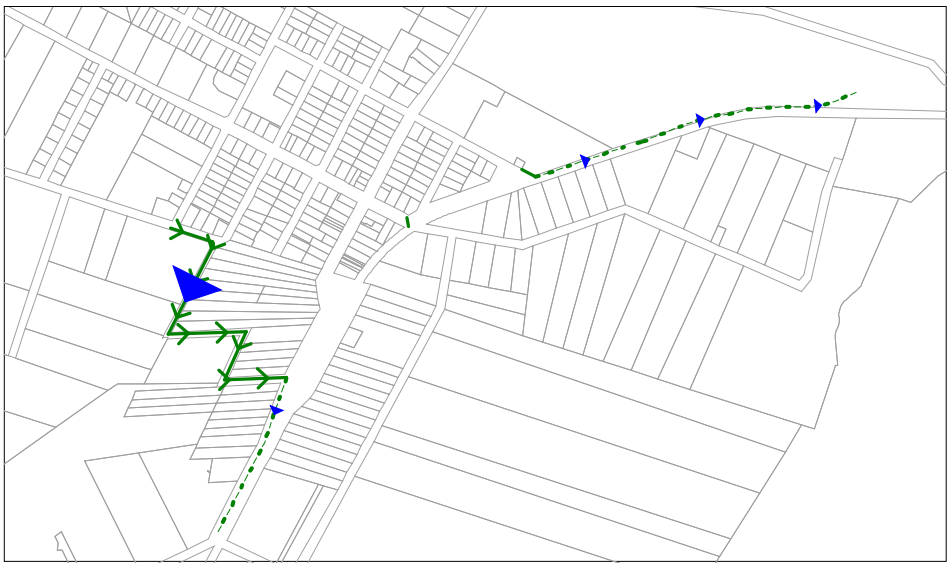
- The inlet structure performance is good.
- The pipe performance is moderate.

3.8.4 Asset Condition

The Otane reticulation asset components have been assessed for condition grading of:

- The inlet structure condition is good.
- The pipe condition is good.

3.9 Takapau Network



There is no formal reticulated stormwater system serving Takapau Township with stormwater generally being carried in open roadside drains and water tables to the main branch of the Te Matau Stream (located to the north of the township) and to an un-named branch of the Porangahau Stream (located to the east and south of the township). However, there are two small sections of stormwater drain that are not associated with the roading asset.

The first of these is a 22metres long, 300mm diameter piped drain which collects water from the roadside drains in Sydney Street and St. Clair Street, crosses the eastern end of Sydney Street to a manhole and discharges, through a 15metres long, 750mm diameter pipe laid beneath the railway to an open drain on the eastern side of the railway line.

The second is an open drain which, under the provisions of Section 11 of the Railway Safety and Corridor Management Act, 1992, the Council is obliged to accept as a public drain. This open drain is on Tranz Rail land and begins at the north eastern end of Meta Street and falls to the north west for approximately 760m before discharging in to the Te Matau Stream

In recent years Council has also taken control of a large interceptor open drain to the South of the town as a result of flooding during the 2006 storm event. This drain is known as the Takapau Zed Drain.

As part of the control of flood water impacting on Takapau the HBRC manage a wier on the Te Matu stream. This diverts excess flow under the state highway and directly to the Makaretu River, thus preventing surface flooding in Takapau.

3.9.1 Piped Network

The Takapau piped network comprises of two piped sections:

- 300mm diameter concrete pipe 22 metres long, constructed in 1998.
- 750mm diameter concrete pipe 15 metres long, constructed in 1998.

3.9.2 Open Drains

Takapau has 762 metres of open drains. This includes an open drain on TranzRail land which Council is obliged to maintain as a public asset.

Takapau Open Drain Network		
Address	Total Length in metres	Install Year
RAILWAY DRAIN	762.07	1982
TAKAPAU Z DRAIN	802.2	2006
STOCK ROUTE DRAIN	1210.6	2006

3.9.3 Asset capacity / performance

The Takapau reticulation asset components have been assessed for performance grading of:

- The inlet structures performance is very good.
- The pipe sections performance is very good.
- The manhole performance is good.
- The open drains performance is good.

3.9.4 Asset Condition

The Takapau reticulation asset components have been assessed for condition grading of:

- The inlet structures condition is very good.
- The pipe sections condition is very good.
- The manhole condition is good.
- The open drains condition is good.

3.10 Porangahau Network

A new reticulated stormwater system was constructed in Porangahau Township during 2005 consisting of an underground piped stormwater system in conjunction with an open 'V' drain system for surface water flows.

The construction of this new reticulation system replaced all the large open drains in the township that were managed under the Land Transport Activity. The "V" drains above the piped system still remain the management of the Land Transport Activity, but in reality the "V" drain or swales are maintained in the most cases by the adjoining land owner.

3.10.1 The Piped Network

The new piped network is 2,214 metres long and was installed in 2005. All pipes are concrete. The system contains 12 manholes and 57 manholes with grated lids (Manhole sumps).

3.10.2 Asset capacity/performance

The performance assessment for the piped network is very good.

The performance grading given to the inlet structures is very good.

The manholes performance has been graded as very good.

3.10.3 Condition

The condition of the piped network is excellent.

The condition of the inlet structures is excellent.

The condition of the manholes/manhole sumps is excellent.

3.10.4 Open Drains

One open drain was installed in 2006. It is an earth formed drain 291 metres long. This drain is named to Campbell Street Drain.

3.10.5 Asset capacity/performance

The open drains performance has been assessed as very good.

3.10.6 Condition

The open drains condition has been assessed as good.

3.11 Te Paerahi Network

There are two small formal stormwater systems serving the township of Te Paerahi Beach which collect roadside water and discharge to the beach environment. The large of the two systems is a section of 375mm diameter piped drain (241metres long) that collects water from a roadside drain in Beach Road and transmits it in a southerly direction before crossing the road to its discharge point on the foreshore. This pipe system has a number of sumps and household connections attached and are considered to be stormwater asset rather than a roading asset. The other piped system collect water from the roadside drains and discharges the stormwater in to the dune environment at the southern end of the public camping ground. The rest of the system consists of open roadside drains and water tables.

3.11.1 Inlet and Outlet Structures

There is a single concrete headwall constructed in 1994, with a calculated remaining life of 59 years.

3.11.2 Piped Network

The piped network comprises of three sections:

- Two sections of 375mm diameter PVC, constructed in 1994 with a total length of 241 metres.
- 250mm diameter concrete constructed in 1975 with a total length of 84 metres.

3.11.3 Open Drains and 'V' Drains

Te Paerahi Beach has no open drains system for stormwater control. All open drains and 'V' drains that do exist are managed as part of the road drainage system under the Land Transport Activity.

3.11.4 Asset Capacity / Performance

The Te Paerahi reticulation asset components have been assessed for performance grading of:

- The inlet structure performance is good.
- The pipe sections performance is good.
- The manhole performance is good.

3.11.5 Asset Condition

The Te Paerahi reticulation asset components have been assessed for condition grading of:

- The inlet structure condition is good.
- The piped network condition is good.
- The manhole condition is good.

3.12 Kairakau Network

There is no formal stormwater system serving the township of Kairakau with stormwater generally being carried in open roadside drains and water tables. However, there is a section of 600mm and 900mm diameter piped drain (approximately 151m long) which collects water from an open drain in Mananui Street and delivers it through the residential area directly to the foreshore. There is also a large open drain at the end of Mananui Street which Council is in negotiation with the Maori land owner to take over and maintain. As part of this project Council would like to move the location of the drain to a point adjacent to the fence line which would allow better utilisation of the land. In addition to these open drains there is a small shallow cut-off drainage system that channels the water away from the dwellings and water treatment plant away and onto the beach.

3.12.1 Inlet and Outlet Structures

There are 3 concrete inlet structures constructed in 1987 and 1993.

3.12.2 Piped Network

Two sections of piped network make up the Kairakau piped network:

- 36 metres of 900mm diameter concrete pipe, constructed in 1987, with a calculated remaining life of 21 years.
- 115 metres of 600mm diameter aluminium pipe constructed in 1993, with a calculated remaining life of 23 years.

3.12.3 Open Drains and ‘V’ Drains

Kairakau has no open drains system for stormwater control. All open drains and ‘V’ drains that do exist are managed as part of the road drainage system under the Land Transport Activity.

3.12.4 Asset Capacity / Performance

The Kairakau reticulation asset components have been assessed for performance grading of:

- The inlet structures performance is good.
- The pipe sections performance is average.
- The manhole performance is good.

3.12.5 Asset Condition

The Kairakau reticulation asset components have been assessed for condition grading of:

- The inlet structures condition is good.
- The piped network condition is fair.
- The manhole condition is good.

3.13 Blackhead Beach Network

Council has constructed a small piped network at Blackhead Beach to alleviate a small but significant flooding issue at the Beach settlement which affected a few house and the neighbouring farm. The system consists of a number of roadside sumps linked by a concrete pipe. The system discharges into an open drain within the Council Beach reserve.

3.13.1 Inlet and Outlet Structures

There is a single concrete headwall constructed in 1994, with a calculated remaining life of 59 years.

3.13.2 Piped Network

The piped network comprises of three sections:

- One sections of 300mm diameter concrete pipe and 2 sections of 450 diameter pipe all constructed in 2005 with a total length of approx. 130 metres.
- 250mm diameter concrete constructed in 1975 with a total length of 84 metres.

3.13.3 Open Drains

Blackhead Beach has no open drains system for stormwater control. All open drains that do exist are managed as part of the Parks and Reserves Activity.

3.13.4 Asset Capacity / Performance

The reticulation asset components have been assessed for performance grading of: excellent.

3.13.5 Asset Condition

The reticulation asset components have been assessed for condition grading of excellent.

3.14 What does this activity involve?

Council undertakes this Activity to identify and manage the risks of storm water flows and flooding to Public Health, minimize the effects of flooding on the urban residents of CHB and their properties. The management of this activity also minimises the effects on the urban environment from adverse storm water flows and surface flooding. The reduction of storm water infiltration into the sewer network such as Waipukurau and Waipawa will however be an important future focus to reduce the volume of sewerage discharges.

Council Stormwater Section manage and maintain the disposal of stormwater in the urban of built up areas of Central Hawke's Bay District. The Network comprise of two systems servicing the two main towns of Waipawa and Waipukurau. There are also six smaller network providing varying levels of coverage for the Townships of Otane, Takapau, Porangahau, Te Paerahi, Kairakau, and Blackhead Beach. The management or control of stormwater flows elsewhere in Central Hawke's Bay falls under the control of Council's Land Transport section, The Hawke's Bay Regional Council or the private land owner. A detailed description of the Stormwater Systems in covered in Section 10 in Part B of this Activity Management Plan.

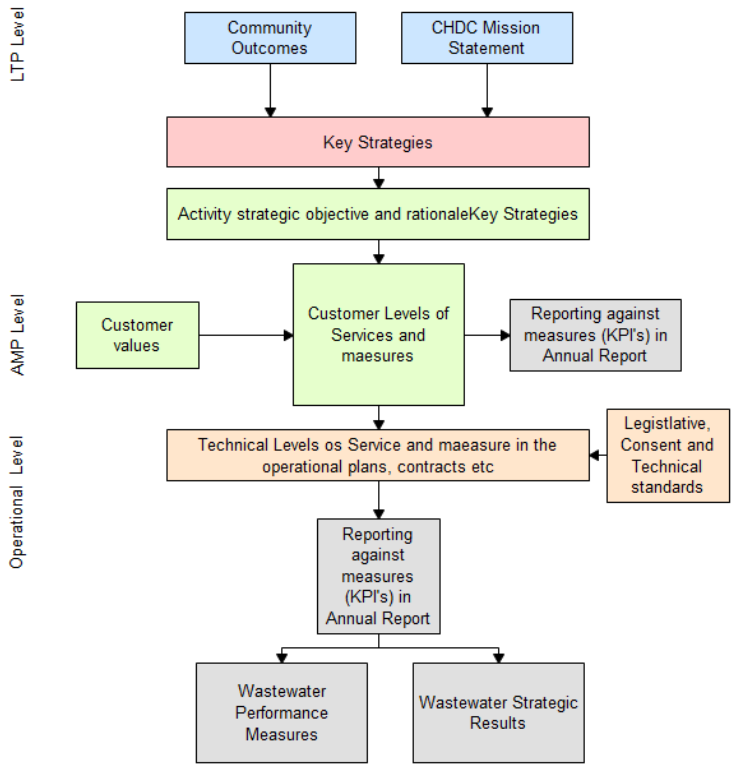
4 Levels of Service

4.1 Introduction – Levels of Service

Levels of Service are used to define the expectations of customers, and to measure the effectiveness of the delivery of the activity.

4.2 Framework for Establishing Levels of Service

The framework for establishing levels of service is illustrated in the figure below.



4.3 Council's Customers

Council's customers can be categorised into the two groups Internal and External Customers. Below is a list of the Customers grouped into the relevant category:

Internal

- Council's Land Transport Department
- Council's Facilities Management Contractor
- Council Properties

External

- Private Property Owners
- Commercial or Industrial Property Owners

4.4 Community Outcomes

Council has determined that the stormwater activity contributes to three of the community's desired outcomes.

Under the Local Government Act 2002 Council is required to consult with their community to identify the community's desired outcomes. The link must then be established, between Council's activities and these 'Community Outcomes', to justify continuance of the activities. Council has determined that the stormwater activity contributes to three of the community's desired outcomes.

Wellbeing	Community Outcome	Commentary
Social and Cultural - A healthy, safe place to live	Risks to public health are identified and appropriately managed	The provision of adequate stormwater management and systems ensures that the collection and treatment of stormwater flows causes the least risk to public health.
Economic - -A place with a thriving economy	Central Hawke's Bay District has an efficient and affordable Stormwater infrastructure	The provision of adequate stormwater management and systems meets growth needs
Environmental - A place that is environmentally responsible	We plan proactively to minimize environmental impact, while facilitating growth and development.	The provision of adequate stormwater management and systems minimises the adverse impacts of stormwater on the environment.

Community Outcome	Commentary
A lifetime of good health and wellbeing	The provision of adequate stormwater management and systems ensures that the collection and treatment of stormwater flows causes the least risk to public health.
An environment that is appreciated, protected and sustained for future generations	The provision of adequate stormwater management and systems minimises the adverse impacts of stormwater on the environment.
A strong, prosperous and thriving economy	The provision of adequate stormwater management and systems meets growth needs to best serve the community.
Provide the management and disposal of the stormwater	Council works to provide the stormwater system in the most cost effective and stainable way by using the latest technologies

Community Outcome	Commentary
systems in a sustainable way	and looking for outside the square opportunities.

The Stormwater Activity provides collective benefits to the community by collecting stormwater and directing it to rivers to mitigate flooding or erosion and minimising any impact on the community and the environment.

Wellbeing	Community Outcome	Commentary
Social and Cultural - A healthy, safe place to live	Risks to public health are identified and appropriately managed	The provision of adequate stormwater management and systems ensures that the collection and treatment of stormwater flows causes the least risk to public health.
Economic - -A place with a thriving economy	Central Hawke's Bay District has an efficient and affordable Stormwater infrastructure	The provision of adequate stormwater management and systems meets growth needs
Environmental - A place that is environmentally responsible	We plan proactively to minimize environmental impact, while facilitating growth and development.	The provision of adequate stormwater management and systems minimises the adverse impacts of stormwater on the environment.

4.5 Strategic Result for Stormwater Management

The Strategic Result required to achieve the stormwater activity goal is:

Reliable, safe and cost effective collection and disposal of stormwater, by

- Collecting and controlling stormwater to an acceptable standard (1 in 50 year return period).
- Ensuring the provision of a cost effective stormwater system that protects public health and the environment, and that is affordable to the community.
- Ensuring the stormwater system is planned for, designed, managed and maintained to meet the service levels agreed with the community and
- Operated so as to prevent any undue nuisance, disturbance or damage to property
- Conforms to all relevant national standards and guidelines.
- Ensuring the incidence of any flooding is not shifted from one area to another.
- Supporting Council's development strategies and Council's environmental goals.
- Maintaining open drains at a level that maximises safety and ensures their appearance is acceptable.
- Maintaining piped reticulation at a level that optimises the economic life and performance of the asset.

4.6 Key Performance Measures

The key performance measures for monitoring achievement of the Activity Goal and Strategic Results for the stormwater activity are:

Strategic Action	Key Performance Measures (KPMs)
Achieve defined levels of service.	• the agreed measures are achieved each year when reported in the annual report
Protect the health and safety of the community and of the maintenance and operational personnel.	• No confirmed report of ill health due to contaminated stormwater • No confirmed report of health problems due to stagnation or retention of stormwater encouraging insect infestation as a result of defective stormwater assets covered by this AMP.
Manage and maintain services so as to ensure any adverse impacts on the environment and/or on the communities are minimised.	• Resource consent compliance at all times • Action is taken within 24 hours of end of flood event to mitigate adverse impacts and direct flood waters to drains quickly
Ensure the capacity of all stormwater systems is sufficient to prevent undue nuisance and disturbance or damage to property.	• Current system can managed the flow of event that it was designed for (stormwater capacity modelling) • Downstream capacity allows unhindered flow of stormwater in a normal event (1 in 50 year return period)
Comply with statutory requirements.	• No negative opinion from audit of this Activity Management Plan
Achieve compliance with appropriate technical standards.	• New works are designed to cope with 1 in 50 year return period storm events
Implement Council's Policies and By-laws.	• Council Policies and By-Laws are clear and enforced at all times
Promote development within the Central Hawke's Bay District.	• Contribution Fees/Development Levies are applied according to Council Policies.
Achieve defined standards of system management.	• Processes/methods and system requirements are achieved as set out in this Activity Management Plan

4.7 The key stakeholder organisations and groups

The key stakeholder organisations and groups that have an interest in the Stormwater Activity are:

- External
  - ⇒ The Central Hawke's Bay community, including citizens, ratepayers and local businesses
  - ⇒ Hawke's Bay Regional Council
  - ⇒ Commercial and Business interest organisations
  - ⇒ Ministry of Health
  - ⇒ Ministry for the Environment
  - ⇒ Local Iwi

⇒ Department of Conservation
⇒ Fish & Game
⇒ Consultants and contractors
⇒ New Zealand Transport Agency

- Internal
  ⇒ Councillors
  ⇒ Chief Executive
  ⇒ Asset Management staff
  ⇒ Financial Support staff
  ⇒ Information Technology staff
  ⇒ Regulatory staff
  ⇒ Council's Contractors (FM and others)

4.8 Property Information

4.8.1 Resource Consents

Resource consent is required for discretionary activities covered in the Regional Resource Management Plan. If there is any doubt as to whether consent will be necessary, Regional Council Environmental Consents Officers can provided the appropriate adice.

Any earthworks which may modify or destroy an archaeological site will require separate approval from the Historic Places Trust.

Land use consent is required for any activities, such as earthworks, reclamation, dumping and construction of structures, within the bed of a lake, river or stream, (see Section 13 of the Resource Management Act 1991). Any proposed activity in a lake, river or streambed will require land use consent. In all situations where land use consent is a requisite, no earthworks can proceed until the consent has been obtained from the Regional Council.

The Hawke's Bay Regional Council are reconsidering their requirements for resource consents for stormwater purposes. In particular they are considering consents for a whole catchment, or to make some stormwater discharges permitted uses rather than discretionary. This may require Council to develop formal catchment management plans.

Council holds the resource consents listed below.

Stormwater System	Permit No.	Purpose	Expiry Date
Waipukurau	HKB790212	Divert stormwater from Pah Flat Stream to Mangatarata Stream catchment.	In perpetuity

Stormwater System	Permit No.	Purpose	Expiry Date
Waipukurau	HKB790213	Increase the discharge capacity into the Mangatarata Stream.	In perpetuity
Waipukurau	WP921583D	Divert water from the College Drain to the new drain thence to the Pah Flat Drain	31 May 2027
Waipukurau	DP921584W *expired*	Discharge of water via new drain to Pah Flat Drain	Permitted Activity
Waipukurau	WP040049M	Divert water from Chambers Street area to Pah Flat Stream	In perpetuity
Te Aute	WP921502M	To dam the Te Aute main drain to retain water during summer and to prevent flooding from the Papanui Stream	31-May-2025
Rural	HKB760352	Divert un-named stream on Blackhead Road for road culvert	In perpetuity
Rural	HKB780104	Divert Mangaorapa Stream around a slip	In perpetuity

4.9 Levels of Service

4.9.1 Setting Levels of Service

The formal way to set levels of service, as described in the NAMS manual "Creating Customer Value from Community Assets" involves an iterative process of Council setting levels of service, consulting with the community on those levels of service, amending those levels of service as a result of that consultation, and Council then providing the resources to achieve the levels of service agreed with the community. The results of applying those resources is then monitored to see if the levels of service are being met, or amending the resourcing to ensure they are met. The whole process is then repeated for each three year LTP cycle.

4.9.2 Levels of service generally fall into two categories:

a. Technical Levels: - The level of service achieved by Council, including council staff and contractors and consultants employed by Council (the service provision team). This level of service covers all areas of work that go into providing the service including administration, maintenance, operation and capital works.

b. Community Levels: The level of service received by the customer. This is the result of the work carried out, the outcome of all the inputs in a. above.

Council has to ensure that appropriate levels of service are set for both categories, so that the performance of the service provision team can be measured to ensure work is being done at the right level, and so that the customers' expectations of the service and their experience of the service can coincide as frequently as possible.

4.10 Council's Direction

Council will maintain the existing stormwater systems and carry our improvements that will reduce flooding and erosion issues from stormwater flows.

4.11 Customer Research

Council has a number of ways to consult with the effected Customer, such as formal surveys, focus groups and the collection of data from our complaints register. This helps council to understand customers' expectations.

No formal surveys have been carried out since 2010-11. Council may in the future do a formal customer survey but currently customer satisfaction is thru the RFS system and general complaints system.

4.12 Request for Service

The "Request for Service" database is used to log calls from customers. Council logs requests and passes stormwater related issues onto the facilities maintenance contractor or Council Utilities Department for action and monitoring. Once the issue has been actioned and completed Council advises the customer explaining the outcome of their request.

4.12.1 Incoming Communications

The "Mail Tracker" database records written requests, compliments and complaints, the actions taken by Council in response, and the reply made to the enquirer. All requests are tagged with the response time and all actions are tracked. This information assists in identifying customers' level of expectation but is not a definitive measure of the expectations of the wider community.

4.12.2 Influences

The main factor which influences the existence and extent of stormwater systems in Central Hawke's Bay is the location and density of development in urban areas.

The main factors which influence the operation and maintenance of stormwater systems are the community's expectations for protection against flooding, the time of year and the frequency and intensity of rainfall events.

These factors may result in the desire for increased capital expenditure to upgrade reticulation to meet community expectations.

4.13 Operational Levels of Service

The operation and maintenance roles for the stormwater activity are completed under the 'Facilities Management Contract' (currently Contract No. 240). The Contractor is Higgins Central HB. The final expiry date of the contract is 30 November 2018.

In the Facilities Management Contract, Central Hawke's Bay District Council has adopted a set of 'Outcomes' for its services which includes the stormwater activity.

The specific outcomes stated in the FM Contract are that:

Council will develop and maintain cost effective stormwater and drainage systems within urban areas that:

1. *Provide adequate capacity to dispose of stormwater to prevent undue nuisance and disturbance or damage to property.*
2. *Does not shift the incidence of a flood from one area to another.*
3. *Where open drains are used they will be maintained at a level that maximises safety and ensures their appearance is acceptable.*

These Outcomes have then been translated in the contract document into outputs from which output measures have been constructed. The output measures are used to assess the effectiveness of provision of the Outcomes under this contract.

In addition to the 'Outcomes Specification' in the Facilities Management Contract, there are also performance standards and tasks required of the Contractor and these have been specified under 6 categories as follows:

(i) Customer Service & Public Consultation

(ii) Responsiveness

(iii) Maintenance and continuity of Service

(iv) Quality Control

(v) Reporting

(vi) Outcomes

Provision is made under the Contract for auditing of the Contractor's performance against these categories, and this auditing does take place.

4.13.1 Judgement

Stormwater system users judge the standard of the network and facilities by the reliability of the collection system (reticulation) and the impact of the treatment process and post treatment discharge (quality). Quality is expressed in terms of compliance with resource consent conditions, while reliability is expressed in terms of reduction in complaints about blockages and overflows.

4.13.2 Stormwater Discharge Quality

The stormwater discharges from the treatment plants are regularly tested in accordance with the testing regime set by the resource consent conditions issued from the Hawke's Bay Regional Council. The list of routine tests is shown in the table below.

Network	Otane			Waipukur		Waipawa		Takapau		Porangahau		Te Paerahi	
Sample Site	STP Discharge	Farm Drain	Papanui Stream (US & DS)	STP Discharge	Tuki Tuki River (US & DS)	STP Discharge	Waipawa River (US & DS)	STP Discharge	Makaretu River (US & 2x DS)	Porangahau Town STP Discharge	Porangahau Town STP Discharge	Te Paraehi Beach STP Discharge	Piezometers
Faecal Coliforms	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
E.Coli	☑	☑	☑	☑	☑	☑	☑			☑	☑		
Enteroccoci										☑	☑		
Total Organic Carbon								☑	☑				
Clarity					☑		☑						
pH	☑			☑		☑		☑	☑	☑	☑	☑	
Suspended Solids	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	
cBOD5	☑			☑		☑		☑		☑	☑	☑	
Total Ammoniacal Nitrogen	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑		☑
Soluble Reactive Phosphorus	☑	☑	☑	☑	☑	☑	☑	☑		☑	☑		☑
Total Nitrogen	☑			☑		☑				☑	☑		☑
Total Phosphorus	☑			☑		☑				☑	☑		☑
Dissolved Oxygen	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	
Temperature	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	
COD								☑					
Condition of River					☑		☑		☑				
Nitrates								☑	☑	☑	☑	☑	☑
TKN										☑	☑		
Conductivity								☑	☑				
Frequency	**F**	**Q**	**Q**	**F**	**M**	**F**	**M**	**M**	**M**	**F**	**M**	**M**	**M**
F = Fortnightly, M = Monthly, Q = Quarterly													

4.14 Setting Levels of Service in Practice

In practice the processes described above for setting levels of service is not followed to the letter. Council understands that funding for this activity is limited, this dictates what Levels of Services can be delivered. The level of funding is decided by how much Council decides the rating income will be set. Except in exceptional circumstances such as legislative directives requiring work to be done that exceeds Council's decided rating income, the operation, maintenance, renewal and capital works funding requirements are set by Council, and the plan of work is constructed to match that level of funding.

The levels of service for this activity are set by the following process:

1. The amount of funding available in the current year for operations and maintenance is increased by the rate of inflation for the next year's budget.

2. The extent of renewal works to be considered is limited to the amount of depreciation raised for the year.
3. The projects (capital improvements) that staff recommends should be carried out are listed.
4. These funding requests (operations and maintenance, renewals and capital works) are included in the total LTP funding, and the resulting increase in rating requirement is determined. Since this amount exceeds Council's expectations for the rating increase, capital works projects are then reduced to nil for the next 3 years (which means only works necessitated by legislative directive are included in the LTP).
5. Levels of service for customers are then written to match the results that can be expected from the amount of funding available to carry out the activity.
6. These Levels of Services are explained to the community through simple consultation processes and regular surveys are conducted to check if Council is meet the customer's expectations.

4.15 Stormwater Levels of Service from LTP

Below is a table to show the agreed levels of service set by council for the Annual Report. These forms are filled out on a monthly bases by the council officer responsible for the water. At the end of the financial year the monthly reports are collated and the summary form the final report which is included in the Annual Report to Council.

To support the report below the Contractor provided month feedback information which is consolidation of the daily logs from pump station, request for services, meter reading etc. as required by the contract.

Stormwater								
What customers want / Customer Value	**Customer Levels of Service**	**Performance Measure**	**Baseline**	**Year 1 Target (2018/19)**	**Year 2 Target (2019/20)**	**Year 3 Target (2020/21)**	**Year 4-10 Target (2019/20)**	**Performance Measure Reporting**
A safe and operational stormwater drainage network for design events	Quality	For each flooding event, the number of habitable floors affected. (Expressed per 1000 properties connected to the territorial authority's stormwater system.)	0	0	0	0	0	Request for Service System

Stormwater								
What customers want / Customer Value	**Customer Levels of Service**	**Performance Measure**	**Baseline**	**Year 1 Target (2018/19)**	**Year 2 Target (2019/20)**	**Year 3 Target (2020/21)**	**Year 4-10 Target (2019/20)**	**Performance Measure Reporting**
	Compliant	Compliance with the territorial authority's resource consents for discharge from its stormwater systems measured by the number of:						
		abatement notices;	0	0	0	0	0	Management Reporting
		infringement notices;	0	0	0	0	0	Management Reporting

Stormwater								
What customers want / Customer Value	**Customer Levels of Service**	**Performance Measure**	**Baseline**	**Year 1 Target (2018/19)**	**Year 2 Target (2019/20)**	**Year 3 Target (2020/21)**	**Year 4-10 Target (2019/20)**	**Performance Measure Reporting**
		enforcement orders; and	0	0	0	0	0	Management Reporting
		successful prosecutions, received by the territorial authority in relation those resource consents.	0	0	0	0	0	Management Reporting

Stormwater								
What customers want / Customer Value	**Customer Levels of Service**	**Performance Measure**	**Baseline**	**Year 1 Target (2018/19)**	**Year 2 Target (2019/20)**	**Year 3 Target (2020/21)**	**Year 4-10 Target (2019/20)**	**Performance Measure Reporting**
	Responsive	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.	≤2hr	≤2hr	≤2hr	≤2hr	≤2hr	Request for Service System

Stormwater								
What customers want / Customer Value	**Customer Levels of Service**	**Performance Measure**	**Baseline**	**Year 1 Target (2018/19)**	**Year 2 Target (2019/20)**	**Year 3 Target (2020/21)**	**Year 4-10 Target (2019/20)**	**Performance Measure Reporting**
	Customer Service	The number of complaints received about the performance of the stormwater system (expressed per 000 properties connected to the stormwater system)	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	Request for Service System
	Customer Service	The percentage of users satisfied with the stormwater service provided	90%	90%	90%	90%	90%	Independent Community Views Survey

Below is a table to show hpow the agreed high level LoS arer related to the day to day operation work carried out by the Council staff and the FM Contractor.

STORMWATER OPERATIONAL FRAMEWORK FOR LEVELS OF SERVICES 2012 -2022

		Out come	Level of Service	Performance Measure	Supporting Practices	Reporting Method
Community Level	Community Wellbeing	Community Health and Protection	Collection and control of SW to an acceptable standard.	No Dwellings or Shops become flooded due to moderate rainfall.	FM Contract	Monthly Reports
			Protect Public Health			Monthly Reports
			Meet customer requests in a timely and efficient manner	Customer request are processed in Timely fashion	FM Contract	Resolution times as per FM contract
Technical Levels	Community Infrastructure	Infrastructure Stewardship	Maintain stormwater systems to design levels	SW network maintained in a timely fashion	FM contract	Monthly Reports
				Breaks are fixed within times set in FM Contract		
			Ensure compliance with HBRC consents	No breaches of the Discharge consent	Number of breaches reported by HBRC	Annual Consent Report
	Future District Planning	Sustainable Development	Future stormwater systems are designed to appropriate levels	In Fill or New Development is constructed to appropriate standards	Resource Consent	Annual Reports
					Council Contracts	
	Financial Planning and Management	Customer Satisfaction	Fair Price	Annual Charges	Financial Management	LTP and Annual Plan consultation
				O & M expenditure	Competitive tendering	
					Contract Management	
			Continuous Services	Unplanned disruptions		
				Minimal Flooding	Less than 5 complaints per year resulting/confirmed from the SW asset	RFS reports on monthly reports
			Custom Satisfaction	Satisfaction Reports/surveys	LTP/annual Plan Public consultation	LTP and Annual Plan consultation

4.16 Summary of Stormwater Activity Performance

Overall, the performance of the stormwater activity is good.

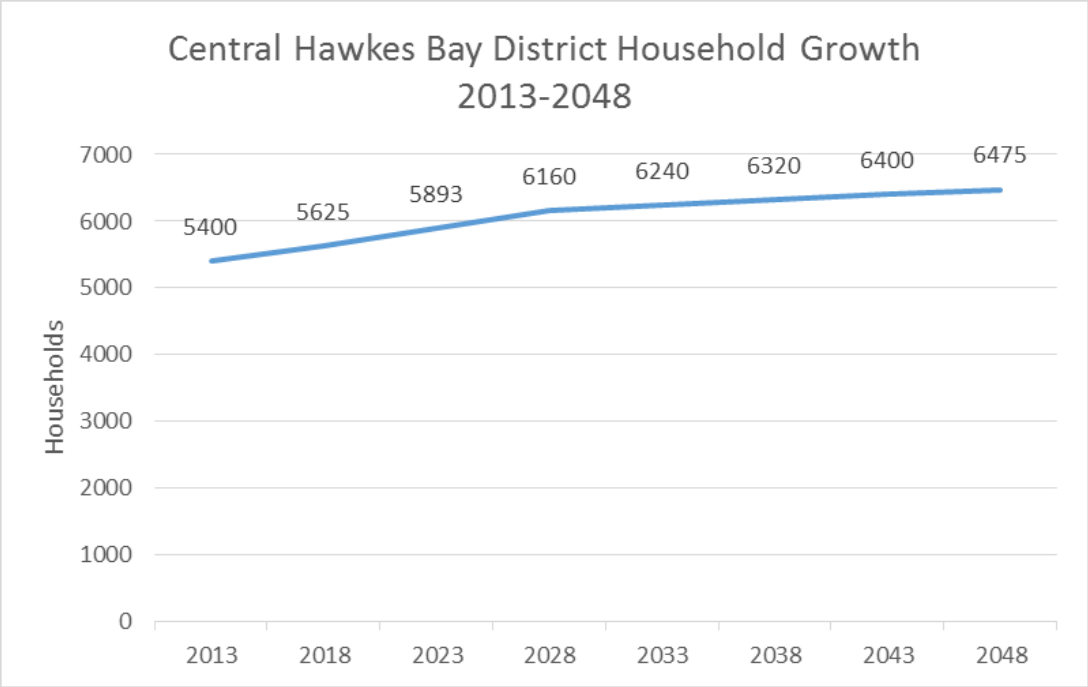
There are issues with some flooding problems, however these have typically been for extreme events. The new design standard of 1 in 50 yr return period, which reflects the expected increase in storm intensity due to climate change effects, means that this standard will be exceeded more frequently.

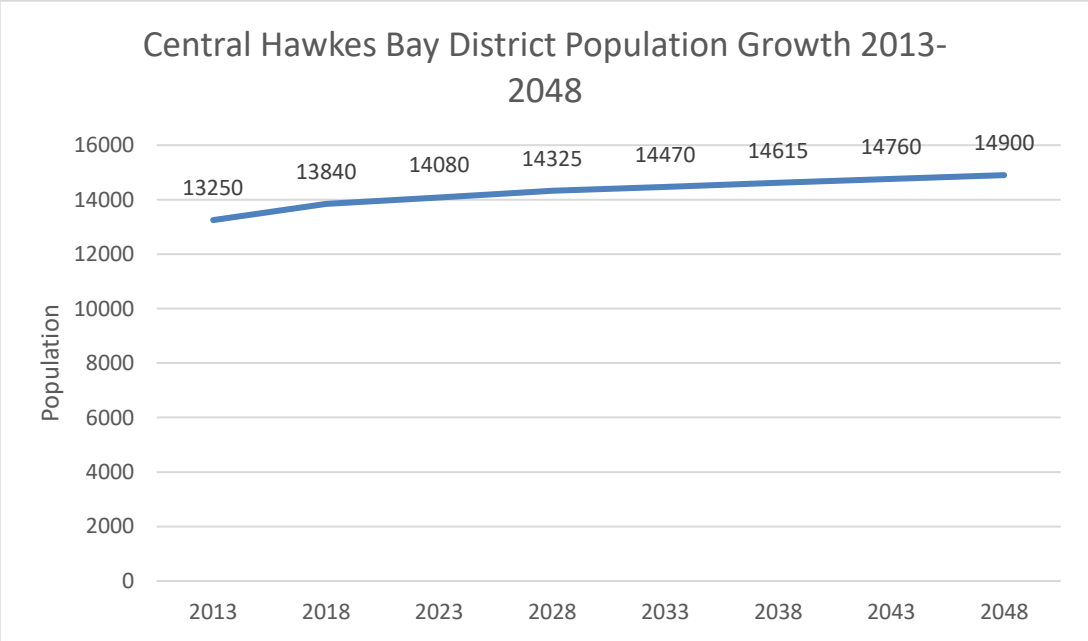
There are good controls for levels of service in the current Facilities Management Contract and new procedures to more formally audit performance of this contract will improve compliance with level of service standards.

5 Demand Management

5.1 Demand

The Central Hawkes Bay District Long-Term Planning document by Sean Bevan outlines the Demographic and Economic growth direction 2018 to 2048 estimated growth of the district for the next 30 years. This report indicates a household growth for the reticulated areas in the order of 790 properties, and an overall growth in population of over 1000, as shown on the graphs below.





5.1 Implications of Uncertainty

Council is face the most uncertain times in its history, with the prospects of reducing population, amalgamation on the one hand and the prospects of a game changing irrigation scheme which would increase the population by some 23% over the next 30years plus. This make decision making very difficult and is compounded by recent events in the Far North where Council has made decision on expected growth only to find economic climate has changes the playing field and the predicted growth has not eventuated.

In Engineering terms we are looking at an uncertain future and when coupled with the ageing infrastructure the long term planning not only becomes difficult but critical to the success of the community.

In this document Council has explored two possible scenarios based on the status quo where the future looks like a time of declining population. In this scenario we as Council Engineers are faced with the options of reduce requirements for Council services such as water stormwater etc. To make the scenario of issues of declining population more complex, is the impact of changing weather patterns resulting in less user to pay for a more expensive stormwater management system.

5.2 Factors Influencing Demand

The factors influencing demand can be broken into two categories:

- Activity factors.
- Asset factors.

"Activity factors" are factors relating to use of the asset and demand from users for the asset.

"Asset factors" are factors relating to the physical parameters of components of the network, such as capacity, age and design standards.

The combination of these asset and activity factors needs to be considered to understand the full impact of demand.

The following activity based factors influence demand on stormwater collection and disposal:

- Population increase/decrease
- Demographics of communities
- Economy and Socio-economic factors

- Subdivision development
- Land use changes
- Recreational development
- Industry and Commercial development
- Tourism development
- Cultural development

The following asset factors influence how activity factors (demand for service) might impact on the stormwater network:

- Design capacity for stormwater facilities/structures
- Design capacity for reticulation
- Stormwater discharge quality
- Treatment design standards
- Environmental design standards
- Debris buildup and other system inefficiencies

These asset factors can be considered as critical failure points if the activity demand on a section of the network increases to a point that exceeds the asset's ability to meet that demand.

5.2.1 Projected Change in Customer Expectations

Historical trends in customer expectations for stormwater services are that little changes over the years. There are no comments from customers most of the time, and when comments come they are due to a stormwater problem. The main problem flooding and erosion areas are known to Council staff.

While it is highly desirable to undertake improvements to address existing and new flooding issues, Council believes it has severe funding constraints that make this desired work unaffordable.

5.2.2 Projected Impact of Changes in Technology

Current and future changes in technology have the potential to impact on the stormwater activity primarily in the options available for treatment of stormwater. This will allow better quality of effluent to be produced and could reduce the cost of doing this.

In addition to this, information technology changes will impact on the way Council does business particularly in terms of data collection and analysis practices. It is reasonably expected that both data collection and data analysis will become more advanced, more detailed and more accurate. This will give rise to increased confidence in predictive modelling for asset failures, changes in demand and impacts on infrastructure and financial forecasting and the timing of these impacts

- ***Current and future changes in technology have the potential to impact on the stormwater activity in three significant ways:***
- ***Change in runoff and volume of flow from properties (new technology could either increase or decrease this).***
- ***Generation of new types of contaminants in stormwater.***
- ***Provision of new solutions for disposal and/or reuse of stormwater.***

In addition to this, information technology changes will impact on the way Council does business particularly in terms of data collection and analysis practices. It is reasonably expected that both data collection and data analysis will become more advanced, more detailed and more accurate. This will give rise to increased confidence in predictive modelling for asset failures, changes in demand and impacts on infrastructure and financial forecasting and the timing of these impacts.

5.2.3 Projected Change in Demand on Service

In general (Scenario 1) there is a nil population growth in the District as a whole and potentially a slight decrease. However, in some parts of the District population growth has occurred and future growth is expected. This is driven by addition housing occurring and is likely to continue in some areas in the District.

This will have an impact on infrastructure even though the permanent residential population may not increase. An example of this type of impact is the increase in holiday homes in Porangahau and Te Paerahi which will most likely translate to increased demand for stormwater services.

In summary, the most significant projected increases and decreases of demand on the stormwater services are expected to be:

- Increased number of connections which will require extensions or upgrades of the reticulation, particularly in:
  - Porangahau Road, Waipukurau
  - Racecourse Road, Waipukurau
  - Mt Herbert Road, Waipukurau
  - Te Paerahi
- Increased demand to monitor and report on environmental performance.

5.2.4 Design Standards for Demand Management

Design standards and guidelines are used to:

- manage stormwater collection and disposal.
- assess the need for improvements in stormwater services.
- ensure the most appropriate solutions are installed.

The standards and guidelines include:

- Council Policy Documents.

- Engineering Code of Practice documentation.
- Facilities Management Contract specifications.
- Construction contracts specifications.

Other solutions available are:

- Education and communication programmes.
- Setting stormwater restrictions/controls for commercial and industrial sites.
- The use of development impact fees.
- Development controls through land use zoning.
- Subdivisional controls through Engineering Codes of Practice requirements.

5.3 Demand Management Plan

5.3.1 Overview of Council Strategic Direction

The key strategic direction for Council in regard to meeting demand for the stormwater activity can be summarised as follows:

- The demand for stormwater activity will increase not reduce.
- Stormwater infrastructure for subdivisions and developments will be paid for by the developers and vested in Council.
- The stormwater asset will continue to be adequately maintained without increasing funding (other than allowing for inflation, the addition of new infrastructure vested in or installed by Council, and subject to Council financial constraints).

Council believes it has severe funding constraints that mean that only the essential improvement works necessitated by legislative requirements will be undertaken. This means that only stormwater treatment improvements required to meet the resource consents will be funded and carried out.

5.3.2 Demand Management

Currently demand management for stormwater services is implemented through:

- Council Policy and By-law documents.
- Subdivision controls and consent conditions.
- Land development controls such as land use zoning.
- Consultation on capital works projects through the LTP process.
- Providing feedback to customers on operation and maintenance costs through the Annual Report process.

- Feedback to customers on achievements against performance measures and levels of service through the Annual Report process and future LTP consultation.

6 Risk Management

6.1 Introduction

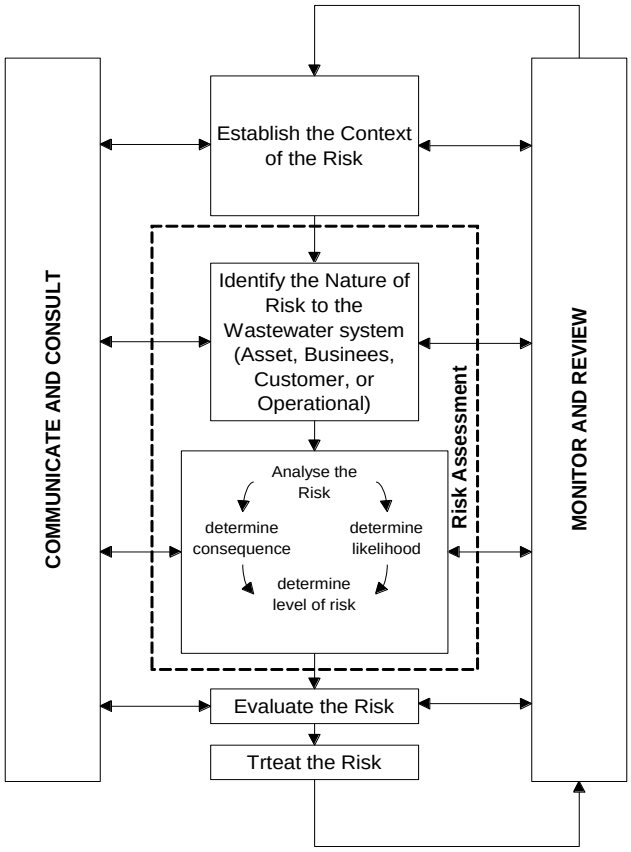
Risk management involves looking at all the activities carried out in providing the Stormwater Services and assessing what might go wrong and how often this might occur. The information gained from this can be used to eliminate the risk, reduce its effect, or allow a contingency plan to be prepared to deal with the risk if it occurs. It also involves looking more widely for events that would not normally be expected to happen but have the possibility of happening and affecting this activity.

6.2 Risk Management Procedure

Risk procedure is based on the Guidelines in AS/NZS 4360:2004 - Risk Management. The definition of risk management, as presented in Standards New Zealand Handbook – 'Risk Management for Local Government' (SNZ HB 4360:2000) is:

"The systematic applications of management policies, procedures and practices to the task of identifying, analysing, 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".

The risk management process is illustrated below.



6.3 Risk Assessment Context

Risk management is applied and developed in both the strategic and organisational contexts.

The identification, analysis and treatment/management of risk will impact at all levels in the management of the Activity, from Community Outcomes through to strategic goals, activity goals, service level delivery and operational delivery.

Risk should be considered relative to Strategic Objectives, Organisational Performance and Event Management.

6.3.1 Strategic Context

This Activity Management Plan describes Council's Strategic Objectives relative to the Stormwater Activity and details the relationship between Strategic and Community Outcomes and Stormwater Activity Goals. The plan also sets out the various relationships between other plans, legal requirements, financial strategies, regulatory consents and policy documents for the stormwater activity.

The strategic risk assessment must consider Councils' ability to achieve its strategic goals and comply with all relevant legal obligations within the context of all these relationships, statements and requirements.

6.3.2 Organisational Context

The organisational context for risk management relates to assessment of Council's ability to manage the stormwater activity to achieve the required outcomes.

In particular the focus for this context is risk associated with organisation issues such as staffing (resources, skills and training etc.), work areas, location, IT and financial systems, database and data recording, analysis and tracking systems, policies and procedures, relationships with elected representatives etc.

6.3.3 Event Management Context

The Event Management context relates to both the management and operation of the activity. It includes assessment of risk relating to particular events that may occur. The range of types of events assessed should include contract management activities, operational activities, asset failure events as well as general, accidental, environmental and deliberate harm events.

6.3.4 Assessment Process

The assessment process is set out in further detail in the following paragraphs that describe the criteria in terms of Risk Management Activities, Likelihood Scale, and Consequence Scale. The process includes for development of a Risk Assessment Matrix, Risk Register and analysis and format of a Risk Treatment Plan for the risks and events identified.

6.4 Risk Management Activities

Activities associated with stormwater services can be categorised by function into four broad areas. Under each area or function heading is a list of processes that might occur within the

stormwater activity. Each process can have a number of risks. This method of categorisation of risks is used to methodically develop a risk register.

ACTIVITY CATEGORIES FOR RISK REGISTER				
Activity Area	**Asset Management Risks**	**Business Risks**	**Customer Services Risks**	**Operational Risks**
Processes	Forward Planning	Funding Provision	Public Request Management	Routine Operation & Maintenance
	Asset Renewals Programme	Governance	Managing Response Times	Planned Maintenance
	Information Systems & Management	Legislative Compliance	Managing Customer Expectations	Routine Inspections (Contractor/Council)
	Standards and Guidelines	Policy Development	Level of Service changes	Facilities Management
	Demand Change	Procurement	Customer Expectation change	Data capture, analysis and forward forecasts
	Data Storage	Employment	Customer not understanding service levels	Contract Administration (reporting, programmes, quality management, service delivery)
	Data Analysis	Financial Management & Reporting	Recording Data	Capital and Renewal Physical Works Projects (QA, Management, Timeliness)
	Resources	Political	Analysing Data	Budget Constraints
	Contract Administration	Staff (Council)	Customer Consultation	
	Performance Tracking (Contracts and Consents)		Customer expectations research	

6.5 Risk Evaluation Process

The probability (likelihood) and consequence of a risk occurring are assessed to arrive at Risk Rating Category for the risk. The process from AS/NZS 4360:2004 is used.

6.5.1 Likelihood Scale

The Likelihood Scale is based on frequency or return period rather than an absolute probability.

LIKELIHOOD SCALE				
Level	**Descriptor**	**Description**	**Indicative Frequency**	**Probability of at least one occurrence in 10 yrs**
A	**Probable**	The threat is expected to occur frequently	> 1 year	>99.9
B	**Common**	The threat will occur commonly	1 to 5 years	90% to 99.9%
C	**Possible**	The threat occurs occasionally	5 to 10 years	65% to 90%
D	**Unlikely**	The threat could occur infrequently	10 to 50 years	20% to 64.9%
E	**Rare**	The threat may occur in exceptional circumstances	>50	<20%

Percentage values for the 'probability of occurrence in 10 years' column above are indicative only and have been rounded to avoid giving a greater impression of accuracy than is justified by the qualitative analysis.

6.5.2 Consequence Scale

The scale of consequences for the categories of health and safety, image/reputation and environment are described below.

CONSEQUENCE SCALE								
Level	**Descriptor**	**Consequence Types**						
		Health and Safety	**Image / Reputation**	**Environment**	**Annual Cost**	**Obligations**	**Network Condition**	**Serviceability**
V	Severe	Fatality	Sustained national media cover	Permanent widespread ecological damage	>$100,000	Government Commission of Inquiry	Net reduction to asset value > $1,000,000	Prolonged disruption to large area or significant industry/facility
IV	Major	Serious injury	Regional media cover or short term national cover	Heavy ecological damage	$50,000 to $100,000	RMA prosecution, Audit tags	Net reduction to asset value $500,000 to $1,000,000	Temporary disruption to large area or prolonged disruption to smaller area
III	Moderate	Moderate injury	Local media cover	Significant, but recoverable, ecological damage	$10,000 to $50,000	Abatement Notice, Minor claims.	Net reduction to asset value $100,000 to $500,000	Significant localised flooding and/or disruption of normal business in localised area; moderate nuisance
II	Minor	Minor Injury	Brief local media cover	Limited, medium term, ecological damage	$1,000 to $10,000	Excessive or widespread rate payer complaints	Net reduction to asset value $50,000 to $100,000	Moderate localised flooding; minor nuisance
I	Negligible	Potential Injury	Local complaints	Short term damage	< $1,000	Local complaints	Net reduction to asset value < $50,000	Minor localised flooding; negligible nuisance

The category of "Annual Cost" provides for the whole cost of negative events to be taken into account in the risk assessment, without considering any potential subsidies from Central Government for reducing the risk or dealing with the potential consequences.

The category for "Obligations" relates to issues of sound governance and includes consideration of Council's ability to achieve identified community outcomes as they are stated in the LTP, in relation to the LGA 2002 and the criteria for the four well-beings contained therein.

The "Network Condition" category allows for consideration of risk in the context of maintaining the value of the network and the "Serviceability" category reflects the asset management context relative to the assessment of risk.

6.6 Risk Matrix

The result of consideration of the likelihood and consequences of a risk is entered on the Risk Rating Matrix to determine its Risk Rating Category.

Likelihood		Consequence				
		I	II	III	IV	V
		Negligible	Minor	Moderate	Major	Severe
A	Probable	Medium	High	High	Very High	Very High
B	Common	Medium	Medium	High	High	Very High
C	Possible	Low	Medium	Medium	High	High
D	Unlikely	Low	Low	Medium	Medium	High
E	Rare	Low	Low	Low	Medium	Medium

6.7 Risk Rating Categories

Four risk ratings describe the outcome of the risk assessment for each event in the risk.

Rating	Description	Recommended Level Of Action
Very High	Intolerable. Urgent action required	Risks in the very high category are considered intolerable and immediate action is required to reduce the likelihood or consequence to reduce the risk to a lower category. Risk treatment options may be required that are not justifiable on strictly economic grounds. Safety, legal and social responsibility requirements may override financial considerations.
High	Take actions to reduce risk to as low as reasonable possible. Mitigation plan required for each risk.	High risks are undesirable, but may be accepted if they cannot be reduced or avoided. All reasonable measures should be undertaken to reduce these risks to as low a level as possible, regardless of cost, inconvenience or other factors. As a minimum there should be a specific risk treatment plan for each entry in the "high risk" category.
Medium	Tolerable. Consider mitigation measures on case	Items in the medium risk category should be evaluated on a case by case basis. Action to reduce these risks will be undertaken only when the potential benefits of the risk

Rating	Description	Recommended Level Of Action
	by case basis. Measures to reduce risk if justified.	treatment outweigh the expected costs. Normal project evaluation criteria can be used to asses potential risk treatment measures for medium risks.
Low	Business as usual.	No action required for low risks, other that monitoring to ensure they do not progress into higher risks.

6.8 Risk Register

Council has set up a Risk Assessment for each Stormwater Network similar to the assessment used in the Lifelines Risk analysis. Each network or system has been analysed as an individual system. Under each network the system has been broken down to the general component level Because of the nature and size of each network has only been broken down to the types of component level. E.g. Manholes, mains sub mains etc.

Using this break down the impact of the tangible (physical components) and the Non-tangible (non-physical attributes) have been assessed against expected hazards thus creating a risk profile for each stormwater system. *A completed copy of these tables can be send at the end of this section?* Below is a summary of all the network risks and we can see that the risks range from low to high.

Summary of Risk across the Networks

	COMPONENT/ SEGMENT	Waipukurau	Waipawa	Otane	Takapau	Kairakau	Blackhead	Porangahau	Te Paerahi
Tangible	Private Retic	Low	Low	Low	Low	Low	Low	Low	Low
	Connection/laterals	Low	Low	Low	Low	Low	Low	Low	Low
	Manholes	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Mains	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Sub Mains	Low	Low	Low	Low	Low	Low	Low	Low
	Rail crossings	Medium	Medium	Medium	Medium	N/A	N/A	N/A	N/A
	Open Drainage network	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Outfalls	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Location/Access	Low	Low	Low	Low	Medium	Medium	Medium	Medium
	Item								
Non - Tangible	Known Age/Condition of system	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Lack of Information	Low	Low	Low	Low	Low	Low	Low	Low
	Unknown Assets	Low	Low	Low	Low	Low	Low	Low	Low
	Capacity	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Personnel Skill - Council	High	High	High	High	High	High	High	High
	Personnel Skill - Contractor	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Lack of Supervision - construction work	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Legislation changes	Low	Low	Low	Low	Low	Low	Low	Low
	Lack of Forward Planning	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Discharge Consents	Low	Low	Low	Low	Low	Low	Low	Low
	Poor Maintenance	Low	Low	Low	Low	Low	Low	Low	Low
	Stall/Resouces	Low	Low	Low	Low	Low	Low	Low	Low

6.9 Risk Management Relationships to AMP Documents

Risk applies across all processes in the management of the asset and the activity. The relationship between risk management activities and the sections within the Stormwater Activity Management Plan document are indicated below.

Risk Management Activity	Relevant AMP Document Sections
Asset Management Risks	**Levels of Service**
	Lifecycle Management
	Asset Management Practice
Operational Risks	**Lifecycle Management**
	Asset Management Practice
Customer Services Risk	**Levels of Service**
	Lifecycle Management
Business Risks	**Levels of Service**
	Financial Summary
	Asset Management Practice

The risk register holds the details of the risk event and documents which stormwater activity or activities it impacts on.

6.10 What are the risks associated with this Activity?

The following are some of the risks associated with this activity and its management:

- Incomplete management and supervision of this Activity due to limited staff resources.
- Identified improvement works that could reduce or eliminate some flooding problems cannot be funded in the term of this LTP and therefore will not be built.
- The requirements of the Regional Council in future resource consents for stormwater treatment standards may result in unpalatable or undeliverable requirements of this Activity.
- The limited application of risk assessment could lead to avoidable risks occurring and but this could require more funding than the avoidance cost.
- Detailed planning of District stormwater requirements for the future and the related capital contribution regime has not been done. This could mean that future requirements are not met in the time they are needed.
- The changing legislative environment.

6.11 Risk Treatment

A risk treatment plan should be focussed on risks rated high or very high in the first instance. Corrective Action plans should be written to document how the risk treatment options will be implemented.

Risk treatment options generally fall into the following categories:

- Avoid the risk by deciding not to start/continue with activity that gives rise to the risk.
- Reduce the likelihood of the negative outcomes.
- Reduce the consequences.
- Sharing or transferring the risk with other organisations.
- Retaining the risk, after all reasonable treatment measures have been considered.

Some risks may be rated high initially due to uncertainty in the likelihood or effects and the risk treatment plan may consist of further investigations or assessments to better define the level of risk. Other risk treatment options may consist of financial controls (e.g., insurance), operational improvements, contingency planning or physical works to reduce risks.

Risk treatment activities should be carried out by the party who is in the best position to deal with that issue; which may be Council staff, the Contractor, or others.

After identifying the risks and entering them in the risk register and assessment to rate them, Council will need to determine which parties are in the best position to carry out risk treatment planning for each of the high and very high risks, so that the appropriate actions may be taken.

Any significant additions or changes to the risk register will be noted as they occur through regular reporting procedures. It is recommended that the risk register have a comprehensive update every 12 months and be included in the Facilities Management Contract documentation. Sample of Council Register is shown below. Completed forms for the stormwater ponds and pumping stations can be view on Council computers system under N:\Admin\Health and Safety\Hazard Registers\

HAZARDS Site Inspection form

Site:_____ Inspection Date: _____ Inspected by: _____

	Hazards Identified	Repairs/ Maint. Yes/No	Location	Action required
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

	Other Observations/Notes			

6.12 Lifelines

The "Engineering Life Lines Project" involves all utility service providers for Hawke's Bay, as well as many other agencies. The project identifies some of the risks to maintaining services and addresses what needs to be done to reduce the risk. Key findings for the Hawke's Bay region are:

- Hawke's Bay is one of the most earthquake prone regions in New Zealand, with 22 known active faults and folds that are capable of producing very strong earthquakes:
    - Large subduction thrust earthquakes on the interface between the Australian and Pacific tectonic plates occur regularly. They are capable of producing high levels of shaking over a large part of the region and could cause ground level drops of up to 600 millimetres.

- The tectonic plate margin close to the East Coast of the North Island is capable of generating earthquakes and submarine landslides that could cause devastating tsunami, despite there being few recorded tsunami in recent times.

- Flooding has caused significant community disruption and economic loss in the past. Most urban areas in Hawke's Bay are protected by flood prevention schemes. The flood prevention schemes are designed to cope with a 100-year return period. Stopbank breeches are possible during bigger floods.
- Ash from volcanic eruptions in the central North Island could affect all parts of Hawke's Bay, depending on the wind direction at the time. However Hawke's Bay's engineering lifelines will be much less affected than lifelines near the source of the eruption.

The project's risk assessments have resulted in the following major findings:

- The seismic hazard poses the greatest potential risk to transportation networks, especially structures such as bridges and wharves. Landslips and flooding are potentially the next most serious hazards.
- Civil services are generally underground. At junctions there is a risk they will fracture, especially where they are made of brittle materials and in areas with a high liquefaction potential.
- The installation of automatic seismic shut off valves to reservoirs should be considered to help protect community water supplies during a major earthquake.
- The supply of electric power to Central Hawke's Bay is limited by the capacity of the single line from Onga Onga Substation. If this supply were to be lost, other sources would not be capable of maintaining full economic production in the region.
- Hawke's Bay needs a well-designed and constructed regional civil defence emergency operating centre. This facility should be built to the highest structural design category for buildings where loss of function would have a severe impact on society. It would need backup supplies of power and water and wastewater discharge capacity to cover an extended period of a civil defence emergency.

Additional key findings of risk assessments carried out on the transportation, civil services, energy and communications networks as part of the project, are summarised below. It is important to consider all risks as although many of these assets are not controlled under the CHBDC Stormwater Activity, their performance in an event can impact significantly, for example loss of power to pumps or road access to sites.

- Civil Services
  - Pipes that are attached to bridges or other structures are at risk from seismic activity.
  - Some pumping stations and control equipment are at risk from ground shaking, flooding or tsunami.
  - Prolonged power failure will have a serious effect on civil services in the region.
- Energy

- Seismic activity poses the greatest potential risk to continued electricity supply.
- Some sites are vulnerable to flooding that could cause electrical equipment to fail.
- Transmission lines can be at risk from earthquakes, landslip, snow, severe wind and ashfall.
- Gas networks are most vulnerable to seismic damage where they are supported above ground by bridges and other structures.
- Remaining cast iron pipes in local gas distribution lines are at risk from fracture during a major earthquake. This could lead to an outbreak of fire.

- Communications
  - Any major emergency is likely to cause overloading of telephone networks.
  - People rely on local radio and television stations for information during an emergency and loss of these services could have serious effects.
  - Earthquakes pose the biggest threat to broadcasting studios, equipment and transmitter sites. Access to transmitter sites may be difficult after an earthquake or major storm.
  - Back-up power supplies to run Emergency Operation Centres during an emergency would be dependent on the availability of diesel deliveries.
- Transportation
  - Bridges and roads are at risk from the effects of earthquakes, including ground-shaking, liquefaction and fault displacement. These could result in structural damage, the raising or lowering of bridges or roads and chasms opening in roads.
  - Many roads and bridges in the region cross low-lying areas, which are difficult to protect from the effects of major flooding or tsunami.
  - The availability and maintenance of alternative routes is important to ensure access after a natural disaster.
  - In the south of the Hawke's Bay region seismic activity could damage rail lines. In the north the rail network is more at risk from flooding and landslip.
  - At the low-lying Hawke's Bay Airport, earthquakes could cause runways to move or crack and a subduction thrust event may lead to an influx of underground seawater. The airport is also at risk from flooding and tsunami inundation.
  - Seismic activity could cause major disruption to cargo handling at the Port of Napier. Tsunamis also present a major risk to port operations.

6.13 Identified Risk

6.13.1 Health and Safety

Council has a Health and Safety Policy (Document 9.1) set out in the Procedures Manual. This outlines the statuary framework that Council is required to follow, and refers to the Health and Safety Business Plan. This plan provides a methodology for Council's to meet its strategic objective for Health and Safety, and both legislative and ACC requirements for Health and Safety management processes.

The Facilities Management contractor has a Health and Safety Programme in operation. Reports are received from the contractor about any incidents relating to health and safety. Council's risk is that no inspection of work sites is undertaken by Council staff to ensure that the requirements of Council's and the contractor's Health and Safety Programmes are being carried out on site.

6.13.2 Asset Risk Plan / Business Continuity / Lifelines

No Risk Assessment Plan has been prepared for this activity. However some work has commenced with the development of an initial risk register. The Hawke's Bay Region has carried out a Lifelines Study. Recommendations from that study will be included in the Risk Assessment.

A Business Continuity Plan covering actions to be taken to continue provision of essential stormwater services during an adverse event, or prompt reinstatement of services immediately following such an event, needs to be documented and approved as part of Council's emergency planning.

Stormwater assets are insured through the Council Insurers brokers, currently AON Insures for underground assets and through and Jardine Lloyd Thompson Limited Insurers for above ground assets.

6.13.3 Construction and Maintenance Work

Council Owned and Operated Works:

All contracts run by Council for work on Council assets are set up and managed using NZS3910. Sections in this document deal with the management of Health and Safety risks as well as the general business risk encountered in day to day contact management.

The Facilities Management Contract includes a Quality Plan for the procedures the Contractor uses in that maintenance of the Stormwater network. The risk is that the procedures are not followed, and there is uncertainty because Council does not have enough staff resources to fully monitor the implementation of the contract requirements by the contractor.

New construction is carried out by a number of contractors and may be supervised by consultants or Council staff. There is a risk that the work may be monitored by observation rather than supervision due to lack of staff resources to fully supervise the work.

The Facilities Management Contract ensures that repairs and connections can be carried out speedily. However, some connections relating to subdivisions and developments can be completed by other contractors under the overview of the Building Inspector. There is a risk that due to resource limitations and work pressures not all connections will receive adequate overview.

Subdivisional Works:

Council has adopted, with their agreement, the Hastings District Council's Engineering Code of Practice. Council also uses NZS4404: Code of Practice for Urban Land Subdivision. The specific requirements for each application are assessed on a case by case basis and the requirements of these standard codes modified by the approving officer as appropriate. The requirement to comply with these standards is included in all Subdivision Consents which involves stormwater. The risk is that Council does not have enough staff resources to fully assess the requirements for and monitor the implementation of the standards by constructors.

As built plans are received from all constructors of stormwater work, and are entered into Council's graphical stormwater asset plan. However resource limitations could result in delays in this process.

6.13.4 Financial Issues

A concerted effort has been made to identify properties connected to the stormwater networks. While this work is ongoing there is a risk that:

- There are still unidentified connected properties that are not being charged.
- That undeveloped properties are not paying the relevant ½ charge for rates

Expenditure is controlled by staff by:

a. ordering work only if finance is available and approved.

b. reviewing expenditure monthly.

c. reporting exceptions.

Council might not collect development contributions that it could collect because identified improvements are not listed in the LTP.

The financial provisions shown in this Plan should be sufficient to provide the operational and maintenance service required from this Activity. There is a risk that all programmed works, particularly the supervision of works, cannot be carried out fully due to limitations on the number and/or the capability of Council staff employed or on funding available to employ consultants to do that work on Council's behalf.

6.13.5 Climate Change Response Act 2002

The predictions for changing weather patterns will impact significantly on this activity. Increased frequency of high intensity storms will cause a change in the design requirements for stormwater systems. Council has revised its design policy to require design for 1 in 50 year storm events (based on historical recording of storm events) instead of for 1 in 20 year storm events. This will need to be reviewed as new recordings change the size of storm events.

6.13.6 Natural hazards and Climate Change

Our district is subject to a number of natural hazards such as earthquakes, coastal inundation and erosion, tsunami and landslides and these can result in disruption to services and damage to our infrastructure. This can lead to unforeseen and often high costs to repair infrastructure and restore services.

These hazards impact on our networks in different ways. For example, where our infrastructure networks are near the coast they may be subject to coastal erosion, coastal inundation, tsunami and landslips. Our urban infrastructure networks are more likely to be impacted by earthquakes and flooding.

6.13.7 Changing Demographics

There are no issues identified as significantly affecting this activity from the foreseeable predictions for changes in population demographics. It is expected that over the next 20 years

there will be an increase in the number of elderly persons within District communities and an increase in the overall percentage of the population that will be over 65 years.

The predicted reduction in household occupancy rates will not affect stormwater volumes per household, but an increase in number of dwellings and in the percentage of area within properties that is paved rather than in lawns and gardens will increase both run-off volumes and run-off rates for stormwater.

6.13.8 Planning

"Area of Benefit" plans have been prepared that identify areas that can be connected to existing stormwater systems. Political directives to amend these plans may result in considerable extra work, both by staff and in the requirement for capital works, to implement those directives.

Council's graphical stormwater asset plan in AssetFinda is being kept up to date with the addition of all new information that comes to hand about the asset. While the information is being continually upgraded, further information gathering improves the depth and accuracy of information in the plan.

Some stormwater discharge points/facilities/structures will require new or renewed resource consents, and Council will review its programme of works when decisions regarding these are determined.

The appropriateness and sufficiency of the proposed methods of dealing with stormwater are addressed when applications for subdivision, development, and for building consent are processed. There is a risk that due to resource limitations and work pressures some applications may not be reviewed in as much depth as desirable and approval of inappropriate connections or methods of stormwater disposal may occur.

Renewals and rehabilitations are programmed by Council staff through their knowledge of the assets, analysis of the database, and application of their previous experience. However the extent of the works are limited to the amount of depreciation monies raised each year. This means that some work that should be carried out may not be carried out.

No capital works are included in the LTP even though capital works have been identified by staff. This means that places where identified improvement works that would reduce or eliminate flooding problems cannot be funded and therefore will not be built.

6.13.9 General Issues

Council staff practitioners, from their experience, training and courses attended, believe that all legislative requirements that impact on this activity are being complied with.

Every practical effort is being made to ensure all resource consent conditions are being complied with, within the resources presently available.

Staff purchasing authorities have been delegated to the appropriate staff. Duties relating to this Activity have been included in particular staff member's job descriptions as appropriate. No other delegations relating to this activity have been made.

Council's policies are held in the Policy Manual. The risk is that the Policy Manual is not kept up to date.

Warrants have been created for all staff required to have a warrant.

Council has sufficient and appropriate procedures in place to ensure that it will be able to properly report the progress that is being made towards the achievement of Community Outcomes and against the agreed level of service relating to this activity.

6.14 The Most Critical Risks

The most critical risks are:

- Incomplete management and supervision of this Activity due to limited staff resources.
- Identified improvement works that would reduce or eliminate flooding problems cannot be funded and therefore will not be built.
- The requirements of the Regional Council in future resource consents for stormwater treatment standards may result in unpalatable or undeliverable requirements of this Activity.
- The limited application of risk assessment could lead to avoidable risks occurring and requiring more funding than the avoidance cost.
- Detailed planning of District stormwater requirements for the future and the related capital contribution regime has not been done. This could mean that future requirements are not meet in the time they are needed.
- The changing legislative environment.

6.15 Key Assumptions and Uncertainties affecting Risk

Significant assumptions and uncertainties in the preparation of this Stormwater Activity Management Plan are:

- There will be an ongoing requirement for the provision of this activity.
- The demand for this activity will increase, and not reduce. The amount will vary depending on which scenario occurs.
- The knowledge of the practitioners directly providing this activity, both on a day-to-day basis and historically, has been relied upon. These practitioners include Council's Utility, Technical Services, and Corporate Services Departments staff, and staff of the Facilities Management Contractor Higgins Contractors HB.
- The operational and maintenance requirements for this activity will remain similar for the next ten years.
- Funding will be available to provide the operational and maintenance requirements of this activity.
- Funding for renewal works will be limited by the amount of depreciation raised through rates each year, and any surplus depreciation funding raised will be retained to be used in the future for renewal works.
- Funding for capital improvements will be limited by political decisions as to the level of funding available.
- The dollar values shown in this Plan are June 2018 dollars, adjusted where appropriate by "BERL" estimated rates of inflation.
- Some capital and renewal costs are rough order of cost estimates that will need to be further researched and refined.
- Incomplete management and supervision of this Activity due to limited staff resources

6.16 Significant Negative Effects

There are many positive effects from provision of stormwater services within the District not the least of which is enhancement of health and well-being and economy of Central Hawke's Bay communities. However, awareness must also be given to any significant real or potential negative effects from the provision of stormwater services and these are outlined as follows.

The significant effects of **not providing** stormwater services are:

- Moderate risk of health problems particularly and variable risk of harm to individuals during storm events plus high risk of property damage.
- Reduced commercial and industrial activity could result from lack of access to reticulated stormwater systems and this would impact on the social and economic wellbeing of the community.
- The risk of degrading the environment caused by the accumulative effect of on-site disposal system within a confined township/residential area.

The significant negative effects of **providing** stormwater services are:

- Potential adverse effects on environmental well-being particularly erosion damage at discharge points and contamination of waterways. This is monitored and mitigated by existing and probable future resource consent conditions and compliance programmes.
- Cost impact of operation, maintenance, renewal and capital costs of reticulated systems and potential future stormwater treatment units/structures/facilities within urban areas with small populations. This will impact on social and economic well-being of these communities and of the wider District.

5.1 Risk Register Spreadsheets

Stormwater Network

WAIPUKURAU

Tangible

COMPONENT/ SEGMENT	Hazards: Natural: Seismic	Flood	Land-slide	Tsunami	Volc Ash	Human: Damage/Infill	Cross contamination	Impact: Customers	Operational	Business	Environmental	Legal	H & S	Likelihood	Consequence	Criticality	Comments
weighting	20%	100%	20%	0%	10%	50%	50%	100%	50%	80%	80%	80%	80%				
Private Retic	1	3	1	0	1	2	1	1	1	1	1	1	1	2	1	Low	Includes private open drains
Connection/laterals	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	Low	
Manholes	1	3	1	0	1	2	2	2	2	2	2	2	2	3	2	Medium	
Mains	1	2	1	0	1	1	1	3	3	3	3	3	3	2	3	Medium	
Sub Mains	1	2	1	0	1	1	1	2	2	2	2	2	2	2	2	Low	
Rail crossings	3	2	1	0	1	1	1	3	3	3	3	2	3	2	3	Medium	
Open Drainage network	1	3	2	0	1	3	2	3	3	3	3	2	3	3	3	Medium	
Outfalls	1	4	1	0	1	3	1	3	3	3	3	2	4	3	3	Medium	Coulc be a big H&S issues workin g the river zone during flood
Location/Access	1	3	2	0	1	1	1	2	3	2	1	1	3	2	2	Low	

Non - Tangible

Item	Hazards: Failure	LOS	Affordability					Impact: Customers	Operational	Business	Environmental	Legal	H & S	Likelihood	Consequence	Criticality	Comments
weighting	10%	50%	100%					50%	40%	50%	20%	40%	50%				
Known Age/Condition of system	3	3	3					2	3	3	2	1	2	3	3	Medium	
Lack of Information	2	2	2					2	2	2	1	1	1	2	2	Low	
Unknown Assets	1	1	2					1	3	2	1	1	1	2	2	Low	
Capacity	2	3	3					3	2	4	3	1	2	3	3	Medium	
Personnel Skill - Council	4	4	4					3	3	3	3	2	3	4	3	High	
Personnel Skill - Contractor	2	2	2					2	3	3	2	1	2	2	3	Medium	
Legislation changes	0	1	1					1	1	3	2	1	1	1	2	Low	
Lack of Forward Planning	3	3	3					2	2	4	1	1	1	3	2	Medium	
Discharge Consents	2	1	2					1	1	3	1	1	1	2	2	Low	
Poor Maintenance	3	3	1					3	2	3	1	1	1	2	2	Low	
Stall/Resouces	2	2	2					1	2	3	1	1	1	2	2	Low	Impact of the number of staff to do the work

Key

Likelihood			Consequence: Negligible 1	Minor 2	Moderate 3	Major 4	Serve 5
Rare	E	1	Low	Low	Low	Medium	Medium
Unlikely	D	2	Low	Low	Medium	Medium	High
Possible	C	3	Low	Medium	Medium	High	High
Common	B	4	Medium	Medium	High	High	Very High
Probable	A	5	Medium	High	High	Very High	Very High

Weighting	
Negligible	up to 20%
Minor	20 to 40%
Moderate	20 to 60%
Major	60 to 80%
Serve	80 to 100%

General Comments

Stormwater Network

WAIPAWA

Tangible

COMPONENT/ SEGMENT	Hazards							Impact						Likelihood	Consequence	Criticality	Comments
	Natural					Human											
	Seismic	Flood	Land-slide	Tsunami	Volc Ash	Damage/Infill	Cross contamination	Customers	Operational	Business	Environmental	Legal	H & S				
weighting	20%	100%	20%	0%	10%	50%	50%	100%	50%	80%	80%	80%	80%				
Private Retic	1	3	1	0	1	2	1	1	1	1	1	1	1	2	1	Low	Includes private open drains
Connection/laterals	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	Low	
Manholes	1	3	1	0	1	2	2	2	2	2	2	2	2	3	2	Medium	
Mains	1	2	1	0	1	1	1	3	3	3	3	3	3	2	3	Medium	
Sub Mains	1	2	1	0	1	1	1	2	2	2	2	2	2	2	2	Low	
Rail crossings	3	2	1	0	1	1	1	3	3	3	3	2	3	2	3	Medium	
Open Drainage network	1	3	2	0	1	3	2	3	3	3	3	2	3	3	3	Medium	
Outfalls	1	4	1	0	1	3	1	3	3	3	3	2	4	3	3	Medium	Coulc be a big H&S issues workin g the river zone during flood
Location/Access	1	3	2	0	1	1	1	2	3	2	1	1	3	2	2	Low	

Non - Tangible

Item	Hazards							Impact						Likelihood	Consequence	Criticality	Comments
	Failure	LOS	Affordability					Customers	Operational	Business	Environmental	Legal	H & S				
weighting	10%	50%	100%					50%	40%	50%	20%	40%	50%				
Known Age/Condition of system	3	3	3					2	3	3	2	1	2	3	3	Medium	
Lack of Information	2	2	2					2	2	2	1	1	1	2	2	Low	
Unknown Assets	1	1	2					1	3	2	1	1	1	2	2	Low	
Capacity	2	3	3					3	2	4	3	1	2	3	3	Medium	
Personnel Skill - Council	4	4	4					3	3	3	3	2	3	4	3	High	
Personnel Skill - Contractor	2	2	2					2	3	3	2	1	2	2	3	Medium	
Legislation changes	0	1	1					1	1	3	2	1	1	1	2	Low	
Lack of Forward Planning	3	3	3					2	2	4	1	1	1	3	2	Medium	
Discharge Consents	2	1	2					1	1	3	1	1	1	2	2	Low	
Poor Maintenance	3	3	1					3	2	3	1	1	1	2	2	Low	
Stall/Resouces	2	2	2					1	2	3	1	1	1	2	2	Low	Impact of the number of staff to do the work

Key

			Consequence				
			Negligible	Minor	Moderate	Major	Serve
Likelihood			1	2	3	4	5
Rare	E	1	Low	Low	Low	Medium	Medium
Unlikely	D	2	Low	Low	Medium	Medium	High
Possible	C	3	Low	Medium	Medium	High	High
Common	B	4	Medium	Medium	High	High	Very High
Probable	A	5	Medium	High	High	Very High	Very High

Weighting	
Negligible	up to 20%
Minor	20 to 40%
Moderate	20 to 60%
Major	60 to 80%
Serve	80 to 100%

General Comments

Stormwater Network

OTANE

Tangible

COMPONENT/ SEGMENT	Hazards							Impact						Likelihood	Consequence	Criticality	Comments
	Natural					Human											
	Seismic	Flood	Land-slide	Tsunami	Volc Ash	Damage/Infill	Cross contamination	Customers	Operational	Business	Environmental	Legal	H & S				
weighting	20%	100%	20%	0%	10%	50%	50%	100%	50%	80%	80%	80%	80%				
Private Retic	1	3	1	0	1	2	1	1	1	1	1	1	1	2	1	Low	Includes private open drains
Connection/laterals	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	Low	
Manholes	1	3	1	0	1	2	2	2	2	2	2	2	2	3	2	Medium	
Mains	1	2	1	0	1	1	1	3	3	3	3	3	3	2	3	Medium	
Sub Mains	1	2	1	0	1	1	1	2	2	2	2	2	2	2	2	Low	
Rail crossings	3	2	1	0	1	1	1	3	3	3	3	2	3	2	3	Medium	
Open Drainage network	1	3	2	0	1	3	2	3	3	3	3	2	3	3	3	Medium	
Outfalls	1	4	1	0	1	3	1	3	3	3	3	2	4	3	3	Medium	Coulc be a big H&S issues workin g the river zone during flood
Location/Access	1	3	2	0	1	1	1	2	3	2	1	1	3	2	2	Low	

Non - Tangible

Item	Hazards							Impact						Likelihood	Consequence	Criticality	Comments
	Failure	LOS	Affordability					Customers	Operational	Business	Environmental	Legal	H & S				
weighting	10%	50%	100%					50%	40%	50%	20%	40%	50%				
Known Age/Condition of system	3	3	3					2	3	3	2	1	2	3	3	Medium	
Lack of Information	2	2	2					2	2	2	1	1	1	2	2	Low	
Unknown Assets	1	1	2					1	3	2	1	1	1	2	2	Low	
Capacity	2	3	3					3	2	4	3	1	2	3	3	Medium	
Personnel Skill - Council	4	4	4					3	3	3	3	2	3	4	3	High	
Personnel Skill - Contractor	2	2	2					2	3	3	2	1	2	2	3	Medium	
Legislation changes	0	1	1					1	1	3	2	1	1	1	2	Low	
Lack of Forward Planning	3	3	3					2	2	4	1	1	1	3	2	Medium	
Discharge Consents	2	1	2					1	1	3	1	1	1	2	2	Low	
Poor Maintenance	3	3	1					3	2	3	1	1	1	2	2	Low	
Stall/Resouces	2	2	2					1	2	3	1	1	1	2	2	Low	Impact of the number of staff to do the work

Key

			Consequence				
			Negligible	Minor	Moderate	Major	Serve
Likelihood			1	2	3	4	5
Rare	E	1	Low	Low	Low	Medium	Medium
Unlikely	D	2	Low	Low	Medium	Medium	High
Possible	C	3	Low	Medium	Medium	High	High
Common	B	4	Medium	Medium	High	High	Very High
Probable	A	5	Medium	High	High	Very High	Very High

Weighting	
Negligible	up to 20%
Minor	20 to 40%
Moderate	20 to 60%
Major	60 to 80%
Serve	80 to 100%

General Comments

Stormwater Network

TAKAPAU

Tangible

COMPONENT/ SEGMENT	Hazards							Impact						Likelihood	Consequence	Criticality	Comments
	Natural					Human											
	Seismic	Flood	Land-slide	Tsunami	Volc Ash	Damage/Infill	Cross contamination	Customers	Operational	Business	Environmental	Legal	H & S				
weighting	20%	100%	20%	0%	10%	50%	50%	100%	50%	80%	80%	80%	80%				
Private Retic	1	3	1	0	1	2	1	1	1	1	1	1	1	2	1	Low	Includes private open drains
Connection/laterals	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	Low	
Manholes	1	3	1	0	1	2	2	2	2	2	2	2	2	3	2	Medium	
Mains	1	2	1	0	1	1	1	3	3	3	3	3	3	2	3	Medium	
Sub Mains	1	2	1	0	1	1	1	2	2	2	2	2	2	2	2	Low	
Rail crossings	3	2	1	0	1	1	1	3	3	3	3	2	3	2	3	Medium	
Open Drainage network	1	3	2	0	1	3	2	3	3	3	3	2	3	3	3	Medium	
Outfalls	1	4	1	0	1	3	1	3	3	3	3	2	4	3	3	Medium	Coulc be a big H&S issues workin g the river zone during flood
Location/Access	1	3	2	0	1	1	1	2	3	2	1	1	3	2	2	Low	

Non - Tangible

Item	Hazards							Impact						Likelihood	Consequence	Criticality	Comments
	Failure	LOS	Affordability					Customers	Operational	Business	Environmental	Legal	H & S				
weighting	10%	50%	100%					50%	40%	50%	20%	40%	50%				
Known Age/Condition of system	3	3	3					2	3	3	2	1	2	3	3	Medium	
Lack of Information	2	2	2					2	2	2	1	1	1	2	2	Low	
Unknown Assets	1	1	2					1	3	2	1	1	1	2	2	Low	
Capacity	2	3	3					3	2	4	3	1	2	3	3	Medium	
Personnel Skill - Council	4	4	4					3	3	3	3	2	3	4	3	High	
Personnel Skill - Contractor	2	2	2					2	3	3	2	1	2	2	3	Medium	
Legislation changes	0	1	1					1	1	3	2	1	1	1	2	Low	
Lack of Forward Planning	3	3	3					2	2	4	1	1	1	3	2	Medium	
Discharge Consents	2	1	2					1	1	3	1	1	1	2	2	Low	
Poor Maintenance	3	3	1					3	2	3	1	1	1	2	2	Low	
Stall/Resouces	2	2	2					1	2	3	1	1	1	2	2	Low	Impact of the number of staff to do the work

Key

			Consequence				
			Negligible	Minor	Moderate	Major	Serve
Likelihood			1	2	3	4	5
Rare	E	1	Low	Low	Low	Medium	Medium
Unlikely	D	2	Low	Low	Medium	Medium	High
Possible	C	3	Low	Medium	Medium	High	High
Common	B	4	Medium	Medium	High	High	Very High
Probable	A	5	Medium	High	High	Very High	Very High

Weighting	
Negligible	up to 20%
Minor	20 to 40%
Moderate	20 to 60%
Major	60 to 80%
Serve	80 to 100%

General Comments

Stormwater Network

KAIRAKAU

Tangible

COMPONENT/ SEGMENT	Hazards							Impact						Likelihood	Consequence	Criticality	Comments
	Natural					Human											
	Seismic	Flood	Land-slide	Tsunami	Volc Ash	Damage/Infill	Cross contamination	Customers	Operational	Business	Environmental	Legal	H & S				
weighting	20%	100%	20%	50%	10%	50%	50%	100%	50%	80%	80%	80%	80%				
Private Retic	1	3	1	2	1	2	1	1	1	1	1	1	1	2	1	Low	Includes private open drains
Connection/laterals	1	1	1	2	1	1	1	1	1	1	1	1	1	2	1	Low	
Manholes	1	3	1	3	1	2	2	2	2	2	2	2	2	3	2	Medium	
Mains	1	2	1	3	1	1	1	3	3	3	3	3	3	2	3	Medium	
Sub Mains	1	2	1	0	1	1	1	2	2	2	2	2	2	2	2	Low	
Open Drainage network	1	3	2	3	1	3	2	3	3	3	3	2	3	3	3	Medium	
Outfalls	1	4	1	3	1	3	1	3	3	3	3	2	4	3	3	Medium	Coulc be a big H&S issues workin g the river zone during flood
Location/Access	1	3	2	3	1	1	1	2	3	2	1	1	3	3	2	Medium	

Non - Tangible

Item	Hazards							Impact						Likelihood	Consequence	Criticality	Comments
	Failure	LOS	Affordability					Customers	Operational	Business	Environmental	Legal	H & S				
weighting	10%	50%	100%					50%	40%	50%	20%	40%	50%				
Known Age/Condition of system	3	3	3					2	3	3	2	1	2	3	3	Medium	
Lack of Information	2	2	2					2	2	2	1	1	1	2	2	Low	
Unknown Assets	1	1	2					1	3	2	1	1	1	2	2	Low	
Capacity	2	3	3					3	2	4	3	1	2	3	3	Medium	
Personnel Skill - Council	4	4	4					3	3	3	3	2	3	4	3	High	
Personnel Skill - Contractor	2	2	2					2	3	3	2	1	2	2	3	Medium	
Legislation changes	0	1	1					1	1	3	2	1	1	1	2	Low	
Lack of Forward Planning	3	3	3					2	2	4	1	1	1	3	2	Medium	
Discharge Consents	2	1	2					1	1	3	1	1	1	2	2	Low	
Poor Maintenance	3	3	1					3	2	3	1	1	1	2	2	Low	
Stall/Resouces	2	2	2					1	2	3	1	1	1	2	2	Low	Impact of the number of staff to do the work

Key

			Consequence				
			Negligible	Minor	Moderate	Major	Serve
Likelihood			1	2	3	4	5
Rare	E	1	Low	Low	Low	Medium	Medium
Unlikely	D	2	Low	Low	Medium	Medium	High
Possible	C	3	Low	Medium	Medium	High	High
Common	B	4	Medium	Medium	High	High	Very High
Probable	A	5	Medium	High	High	Very High	Very High

Weighting	
Negligible	up to 20%
Minor	20 to 40%
Moderate	20 to 60%
Major	60 to 80%
Serve	80 to 100%

General Comments

Stormwater Network

BLACKHEAD

Tangible

COMPONENT/ SEGMENT	Hazards							Impact						Likelihood	Consequence	Criticality	Comments
	Natural					Human											
	Seismic	Flood	Land-slide	Tsunami	Volc Ash	Damage/Infill	Cross contamination	Customers	Operational	Business	Environmental	Legal	H & S				
weighting	20%	100%	20%	50%	10%	50%	50%	100%	50%	80%	80%	80%	80%				
Private Retic	1	3	1	2	1	2	1	1	1	1	1	1	1	2	1	Low	Includes private open drains
Connection/laterals	1	1	1	2	1	1	1	1	1	1	1	1	1	2	1	Low	
Manholes	1	3	1	3	1	2	2	2	2	2	2	2	2	3	2	Medium	
Mains	1	2	1	3	1	1	1	3	3	3	3	3	3	2	3	Medium	
Sub Mains	1	2	1	0	1	1	1	2	2	2	2	2	2	2	2	Low	
Open Drainage network	1	3	2	3	1	3	2	3	3	3	3	2	3	3	3	Medium	
Outfalls	1	4	1	3	1	3	1	3	3	3	3	2	4	3	3	Medium	Coulc be a big H&S issues workin g the river zone during flood
Location/Access	1	3	2	3	1	1	1	2	3	2	1	1	3	3	2	Medium	

Non - Tangible

Item	Hazards							Impact						Likelihood	Consequence	Criticality	Comments
	Failure	LOS	Affordability					Customers	Operational	Business	Environmental	Legal	H & S				
weighting	10%	50%	100%					50%	40%	50%	20%	40%	50%				
Known Age/Condition of system	3	3	3					2	3	3	2	1	2	3	3	Medium	
Lack of Information	2	2	2					2	2	2	1	1	1	2	2	Low	
Unknown Assets	1	1	2					1	3	2	1	1	1	2	2	Low	
Capacity	2	3	3					3	2	4	3	1	2	3	3	Medium	
Personnel Skill - Council	4	4	4					3	3	3	3	2	3	4	3	High	
Personnel Skill - Contractor	2	2	2					2	3	3	2	1	2	2	3	Medium	
Legislation changes	0	1	1					1	1	3	2	1	1	1	2	Low	
Lack of Forward Planning	3	3	3					2	2	4	1	1	1	3	2	Medium	
Discharge Consents	2	1	2					1	1	3	1	1	1	2	2	Low	
Poor Maintenance	3	3	1					3	2	3	1	1	1	2	2	Low	
Stall/Resouces	2	2	2					1	2	3	1	1	1	2	2	Low	Impact of the number of staff to do the work

Key

			Consequence				
			Negligible	Minor	Moderate	Major	Serve
Likelihood			1	2	3	4	5
Rare	E	1	Low	Low	Low	Medium	Medium
Unlikely	D	2	Low	Low	Medium	Medium	High
Possible	C	3	Low	Medium	Medium	High	High
Common	B	4	Medium	Medium	High	High	Very High
Probable	A	5	Medium	High	High	Very High	Very High

Weighting	
Negligible	up to 20%
Minor	20 to 40%
Moderate	20 to 60%
Major	60 to 80%
Serve	80 to 100%

General Comments

Stormwater Network

PORANGAHAU

Tangible

COMPONENT/ SEGMENT	Hazards							Impact						Likelihood	Consequence	Criticality	Comments
	Natural					Human											
	Seismic	Flood	Land-slide	Tsunami	Volc Ash	Damage/Infill	Cross contamination	Customers	Operational	Business	Environmental	Legal	H & S				
weighting	20%	100%	20%	50%	10%	50%	50%	100%	50%	80%	80%	80%	80%				
Private Retic	1	3	1	2	1	2	1	1	1	1	1	1	1	2	1	Low	Includes private open drains
Connection/laterals	1	1	1	2	1	1	1	1	1	1	1	1	1	2	1	Low	
Manholes	1	3	1	3	1	2	2	2	2	2	2	2	2	3	2	Medium	
Mains	1	2	1	3	1	1	1	3	3	3	3	3	3	2	3	Medium	
Sub Mains	1	2	1	0	1	1	1	2	2	2	2	2	2	2	2	Low	
Open Drainage network	1	3	2	3	1	3	2	3	3	3	3	2	3	3	3	Medium	
Outfalls	1	4	1	3	1	3	1	3	3	3	3	2	4	3	3	Medium	Coulc be a big H&S issues workin g the river zone during flood
Location/Access	1	3	2	3	1	1	1	2	3	2	1	1	3	3	2	Medium	

Non - Tangible

Item	Hazards							Impact						Likelihood	Consequence	Criticality	Comments
	Failure	LOS	Affordability					Customers	Operational	Business	Environmental	Legal	H & S				
weighting	10%	50%	100%					50%	40%	50%	20%	40%	50%				
Known Age/Condition of system	3	3	3					2	3	3	2	1	2	3	3	Medium	
Lack of Information	2	2	2					2	2	2	1	1	1	2	2	Low	
Unknown Assets	1	1	2					1	3	2	1	1	1	2	2	Low	
Capacity	2	3	3					3	2	4	3	1	2	3	3	Medium	
Personnel Skill - Council	4	4	4					3	3	3	3	2	3	4	3	High	
Personnel Skill - Contractor	2	2	2					2	3	3	2	1	2	2	3	Medium	
Legislation changes	0	1	1					1	1	3	2	1	1	1	2	Low	
Lack of Forward Planning	3	3	3					2	2	4	1	1	1	3	2	Medium	
Discharge Consents	2	1	2					1	1	3	1	1	1	2	2	Low	
Poor Maintenance	3	3	1					3	2	3	1	1	1	2	2	Low	
Stall/Resouces	2	2	2					1	2	3	1	1	1	2	2	Low	Impact of the number of staff to do the work

Key

			Consequence				
			Negligible	Minor	Moderate	Major	Serve
Likelihood			1	2	3	4	5
Rare	E	1	Low	Low	Low	Medium	Medium
Unlikely	D	2	Low	Low	Medium	Medium	High
Possible	C	3	Low	Medium	Medium	High	High
Common	B	4	Medium	Medium	High	High	Very High
Probable	A	5	Medium	High	High	Very High	Very High

Weighting	
Negligible	up to 20%
Minor	20 to 40%
Moderate	20 to 60%
Major	60 to 80%
Serve	80 to 100%

General Comments

Stormwater Network

TE PAERAHI

Tangible

COMPONENT/ SEGMENT	Hazards							Impact						Likelihood	Consequence	Criticality	Comments
	Natural					Human											
	Seismic	Flood	Land-slide	Tsunami	Volc Ash	Damage/Infill	Cross contamination	Customers	Operational	Business	Environmental	Legal	H & S				
weighting	20%	100%	20%	50%	10%	50%	50%	100%	50%	80%	80%	80%	80%				
Private Retic	1	3	1	2	1	2	1	1	1	1	1	1	1	2	1	Low	Includes private open drains
Connection/laterals	1	1	1	2	1	1	1	1	1	1	1	1	1	2	1	Low	
Manholes	1	3	1	3	1	2	2	2	2	2	2	2	2	3	2	Medium	
Mains	1	2	1	3	1	1	1	3	3	3	3	3	3	2	3	Medium	
Sub Mains	1	2	1	0	1	1	1	2	2	2	2	2	2	2	2	Low	
Open Drainage network	1	3	2	3	1	3	2	3	3	3	3	2	3	3	3	Medium	
Outfalls	1	4	1	3	1	3	1	3	3	3	3	2	4	3	3	Medium	Coulc be a big H&S issues workin g the river zone during flood
Location/Access	1	3	2	3	1	1	1	2	3	2	1	1	3	3	2	Medium	

Non - Tangible

Item	Hazards							Impact						Likelihood	Consequence	Criticality	Comments
	Failure	LOS	Affordability					Customers	Operational	Business	Environmental	Legal	H & S				
weighting	10%	50%	100%					50%	40%	50%	20%	40%	50%				
Known Age/Condition of system	3	3	3					2	3	3	2	1	2	3	3	Medium	
Lack of Information	2	2	2					2	2	2	1	1	1	2	2	Low	
Unknown Assets	1	1	2					1	3	2	1	1	1	2	2	Low	
Capacity	2	3	3					3	2	4	3	1	2	3	3	Medium	
Personnel Skill - Council	4	4	4					3	3	3	3	2	3	4	3	High	
Personnel Skill - Contractor	2	2	2					2	3	3	2	1	2	2	3	Medium	
Legislation changes	0	1	1					1	1	3	2	1	1	1	2	Low	
Lack of Forward Planning	3	3	3					2	2	4	1	1	1	3	2	Medium	
Discharge Consents	2	1	2					1	1	3	1	1	1	2	2	Low	
Poor Maintenance	3	3	1					3	2	3	1	1	1	2	2	Low	
Stall/Resouces	2	2	2					1	2	3	1	1	1	2	2	Low	Impact of the number of staff to do the work

Key

			Consequence				
			Negligible	Minor	Moderate	Major	Serve
Likelihood			1	2	3	4	5
Rare	E	1	Low	Low	Low	Medium	Medium
Unlikely	D	2	Low	Low	Medium	Medium	High
Possible	C	3	Low	Medium	Medium	High	High
Common	B	4	Medium	Medium	High	High	Very High
Probable	A	5	Medium	High	High	Very High	Very High

Weighting	
Negligible	up to 20%
Minor	20 to 40%
Moderate	20 to 60%
Major	60 to 80%
Serve	80 to 100%

General Comments

7 Life Cycle Management and Route Maintenance Plan

7.1 Lifecycle Management

Lifecycle management looks at what is planned to keep the assets managed and operating at the agreed levels of service while optimising lifecycle costs.

The overall objective of the Life Cycle Management Plan is

To manage the stormwater activity to ensure that current strategies provide the required level of service in an efficient and cost effective manner that does not consume the stormwater assets.

7.2 Routine Maintenance Plan

7.2.1 Scope of Maintenance Plan

The major issues that need to be addressed in the Maintenance Operations Plan are:

- Ensuring maintenance of stormwater systems is carried out regularly to meet required Outcomes.
- Ensuring asset condition information is reported to the asset managers for consideration and entry in the asset database.

7.3 Responsibilities

The stormwater assets are managed by the Utilities Department of Council. The physical work is preformed thru a Facilities Management Contract. Their responsibility is to ensure all parts of the reticulated networks etc. are maintained and operated to Council standards, as well the can carry out minor capital works. Most capital works are carried out by external companies selected via a competitive or selected tender process.

7.3.1 Service Procurement (Method of Contracting)

The routine management, maintenance and operations for the stormwater activity are included in Contract No. 240 - Facilities Management Contract (FM). The Contractor is Higgins Contracting Limited. The final expiry date of the contract is 30 October 2015, but it includes an extension clause allowing the contract to be extended until 30 October 2018. The services covered by this contract for the stormwater activity are:

(i) Routine operations, maintenance (including preventative maintenance) and management associated with stormwater activities.

(ii) Ready response work (reactive maintenance) including emergency response and maintenance services as required and authorised.

(iii) Planned maintenance and improvement capital works when and as directed by Council.

(iv) Customer services call centre and call out service.

(v) The supply and maintenance of asset information to Council including the asset condition, works carried out on them and future requirements to maintain and if necessary enhance the assets.

(vi) Routine inspection service.

(vii) Reporting to Council.

(viii) Management and professional advice services.

The Facilities Management Contract puts emphasis on a partnering style relationship between Contractor and Council, where there is a mutual commitment to achieving the contract objectives and outcomes by maximising the effectiveness of co-operation. The nature of the work under the FM Contract, with elements requiring flexibility and co-operation (emergency response, variability of natural cycles, etc.) means the contract is a partnership. The Contractor works alongside and with Council to provide the outcomes expected by its customers within the resources that are available.

7.3.2 Maintenance Needs, Standards and Timing

The work output levels required to maintain the stormwater assets have been determined through the preparation of the FM Contract. The Outcomes Specification and Technical Specification contained within the FM Contract form the basis of the Routine Maintenance Operations Plan for the stormwater activity.

7.3.3 Routine Maintenance Operations Costs

The funding levels for maintenance of the stormwater activity are based on the maintenance costs estimate for 2018 - 48, and inflation adjusted for each subsequent year. The inflation figures are provided by BERL.

The current practise is to provide a bulk sum for the maintenance of the all networks in a District wide budget line. At the end of the financial year the relevant officers of Council meet to review the project and prioritise the maintenance project across the networks for the coming year.

Currently the following project is plan for major routine maintenance to ensure that the drain continues to meet it performance requirements:-

7.4 Council Confidence

Council believes that historical results show that the operations and maintenance funding levels provided will ensure that the stormwater asset will continue to be adequately maintained without needing to increase funding to a higher “theoretical” level.

While it is highly desirable to undertake improvements to address existing and new flooding issues, Council believes it has severe funding constraints that make this desired work unaffordable.

7.5 Decision Making

The process followed in order to properly maintain assets required for the stormwater activity is:

Renewal work will only be carried out where an asset component has failed or is about to fail (for example a pump fails or is about to fail, or a pipe collapses or is about to collapse). Assets will not be renewed just because they have reached their calculated life.

Or, the asset components to be renewed are old but still functional but practically should be replaced in conjunction with other non-renewal works (for example, if a new stormwater pipe is installed all the existing lateral connections to each property should be renewed at the same time if those laterals are likely to fail within the next 10 years).

These decisions will be made by Council's asset managers.

- Consideration of the funding available for the work will be made in conjunction with the Corporate Services Manager.
- Funding for that renewal will, in the first instance, come from the Stormwater Depreciation Account. The Account will be used to either pay for the work immediately, or to finance a loan for the renewal work.
- If there is insufficient funding available for the work, the Chief Executive shall:
    - If the work is needed immediately, authorise the work and report the situation to the next Council meeting.
    - If the work can be delayed but is still required, obtain approval from Council for extra expenditure before the work takes place.

7.6 Renewal Plan

7.6.1 Scope of Asset Renewals Plan

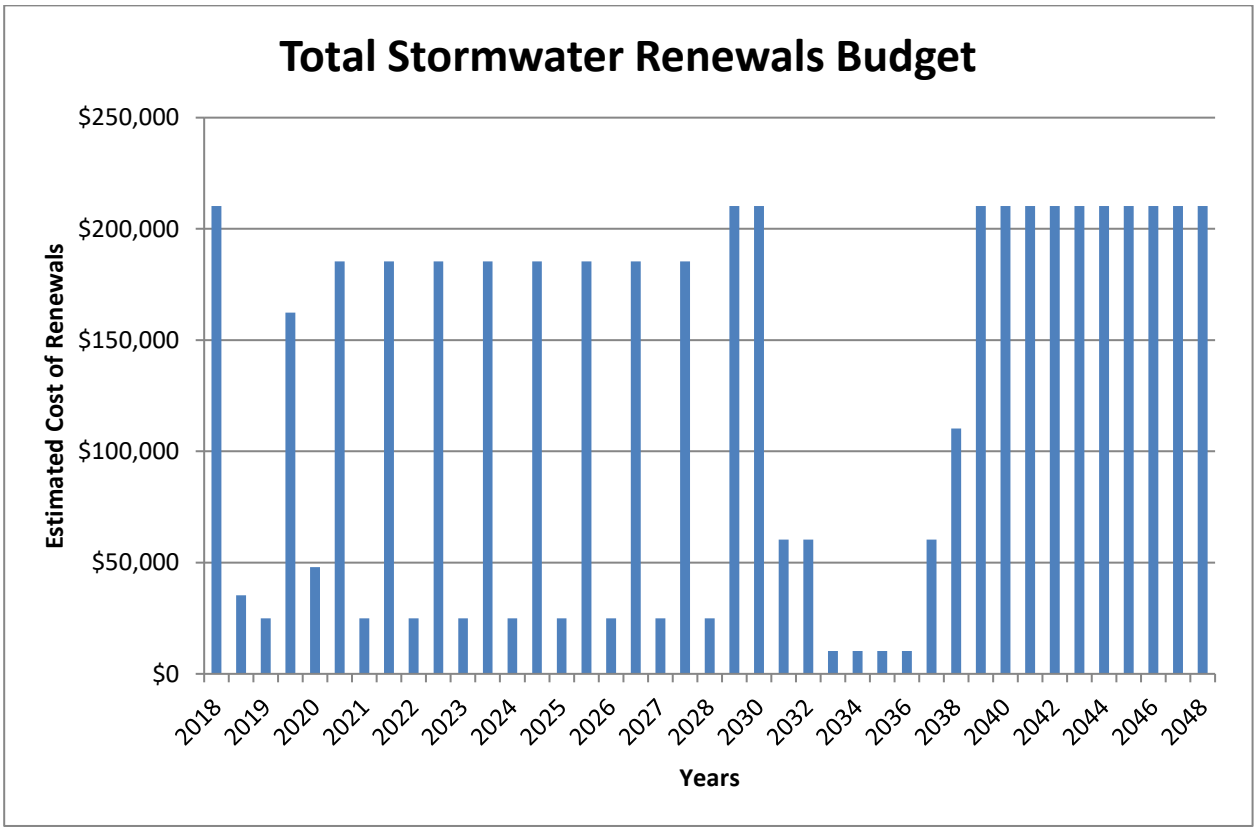
The Asset Renewals Plan looks at the amount of work required to maintain the existing stormwater asset in perpetuity. In other words, which parts of the stormwater networks need to be replaced because they are at the end of their useful life, and so that the capacity of the stormwater networks can be maintained, i.e. maintain Levels of Service.

The need to replace parts of the asset is based on the condition of the parts. An initial approximation of the condition is the age of the asset. Components of the stormwater systems have theoretical lives which have been determined from experience, and on average the components will have reached the end of their life at that theoretical time. Looking at

the age of each component gives a list of the components that need to be looked at for renewal.

Funding for renewal works will be limited by the amount of depreciation raised through rates each year, and any surplus depreciation funding raised will be retained to be used in the future for renewal works in following years. Under current estimations based on theoretical lives of assets the current funds allocated for renewals will not meet the projected replacement work load.

Within the Council's stormwater assets, the oldest component of the stormwater systems was installed in the 1920's. With a theoretical life of 80- 100 years it is still reasonable theoretic life in the components before replacement of these items is theoretically required. Based on the data in Council asset management program the theoretical predicted replacement profile for this asset is shown in the graph below.



This profile shows substantial peaks of large replacement cost and periods of minimal replacement cost, Council tries to anticipate the cash flow by smoothing the work. The current funding philosophy limits the amount of renewal work that can be carried out in any one year to the level that matches the Council income for this type of work. Therefore work is assessed on the following bases

- Assets will be assessed for renewal annually.
- Assets will be renewed on a priority basis, with the most necessary renewals being carried out first (this may result in younger assets being replaced before older assets

because of their condition). Such as pump replacement, upgrading/relining of mains, replacement manholes etc.

- Renewal work that comes to the attention of Council or contractors (through routine inspection or incidentally) will be carried out immediately, funding permitting.
- Renewal work that comes to the attention of Council or contractors (through routine inspection or incidentally) will be carried out immediately, funding permitting.

7.6.2 Service Procurement (Method of Contracting)

Renewal and replacement projects for the stormwater activity can be completed by various contractors through:

- Invitation to tender.
- Open advertised tender.
- Commissioned as additional works under the FM Contract.

At all times Council's procurement policies shall be followed.

7.7 Capital Improvements Plan

7.7.1 Scope of Capital Improvements Plan

The major issues that need to be addressed in the Capital Improvements Plan are:

- Ensuring the stormwater systems meet changes in demand for service.
- Ensuring that stormwater service delivery is optimised.
- Ensuring that changes in resource consent requirements are met.

Currently there are no Capital Improvements Plan for the next 3 years under scenario 1 except for a localised project at Rose Street Waipukurau should development t pressure require the work..

Stormwater Project	Description	Timing	Estimated Cost (Inflated)
Waipukurau Stormwater: CBD upgrades			
Most Likely Scenario	A project to upgrade the stormwater reticulation in the CBD area to reduce flooding issues.	2019	$0.6 million
Waipukurau Stormwater: Upgrades to the network			
Most Likely Scenario	Project is to upgrade the stormwater network in Waipukurau to meet future demands.	2031 to 2036	$4.1 million
Waipawa Stormwater: Upgrades to the network			

Stormwater Project	Description	Timing	Estimated Cost (Inflated)
Most Likely Scenario	Project is to upgrade the stormwater network in Waipawa to meet future demands.	2033 to 2038	$2.0 million
District wide Stormwater: Upgrades to the network			
Most Likely Scenario	Project is to upgrade the stormwater network in District wide to meet future demands.	2040 to 2048	$8.2 million

System	Project	Year	Estimated Value	Description.
Waipukurau Storm Water	Rose Street system	2015	$95,000	Council has come under pressure from the Racecourse for continuing to discharge stormwater from the residential network in to the top end of the Lake Hatuma system. With the current lake level set by the Courts and long term siltation of the lake stormwater is backing up and causing flooding problems in the racecourse. New modelling of the piped systems that discharge into the Lake Hatuma will be required as possible development of Waipukurau puts pressure on already stretch stormwater system. Coupled with the need to allow for climate change will required the Council to look at some form of onsite/ off site retention method to limit the flows and reduce possible downstream flooding

ProjectName	ProjectDescription	ProjectCompletion	Gross	Description
Waipukurau Storm Water	Modelling Wpk for Development	2015	25,000	Next stage of modelling of the SW Phase 2
Waipukurau Storm Water	Racecourse Rd Development	2021	218,545	Development of the land above Racecourse Road is creating more intense runoff which means that the capacity of watercourses below Racecourse Road is being overwhelmed more frequently. Because Council has agreed to these developments it must now deal with the consequences. Improvements including some piping of watercourses and maintenance of watercourses is necessary.
Waipukurau Storm Water	College Drain	2024	373,713	The Blundell Avenue area has flooded with house floors being inundated. This area will certainly flood again in the future because it is a basin with only one undersized stormwater outlet. A second pipe needs to be installed through the College grounds to ensure the safety of this area.
Waipukurau Storm Water	Industrial Stormwater works	2018	1,060,721	The Waipukurau industrial area may be developed in the future. Extra stormwater drainage would be required to service this area. The estimated cost is $970,710, and this should be funded by developers developing within this industrial area.
Waipukurau Storm Water	Francis Drake St Upgrade design work	2019	100,000	This area has been identified as a minimum floor height zone for any development. Some work on stormwater reticulation has been done but with the review of the District Plan and pressure from possible development model of the network is required to ensure we allow development in the appropriate areas of Waipukurau.
Waipukurau Storm Water	Francis Drake St Upgrade	2020	498,400	As part of this the model will be expanded to include other potential development zones around Waipukurau
Waipawa Storm Water	Lower Wpa Upgrade due to Develop Impact.	2022	750,000	The lower part of Waipawa floods regularly. The floodwater not only floods properties, it also enters the wastewater reticulation causing treatment issues and resulting in no service to some of the wastewater customers. A new stormwater system needs to be installed to stop the flooding problem. The estimated cost is $1,500,000 Additional reticulation lower part of Waipawa floods regularly. The floodwater not only floods properties, it also enters the wastewater reticulation causing treatment issues and resulting in no service to some of the wastewater customers. A new stormwater system needs to be installed to stop the flooding problem.
Waipawa Storm Water	Lower Wpa Upgrade due to Develop Impact.	2023	750,000	The lower part of Waipawa floods regularly. The floodwater not only floods properties, it also enters the wastewater reticulation causing treatment issues and resulting in no service to some of the wastewater customers. A new stormwater system needs to be installed to stop the flooding problem. The estimated cost is $1,500,000 Additional reticulation lower part of Waipawa floods regularly. The floodwater not only floods properties, it also enters the wastewater reticulation causing treatment issues and resulting in no service to some of the wastewater customers. A new stormwater system needs to be installed to stop the flooding problem.
Waipawa Storm Water	Lower Wpa Upgrade due to Develop Impact.	2024	139,091	The lower part of Waipawa floods regularly. The floodwater not only floods properties, it also enters the wastewater reticulation causing treatment issues and resulting in no service to some of the wastewater customers. A new stormwater system needs to be installed to stop the flooding problem. The estimated cost is $1,500,000 Additional reticulation lower part of Waipawa floods regularly. The floodwater not only floods properties, it also enters the wastewater reticulation causing treatment issues and resulting in no service to some of the wastewater customers. A new stormwater system needs to be installed to stop the flooding problem.
Rural Stormwater	Stormwater Impact	2017	100,000	Investigation the imapct of development on the rural SW due to dam development
Waipukurau Storm Water	Modelling Wpk for Development	2016	25,000	Next stage of modelling of the SW Phase 3
Waipukurau Storm Water	Redesign of mains around the resid Racecourse Rd area	2026	100,000	Design system for increase development
Waipukurau Storm Water	Construction of mains around the resid Racecourse Rd area	2028	500,000	Construction of new system for increase development
Waipukurau Storm Water	Central Area(Hostpital land development) Design	2027	100,000	Design system for increase development
Waipukurau Storm Water	Central Area(Hostpital land development) Construction	2029	750,000	Construction of new system for increase development
Waipukurau Storm Water	Tavistock Rd residentail Area development pressure Design	2030	100,000	Design system for increase development
Waipukurau Storm Water	Tavistock Rd residentail Area development pressure Constr	2032	670,000	Construction of new system for increase development
Waipukurau Storm Water	Furture investigation to service new indaustrial zone	2038	150,000	Design system for increase development
Waipawa Storm Water	Additional services Abbotsford Rd Design	2030	100,000	Design system for increase development
Waipawa Storm Water	additional services Abbotsford Rd Construction	2032	750,000	Construction of new system for increase development
Waipawa Storm Water	New Retic Biby to Pourerere Rds Design	2034	100,000	Design system for increase development
Waipawa Storm Water	New Retic Biby to Pourerere Rds Construction	2036	500,000	Construction of new system for increase development
Waipawa Storm Water	Development pressure retic for the Bush Area Design	2035	100,000	Design system for increase development
Waipawa Storm Water	Development pressure retic for the Bush Area Construction	2037	500,000	Construction of new system for increase development
Waipawa Storm Water	Increase demand for the Watts St north Area Design	2038	150,000	Design system for increase development
Waipawa Storm Water	Increase demand for the Watts St north Area Construction	2039	700,000	Construction of new system for increase development
Rural Stormwater	Otane Design for new retic between town and SH2 Design	2039	100,000	Design new infrastructure for development of Otane
Rural Stormwater	Otane Design for new retic between town and SH2 Construction	2041	500,000	Construction of new infrastructure for development of Otane
Rural Stormwater	Otane Design for new retic between west of SH2 Design	2040	100,000	Design new infrastructure for development of Otane
Rural Stormwater	Otane Design for new retic between west of SH2 Construction	2042	750,000	Construction of new infrastructure for development of Otane
Rural Stormwater	Takapau Design for new retic between town and SH2 Design	2043	100,000	Design new infrastructure for development of Takapau
Rural Stormwater	Takapau Design for new retic between town and SH2 Construction Yr 32++		500,000	Construction of new infrastructure for development of Takapau
Rural Stormwater	Takapau Design for new retic south of town along Ormville Rd Design	2044	100,000	Design new infrastructure for development of Takapau
Rural Stormwater	Takapau Design for new retic south of town along Ormville Rd Construction Yr33++		750,000	Construction of new infrastructure for development of Takapau

7.8 Creation and Design of New Assets

Before Council acquires new stormwater assets, the benefit to the whole community of that asset ownership is considered.

All new assets will be designed to meet the following criteria:

- Current and future demand *(ie population growth and future use changes)*
- Community expectations
- Planning policies
- Technical standards
- Environmental standards
- Technological standards

7.9 Modelling

Computer based models of the Waipukurau is currently been done and it is planned to do similar modelling in Waipawa and possible in Otane stormwater networks. These models will help Council understand the stormwater systems, identify significant shortcomings in the systems, and allow various improvement scenarios to be trialled to optimise improvements and costs.

7.10 Minor Works

In addition there are some minor works that need to be carried out. Where possible, with the absence of any marked funding for these works, they will be funded from the maintenance budget.

7.11 Asset Disposal Plan

7.11.1 Scope

The major issues that need to be addressed in the Disposal Plan are:

- Ensuring optimisation of stormwater systems.
- Ensuring cost effective service delivery.

7.11.2 Disposal Plan

CHBDC does not currently have any formal Asset Disposal Plan because no disposals are envisage for the next ten years. Any change in circumstances that bring about the potential for disposal of assets will be considered by Council on a case by case basis. Decisions will be made on the merits/benefits to the District with consideration to the Community Outcomes agreed through the LTP process.

Key considerations for decisions on asset disposal are that:

- Council's asset disposal procedures will comply with the requirements of the Local Government Act and with Council policy.
- Any revenue arising from the disposal of stormwater assets will be re-invested in the stormwater activity.

7.12 Summary of Council Strategy for Lifecycle Management

Routine maintenance of the stormwater activity will continue to be carried out at a level to maintain the assets in perpetuity. This will be funded at the present funding level and increased by the rate of inflation annually.

Assets will be renewed as they reach the end of their life. Renewal funding will be at the same level as the calculated and raised depreciation funding for this activity.

A number of capital works projects should be carried out in the next 10 years to meet known present and future demand requirements. Council believes it has severe funding constraints that make this desired work unaffordable. Therefore these capital works are excluded from the LTP 2009-19.

8 Financial Summaries

8.1 Revenue and Financing Policy

- The Revenue and Financing policy is required under Section 103 of the Local Government Act 2002. The policy must be included in full in the LTP and changed only as an amendment to the LTP. Section 103(2) allows the following funding mechanisms to be used when funding operating and capital expenditure:
    - General rates
    - Targeted rates
    - Grants and Subsidies
    - Interest and Dividend from Investments
    - Fees and Charges
    - Borrowing
    - Proceeds from Assets Sales
    - Development or Financial Contributions
    - Any other source

This policy summarises the funding sources to be used by Council and their intended use. Sources are identified for each Council activity, including those that may be used to fund operating and capital expenditure.

Council must consider the following elements in deciding on appropriate funding mechanisms for each activity:

- *Community Outcomes* – the community outcomes an activity will primarily contribute to.
- *Distributions of benefits* – the distribution of benefits between the community as a whole, any identifiable parts of the community and individuals.
- *Timeframes of benefits* – the period in and over which those benefits are expected to occur. For example, the benefits may occur on an ongoing basis, but may also benefit future generations.
- *Contributors to need for activity* – the extent to which actions or inactions of particular individuals or groups contribute to the need to undertake the activity.
- *Costs and Benefits of distinct funding* – the cost and benefits, including for transparency and accountability, of funding the activity distinctly from other activities.

8.2 Council Financial Strategy

Council has set its Financial Strategy to ensure funds are available maintain the network and ensure an appropriate level of renewals are under taken to ensure the performance of the network to meet the Levels of Services set out in section 4 of this

document. This funding level is capped due to the limits on rates as highlighted in the Strategy when considering the following factors:

- growth in public debt – principally to fund waste water upgrades,
- limitations on future rate rises,
- and the need to contain costs by maintaining the existing levels of service and existing core services and infrastructure, rather than providing for growth

8.3 Fees and Charges

Fees and charges are set annual by Council passing a Fees and Charges Bylaw in June. Fees and charges as at 1 July 2018 and a full list can be found on Council website.

New Connections:

- Application Fee $128.00 including GST
- Inspection Fee $128.00 including GST

Existing Connections:

- Inspection Fee $128.00 including GST

8.4 Development Contributions

Council requires development contributions from developers under the Local Government Act 2002. Council's policy set out how the levies are calculated based on the list of capital project included in the LTP 2018-28. This policy indicates how the levy will be charged and the dollar value per domestic connection for all new connections to each stormwater system.

8.4.1 Asset Valuations and Depreciation Funds

A valuation is undertaken (typically every three years) to assess the value of the network, the depreciated value and the annual depreciation.

The annual depreciation amount calculated in the valuation is raised as part of the rating for the stormwater activity, and is available for renewal works.

Because asset components do not fail at the theoretical times, any surplus of the raised depreciation is kept in a special fund to accumulate depreciation funding so that it is available to renew asset components as the need arises.

An historical problem is that depreciation has only just been funded from rates, although the depreciation is calculated over the life of the asset. This means that for many assets there is a very large shortfall between the amount of money that should have been raised and saved to pay for renewals, and the actual amount saved. This shortfall will have to be met from:

- An accelerated rating programme, and/or

- Loan funding when renewal funds are exceeded.

The last valuation for the stormwater assets was completed by Council staff for 30 June 2017. Opus International Consultants Ltd reviewed and verified the valuation. A summary of the valuation is shown in the following table.

Stormwater Asset Valuation at 30 June 2017

Community	Asset Type	Total Replacement Cost	Depreciated Replacement Cost	Total Annual Depreciation
Kairakau	Stormwater Mains and Open Drains	$229,330.56	$159,070.56	$3,945.53
	Stormwater Manholes	$45,519.00	$40,709.57	$455.19
	Totals	$274,849.56	$199,780.13	$4,400.72
Otane	Stormwater Mains and Open Drains	$82,892.28	$64,346.68	$888.66
	Stormwater Manholes	$14,334.00	$12,315.29	$143.34
	Totals	$97,226.28	$76,661.97	$1,032.00
Poranagahau	Stormwater Mains and Open Drains	$1,072,242.14	$949,146.19	$10,850.48
	Stormwater Manholes	$473,507.00	$418,363.93	$4,735.07
	Totals	$1,545,749.14	$1,367,510.12	$15,585.55
Blackhead	Stormwater Mains and Open Drains	$67,153.14	$58,367.62	$702.85
	Stormwater Manholes	$11,015.00	$9,781.47	$110.15
	Totals	$78,168.14	$68,149.09	$813.00
Takapau	Stormwater Mains and Open Drains	$90,174.52	$50,916.44	$1,601.30
	Stormwater Manholes	$15,793.00	$12,858.14	$157.93
	Totals	$105,967.52	$63,774.58	$1,759.23
Te Paerahi	Stormwater Mains and Open Drains	$142,373.16	$103,976.25	$1,423.73
	Stormwater Manholes	$4,778.00	$3,698.97	$47.78
	Totals	$147,151.16	$107,675.22	$1,471.51
Waipawa	Stormwater Mains and Open Drains	$6,581,915.46	$4,498,668.07	$69,271.97
	Stormwater Manholes	$1,581,332.00	$1,000,411.54	$15,813.32
	Totals	$8,163,247.46	$5,499,079.61	$85,085.29
Waipukurau	Stormwater Mains and Open Drains	$13,815,975.41	$7,680,216.38	$141,600.01
	Stormwater Manholes	$3,178,273.00	$1,858,834.30	$31,809.12
	Totals	$16,994,248.41	$9,539,050.68	$173,409.13
District Totals		$27,406,607.67	$16,921,681.40	$283,556.43

8.5 Valuation Methodology

The basic value of an asset reduces in accordance with the wear and tear and deterioration undergone over its life. This reduced value is called the optimised depreciated replacement cost and has been calculated as the depreciable component of the replacement cost proportioned by the ratio of remaining useful life to economic life on a straight line basis. This method provides an accurate reflection of the future service potential of the assets.

The NZIAMM procedure has been followed for all of the utility assets. The NZIAMM procedure involves optimising the remaining life of the asset by taking into account the asset age, the utilisation of the asset and the asset condition and performance.

The next valuation needs to be done within three years. However the AssetFinda database includes a module to automatically calculate updated valuations, and this can be applied at any time.

8.6 Financial Summary – Stormwater

The following table's sets out the expenditure and funding forecast required for the Central Hawke's Bay District Council over the next 10 years to managed and maintain the asset. Also following is the forecasted expenditure for the next 20years.

10 Year LTP Expenditure

Category	Full Year Actuals 2016/17	Adopted Annual Plan Budget 2017/18	The Plan 2018/19	The Plan 2019/20	The Plan 2020/21	The Plan 2021/22	The Plan 2022/23	The Plan 2023/24	The Plan 2024/25	The Plan 2025/26	The Plan 2026/27	The Plan 2027/28
Grand Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Income	**-472,642**	**-488,098**	**-756,927**	**-675,664**	**-703,137**	**-717,576**	**-729,033**	**-739,871**	**-756,707**	**-774,408**	**-793,274**	**-813,372**
Expense	**188,316**	**270,195**	**531,184**	**440,920**	**434,600**	**442,761**	**451,491**	**462,465**	**472,623**	**483,464**	**495,027**	**507,353**
Employee Costs	2,824	5,619	5,731	5,857	5,986	6,118	6,259	6,403	6,556	6,720	6,895	7,081
Operations	78,994	157,632	334,524	258,489	250,326	255,833	261,717	267,736	274,162	281,016	288,322	296,107
Overheads	103,123	103,998	149,468	149,577	149,989	153,374	156,991	162,540	166,492	170,706	175,199	179,985
Interest Costs	3,374	2,946	41,461	26,997	28,299	27,436	26,524	25,785	25,413	25,021	24,611	24,179
Capex	**123,040**	**210,330**	**675,518**	**304,433**	**225,619**	**231,034**	**236,579**	**242,494**	**248,798**	**255,267**	**262,159**	**269,500**
Capital	0	0	460,350	83,886	0	0	0	0	0	0	0	0
4041729. DIST STORMWATER CAP IMPTS	0	0	460,350	83,886	0	0	0	0	0	0	0	0
Renewal	123,040	210,330	215,168	220,547	225,619	231,034	236,579	242,494	248,798	255,267	262,159	269,500
4041429C. DIST STORMWATER CAPITAL RNWI	123,040	210,330	215,168	220,547	225,619	231,034	236,579	242,494	248,798	255,267	262,159	269,500
Loans	**7,144**	**7,573**	**-449,774**	**-69,689**	**42,918**	**43,781**	**40,962**	**34,913**	**35,286**	**35,677**	**36,088**	**36,519**
Reserves	**154,141**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Forecasted Expenditure the next 10 years

Category	The Plan 2028/29	The Plan 2029/30	The Plan 2030/31	The Plan 2031/32	The Plan 2032/33	The Plan 2033/34	The Plan 2034/35	The Plan 2035/36	The Plan 2036/37	The Plan 2037/38	The Plan 2038/39
Grand Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Income	**-825,939**	**-844,908**	**-879,137**	**-929,022**	**-984,628**	**-1,046,102**	**-1,109,149**	**-1,173,809**	**-1,225,335**	**-1,260,855**	**-1,289,553**
Expense	**512,461**	**523,765**	**547,437**	**583,663**	**624,161**	**668,987**	**714,552**	**760,857**	**795,790**	**817,098**	**832,424**
Employee Costs	7,251	7,425	7,603	7,786	7,973	8,164	8,360	8,561	8,766	8,976	9,192
Operations	303,214	310,491	317,943	325,573	333,387	341,388	349,582	357,972	366,563	375,360	384,369
Overheads	178,269	182,598	187,030	191,569	196,217	200,976	205,850	210,840	215,951	221,184	226,542
Interest Costs	23,726	23,251	34,860	58,735	86,585	118,458	150,761	183,484	204,510	211,577	212,321
Capex	**276,507**	**283,696**	**775,431**	**795,592**	**961,956**	**986,966**	**1,012,628**	**1,038,956**	**581,680**	**513,990**	**357,420**
Capital	0	0	484,359	496,952	655,551	672,595	690,083	708,025	242,145	165,627	0
4041729. DIST STORMWATER CAP IMPTS	0	0	484,359	496,952	655,551	672,595	690,083	708,025	242,145	165,627	0
Renewal	276,507	283,696	291,072	298,640	306,405	314,371	322,545	330,931	339,535	348,363	357,420
4041429C. DIST STORMWATER CAPITAL RNW	276,507	283,696	291,072	298,640	306,405	314,371	322,545	330,931	339,535	348,363	357,420
Loans	**36,972**	**37,448**	**-443,731**	**-450,233**	**-601,489**	**-609,851**	**-618,031**	**-626,003**	**-152,135**	**-70,233**	**99,708**
Reserves	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Forecasted Expenditure the last 10 years

Category	The Plan 2039/40	The Plan 2040/41	The Plan 2041/42	The Plan 2042/43	The Plan 2043/44	The Plan 2044/45	The Plan 2045/46	The Plan 2046/47	The Plan 2047/48
Grand Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Income	**-1,345,722**	**-1,402,491**	**-1,483,976**	**-1,566,090**	**-1,651,803**	**-1,738,177**	**-1,825,374**	**-1,895,275**	**-1,979,173**
Expense	**869,897**	**907,258**	**964,224**	**1,020,829**	**1,079,461**	**1,137,649**	**1,187,734**	**1,237,392**	**1,290,821**
Employee Costs	9,412	9,638	9,870	10,107	10,349	10,598	10,852	11,112	11,379
Operations	393,594	403,040	412,713	422,618	432,761	443,147	453,783	464,674	475,826
Overheads	232,029	237,648	243,402	249,294	255,327	261,505	267,831	274,309	283,030
Interest Costs	234,861	256,932	298,239	338,810	381,024	422,399	455,269	487,297	520,586
Capex	**1,412,822**	**376,248**	**2,221,386**	**396,067**	**2,338,400**	**416,930**	**2,054,816**	**438,893**	**2,163,055**
Capital	1,046,109	0	1,835,356	0	1,932,035	0	1,627,045	0	1,712,752
4041729. DIST STORMWATER CAP IMPTS	1,046,109	0	1,835,356	0	1,932,035	0	1,627,045	0	1,712,752
Renewal	366,713	376,248	386,030	396,067	406,365	416,930	427,771	438,893	450,304
4041429C. DIST STORMWATER CAPITAL RNW	366,713	376,248	386,030	396,067	406,365	416,930	427,771	438,893	450,304
Loans	**-936,997**	**118,985**	**-1,701,634**	**149,195**	**-1,766,058**	**183,598**	**-1,417,176**	**218,990**	**-1,474,704**
Reserves	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

9 Asset Management Plan Assumptions

This section describes some of the assumption or limitation made when developing and reviewing the Stormwater Asset Management Plan. It is hope this will give the user some insight in the discussion made in the plan and how they should be interrupted.

9.1 Key Assumptions

The following are the key assumptions have been when preparing this Plan.

- There will be an ongoing requirement for the provision of this activity
- Funding will be available to provide the operational and maintenance requirements of this activity for the next 10 years.
- Depreciation will be raised and used to fund replacement of deficient infrastructure.
- Forecasts of areas where new demand is planned for will be correct and funding from development contributions will pay towards these improvements
- The demand for this activity will increase, and not reduce
- Funding for renewal works will be limited by the amount of depreciation raised through rates each year, and any surplus depreciation funding raised will be retained to be used in the future for renewal works.
- Funding for capital improvements will be limited by political decisions as to the level of funding available. – Current due to limits on rate raises not funding is available for Capital works.
- The dollar values shown in this Plan are June 2018 dollars adjusted for the rate of inflation applicable to this Activity (refer BERL rates).
- All capital and renewal costs are rough order of cost estimates that will need to be further researched and refined.
- The forecasts are based on the best available knowledge of asset condition and performance, and on the levels of service that are being delivered. More detailed evaluation of asset renewal requirements will be undertaken.
- Population Data is based on the current data available at the time of writing the report by Sean Bevan.
- The knowledge of the practitioners directly providing this activity, both on a day-to-day basis and historically, has been relied upon. These practitioners include Council's Community Services Department staff and Financial Services Department staff, and staff of the Facilities Management Contractor CHB Works
- The forecasts are based on the best available knowledge of asset condition and performance, and on the levels of service that are being delivered. More detailed evaluation of asset renewal requirements will be undertaken by the use of predictive deterioration modelling during the periodic review

of this Activity Management Plan. Some increases in the expenditure, and some decreases, may flow from these reviews

- The asset register and asset data is suitable for the development of the Activity Management Plan.
- The processes set out have been followed.

9.2 Limitations of this plan include:

- Inspection and condition rating of some of the key assets is still required to form a better overall picture of the stormwater asset on which to base life cycle management decisions.
- A history of condition data needs to accumulate on assets in order to better understand their long term behaviour.
- The impact of the climate change has not been assessed or taken into account as part of this review of the Stormwater AMP

10 Asset Management Practices

10.1 Introduction

This section outlines the combination of data and information systems applied to provide the essential management of the stormwater asset. When looking at these processes it must be remembered that Council has made the conscious decision to development the AMP to a core level for the stormwater asset.

The Asset Management Data		
Data or Process	**Current Practice**	**Desired Practice**
Asset Register	Council has adopted the use of a program called AssetFinda to store all lines, points and plant data in a graphical electronic database.	Not change at this point in time
Asset Hierarchy of Stormwater Asset	Currently council has developed a hierarchy of the asset according to their location within the networks and the risk implication of failure	It would be beneficial to improve the current coarse analysis of the networks based on risk level to a higher level. This work improve the decision make process of where best to apply limited funds
Asset Identification	Current practise is to use the automatic asset identification system from our asset management program.	This gives a consistent and logical asset ID system but as the asset gets replaced the old Id is removed and a new id is attached to the new asset. This makes tracking from old plans/maps difficult. It would be help to contactors and other users of the maps to find a way to retain a consistent name for key elements like manholes.
Spatial Location Data	Current practise is to locate the asset spatially based on best intel at the time of loading.	It would be desirable to locate assets are located geospatially using a GPS coordinate give both X, Y and Z attributes
Physical attribute fields for all asset types are well defined.	Our asset management program has a range of defined fields to be filled in. These are filled in based on the information supplied by "As Built" records. For unknown data such as date a default date of 1/11950 is used – but a note will be entered in the notes area to indicate this as well as the accuracy marked down.	
Condition, Performance, Criticality and Accuracy settings	The program has 4 slide bars to set these function. The use of these is covered under the AssetFinda note Council user notes.	It would be useful to use the combination of Performance and criticality to provide a risk assessment of the asset.

Asset lives	Currently we are using the NAMM's manual to set the base lives with some adjustment based on local knowledge of the assets condition. This is covered in detail in the Valuation Document.	Improve knowledge of the asset condition by physical inspection or CCTV

Data or Process	**Current Practice**	**Desired Practice**
Strategic Planning		
Stormwater flows	Council has done hydraulic modelling of the Waipawa and Waipukurau systems.	To look at the model and compare recent flow rates at similar points to those used to calibrate the model to measure the effectiveness of our renewals program. To look at doing the models within a 3-5 year's time frame.
Inflow and Infiltration	CCTV condition assessments, Hydraulic modelling and flow gauging, SCADA data analysis and verification. Plus collection of overflow data during peak storm events	Focus on strategy within existing OPEX Budgets and Renewal Programme Strategies.
Risk management	Current our risk analysis is based on a table top exercise at high level.	Review the risk register and drill down to a lower level to assess specific asset risks and use the data for a basis for initiating capital expenditure, operational improvements or renewal of assets.
Service level reviews	Current Levels of Services are meeting the needs of the users	
Renewal work	Current practise is to set the amount of renewal work to the level of funding.	It would be desirable to increase the level of funding to a rating the meets the actual need of replacement and not capped at the amount Council can afford.
Capital Works	Current practise to do the essential works and cap the work at value that can be funded via loans etc.	To increase capital works that level that is need to meet demand and allow growth of the District.
Long term financial planning	Renewals/Capital planning is based on year to year prediction of issues	Improve the long term renewals and capital works program to meet the possible impact of growth.
Emergency planning	Emergency plans and business continuity plans are in place.	

Asset Management Plan	Work on a 3 yearly review of the plans to meet the need of the Council	Tune the plans to become a more user friendly document that helps the council role of managing the assets

10.2 Accounting Financial Systems

Financial Management processes are carried out through Council's Financial Management system. Costs are recorded against specific general ledger funding categories as they are incurred. The accounting system is an accrual accounting system, which backdates the expenditure to the financial year in which it is occurs. For asset management purposes, and accounting purposes, expenditure is divided into four categories:

Category	Description
Operational	Activities which have a no effect on asset condition but are necessary to keep the asset utilised appropriately (e.g. power costs, overhead cost, etc).
Maintenance	The on-going day-to-day work required to keep assets operating at required service levels, i.e. repairs and minor maintenance.
Renewal	Significant work that restores an existing asset to its original size, condition or capacity.
Capital Work. (also called development, new works)	Works to create a new asset, or to upgrade or improve an existing asset beyond its original capacity or performance, in response to changes in usage, customer expectation, or anticipated future need.
Disposal	Any cost associated with the disposal of a decommissioned asset. (Most times the asset is destroyed as part of the renewal work and therefore included in the renewal costs).

10.3 Core versus Advanced Management Plans

The 'Core' approach for Asset/Activity Management Plans can be typified as 'top down' with decisions made using simple analysis processes using data relating to a low level of asset component breakdown.

The core approach covers all elements of asset management planning but at a relatively simple level such as:

- Risk management includes identification of critical assets.
- Asset registers have low level of component breakdown.

- Optimised Decision Making based on simple benefit-cost processes for major decisions rather than more detailed multi-criteria analysis.
- Levels of service generally defined on historical performance.
- Financial forecasts based on broad assumptions.
-

Council has reviewed the level of AMP best fits the Stormwater Activity and with the help of Ross Waugh from Waugh and Associates in July 2010. Based on this recommendation Council adopted a "Core-plus" level of asset management planning in February 2010.

10.4 Asset Register

The physical description of the water reticulation is contained within the AssetFinda database. AssetFinda uses a Microsoft SQL Express database and either a MapInfo or Web Browser GIS front end. This information is continually updated as water assets are constructed or replaced. AssetFinda uses the table shown below to holds the inventory data.

Table Name	**Properties**
Water - line	Holds the line data such as the pipe, open drains data. General information held is ID, Location, dimension, type, material, diameter, install year, condition and performance.
Water – services (part of lines table)	This holds service connections data. General attribute data held is ID, Location, dimension, type, material, diameter, install year, condition and performance.
Water - point	This includes manhole, lamp hole and dummy nodes. General attribute data is ID, Location, dimension, type, material, diameter, install year, condition and performance.
Water – plant	This includes pump stations etc. At this point in time Council has no Water Plant Assets.

AssetFinda also has available the following suite of tools to help manage the water network:

- Accounting - Advises which assets need to be replaced, when these should be replaced and how much it will cost. Tracks additions, disposals, sales, residual values, (installation) costs. Calculations include age, remaining life, current value, replacement value, depreciation values. Performs valuations.

- Contract management – uses contract information to generate works orders or purchase orders. Tracks progress payments and progress of work; allows monitoring of contractor / consultant performance; tracks maintenance history; closes work orders on completion.
- Predictive analysis – Advises which assets need to be replaced, when these should be replaced and how much it will cost. Monitors condition and predicts failure. What if scenarios.

At present only the accounting tools are used.

10.4.1 Performance Forecasting

The asset is rated in two ways, for performance and condition. The performance and condition assessment are applied in terms of the New Zealand Infrastructure Asset Grading Guidelines.

Condition Grading

An assessment of the condition of each of the assets has been made in terms of the asset grading system set out below. The table below has been tailored from the IIAMM system for use with the AssetFinda program.

Grade	Label	Description	Work required
1	**Excellent** condition – only normal maintenance required	Asset has been inspected or brand new or asset is less than 2 years old - No work required.	± 1-2%
2	**Good** - Minor defects only. -- Minor maintenance required	Acceptable physical condition; minimal short-term failure risk but potential for deterioration in long-term (10 years plus). Only minor work required (if any).	± 5%
3	**Average** - Maintenance required to return to acceptable level of services. - Significant maintenance required	Significant deterioration evident; failure unlikely within next 2 years but further deterioration likely and major replacement likely within next 10 years. Minor components or isolated sections of the asset need replacement or repair now but asset still functions safely at adequate level of service. Work required but asset is still serviceable	± 10 -20%
4	**Poor** - Renewal Required. - Significant renewal/upgrade required.	No immediate risk to health or safety but works required within 2 years to ensure asset remains safe Substantial work required in short-term, asset barely serviceable.	± 20 - 40%
5	**Very Poor** - Asset Unserviceable. – Over 50% of asset requires	Failed or failure imminent. Immediate need to replace most or all of asset. Health and safety hazards exist which present a possible risk to public safety or asset cannot be serviced/operated without risk to personnel. Major	± 50% plus

Grade	Label	Description	Work required
	replacement.	work or replacement required urgently	
Default setting:- 3			

Performance Grading

The performance capability grading of each of the assets has been made in terms of the asset performance grading systems set out below. The table below has been tailored from the IIAMM system for use with the AssetFinda program.

Grade	% of Base Life	Label	Description
1	5% or less	Excellent Asset functioning as new	New or near new asset. Designed to acceptable standards and meeting all levels of service.
2	10 – 20%	Good Operating as required with minor maintenance.	Minor maintenance required to maintain level of service, but issues are not impacting on hydraulic capacity or affecting performance.
3	20 -50%	Average Asset still performing well with regular maintenance.	Asset at midlife and functioning without problems. With sliming and deposition requiring occasional cleaning or minor backfalls causing a reduction in pipe capacity or inadequate design capacity and surcharging of the at times of high flows, although no surface flooding. E.g. Some infiltration occurring in wastewater pipework..
4	50-80%	Poor Asset need more than regular maintenance to function	Asset at nearing end of life and in need or replacement soon. Significant sliming and deposition requiring regular cleaning or backfalls causing a marked reduction in pipe capacity, risk of blockages or inadequate design capacity causing frequent flooding to gardens and highways or occasional flooding to properties or restricted toilet use, Major leakage from valves etc
5	80% Plus	Very Poor Asset at end of life and failing.	Asset at end of life and in need or replacement ASAP. High levels of sliming and deposition requiring a high frequency of cleaning or maintenance or backfalls causing a serious reduction in pipe capacity or serious inadequate design capacity, risk of blockages or hydraulic restrictions causing regular flooding to gardens and highways or frequent flooding to properties or restricted toilet use, valve unable to be operated etc
Default Setting 3			

10.4.2 Data Accuracy

As part of the asset valuation process data confidence and accuracy levels have been established.

Grading of the data is based on the following grading system as provided by the IIAMM. The table below has been tailored from the IIAMM system for use with the AssetFinda program.

Grade	Label	Definition	Accuracy	Description
1	Excellent Accurate	Site inspected or GPS located or detailed As built has been provided.	± 5%	Spatial location of the asset has been collected along with detailed information on the asset such as material, pipe size, depth of manhole, construction, age, condition, quantity, type of item, plant item duty (including manufacture details or schematic), etc. and where possible photos of the asset are provided. If practical the asset has been physical inspected/installed within 2 years.
2	Good Minor inaccuracies	Discussed with supervisor/based on some supporting documentation	± 15%	Spatial location is known from visual inspection or asset records etc. but some information is missing such as depth and size, type, etc. known but aged and condition. In terms of pumps the exact duty may not be known.
3	Average Significant data estimated	Based on local knowledge and reference to adjacent assets.	± 30%	Data based on verbal reports and/or cursory inspection and analysis or information is derived from plant records or reports. Location, depth and size, type, aged and condition etc. assumed from historical records of hearsay information, exact location has yet to be GPS located. e.g. asset may have been sealed over or covered.
4	Poor All data estimated	Data based on best guess of experienced person	± 40%	Data based on unconfirmed verbal reports and/or cursory inspection and analysis. Exact details of location, depth and size aged and condition etc. unknown but Council records show there is an asset in the approximately area. E.g. buried service connections
5	Very Poor Educated guess.	Council knows there are asset here but location etc. completely unknown	± 70%	Data based on unconfirmed verbal reports and/or cursory inspection and analysis. No details (location, depth and size aged and condition etc.) have been found but general system knowledge indicates there is an asset in this location. i.e. the property must be connected to the services. Flagged for site inspection and investigation.
Default setting				**3**

10.5 Communication

Council manages the operation and maintenance tasks for this Activity through the Facilities Management Contract being directly supervised by Council staff. Lines of communication are therefore from Council to Contractor to Council Officer in charge of the relevant area in the contract, with overview from the Utilities Manager as Engineers Representative. As required by NZS 3910:2003 the Technical Services Manager is designated as the Engineer to the Contractor 240. All reporting is also through the contract direct to Council staff.

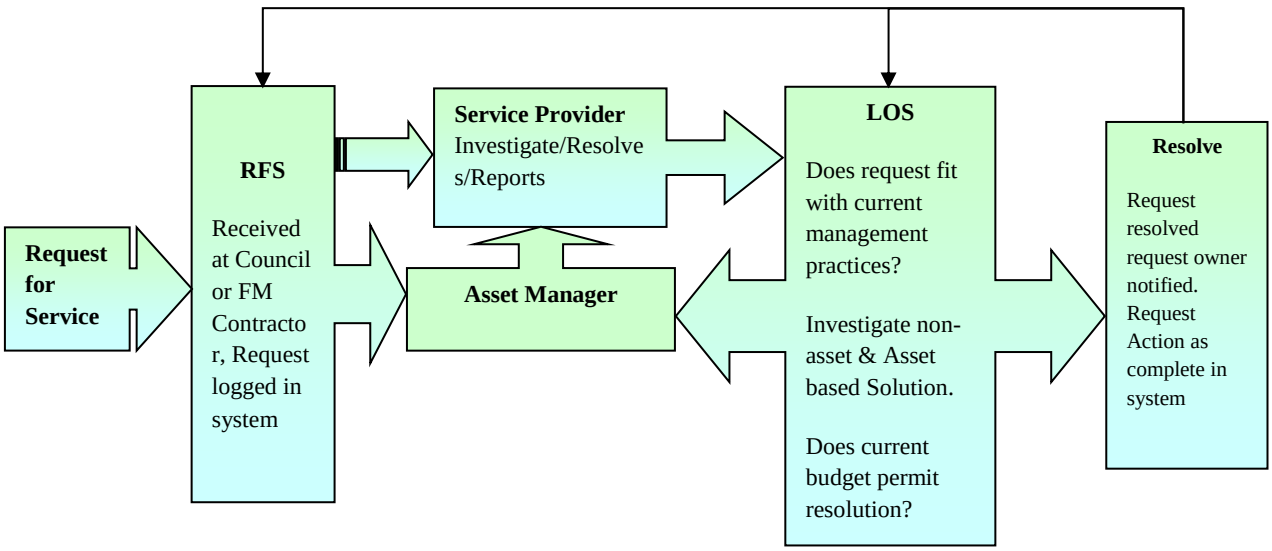
Renewal and capital tasks are managed by Council's Technical Services Unit. Work is carried out by either by an agreed variation to the Facilities Management Contract or through the letting of a tender for the work.

10.6 Service Request

Council maintains a customer request database, the "Request for Service" system. This database is used to log calls from the customers. Council logs requests and passes stormwater related issues onto the facilities maintenance contractor for action and monitoring. Once the issue has been actioned and completed Council are informed. Council reply to the customer on the outcome of their request.

As a part of this process Council's current facilities maintenance contractor maintains a database of service requests from both public and Council.

The above information is used in understanding the public perception and expectation of public on the stormwater asset. This information is used to help assess performance relevant to the Levels of Service



10.7 Incoming Communications

Council has an in-house "Mail Tracker" computer programme to ensure that written requests, compliments and complaints are recorded and the appropriate action is taken and/or response made to the enquirer. All requests are tagged with the response time and all actions are tracked. This form of data capture assists in identifying stake holder's level of expectation but will not be a definitive measure of expectations of the wider community.

11 Improvement Plan

This section provides details of how Council plans to improve the Stormwater Activity Management Plan.

11.1 Introduction

Council is committed to a policy of continual improvement of this Activity Management Plan in the areas of:

- data collection and refinement of existing data.
- data storage, manipulation, accessibility and display.
- analysis of known information.
- forward planning for operations, maintenance renewal and improvements.
- defining and meeting levels of service.

11.2 Areas for Improvement

11.2.1 Improvement of Base Knowledge

Knowledge of the stormwater asset is being refined continually. While all of the known assets are recorded in the AssetFinda database, work needs to continue on the capture of asset attributes and on the verification of the accuracy of information.

This work is carried out in three ways:

- Planned programmes of collecting asset information.
- Information collected as assets are inspected or worked on.
- As built information about new assets and associated existing assets.

Base data has a significant effect on the overall plan confidence. This includes such data as size, type, age, condition, capacity and value for individual asset components within the systems.

11.2.2 CCTV Work

To maximise Council knowledge of the asset Council will continue to do CCTV footage of stormwater mains throughout the District. The prioritisation of the work will be done on a basis of the lines that are found to be cause the most problems with blockages, failures, infiltration etc. First and then other lines as needed. Should Council have request for selected lines to be CCTV'ed these will be done on a case by case bases.

11.2.3 Renewal Needs, Standards and Timing

Planning of renewal works on the stormwater systems is current done on "As it Fails" type process Council staff are working on the asset register to get it to a state that can utilise the updated AssetFinda "Predictive Modelling" section to create a theoretical model for asset renewal. Combining the data with the knowledge of the Council staff and the maintenance contractor is then applied to this list of works, and other works are added from that knowledge, or already listed works reprioritised.

11.2.4 Open Drains Definition

A proportion of the stormwater networks consist of open drains and watercourses. These drains are either the responsibility of the land owner or the responsibility of Council.

In 1998 Council resolved which drains was the responsibility of Council. This list of drains has been reviewed in 2009 and several private open drains have been taken into the public drainage system, particular around the Racecourse area of Waipukurau. If more drains are added to the list, then Council will incur additional maintenance responsibility with a resulting implication on funding.

11.2.5 Computer Model

Computer based models of the Waipukurau is currently been done and it is planned to do similar modelling in Waipawa and possible in Otane stormwater networks. These models will help Council understand the stormwater systems, identify significant shortcomings in the systems, and allow various improvement scenarios to be trialled to optimise improvements and costs.

Analysing the effectiveness of a stormwater system can become complicated as the extent of the system increases. A computer model of the system allows staff to understand how the system works and what shortcomings there are in the existing system. It also allows staff to see the effects of increased development on the stormwater system, and what effect various improvement options would have.

11.2.6 Development Contributions Policy

The effects of the present Development Contributions Policy is shown within this AMP, especially in Section on Future Demand. This Policy is reviewed every 3 years as part of the LTP process unless pacific development requires a special review. This review will cover changes in development in the District, legal decisions that bring some clarity as to how the Development Contributions can be applied, and extreme funding restraints limiting the improvement works that can be built to meet development challenges.

11.2.7 Target Levels of Service

The Levels of Service in this AMP are based on the levels of service able to be delivered as dictated by the levels of funding available for this activity. These need to be reviewed and improved to include the following:

- Ensuring that all service areas are adequately addressed.
- Providing measures and targets for each service area.
- Carry out consultation with key user groups.

11.2.8 Review Renewal Programmes

While the analysis of the age and condition of the stormwater assets indicates that on limited renewal works are required for at least the next 24 years, in reality some assets will fail sooner than this. A realistic "estimated" list of assets that possibly will need renewal earlier should be compiled.

- Correlate renewal expenditure with performance driven expenditure to avoid areas of duplication.

11.2.9 Review Funding

Improvement of the stormwater activity to address known flooding problems and to cater for future development will not happen because of the limited funding available and Council's desire to keep rating increases to near the rate of inflation. Means of funding these necessary improvements need to be found.

11.2.10 Asset Valuation

The latest asset valuation is to 30 June 2017. The next valuation will be to 30 June 2020.

11.2.11 Risk

A board brush review of the risk to the Stormwater asset has been done since the last review of the AMP. This analysis looked at the risk to the stormwater system at a high level and has identified where more detail analysis is required. This analysis will form the Risk Management Plan and be the bases of the Risk Register.

Risk management involves looking at all the activities carried out in this activity and assessing what might go wrong and how often this might occur. The information gained from this can be used to eliminate the risk, reduce its effect, or allow a contingency plan to be prepared to deal with the risk if it occurs. It also involves looking more widely for events that would not normally be expected to happen but have the possibility of happening and affecting this activity.

11.3 Improvement Plan Summary

Below is a list of key components identified for the improving the Stormwater Activity Plan

- On a ongoing bases a 'desk top' audit on the AssetFinda database to identify the extent of unknown attributes in the asset inventory and use available resources to capture this data to improve the accuracy of the database.

- Field survey to determine condition and remaining life of assets in key areas to validate the asset register.

- A capacity analysis and modelling of reticulation networks to determine performance of assets both now and into the foreseeable future.

- Review of Council systems and Contract Documentation relating to Stormwater Activities, to improve communication between all branches of data collection so that data connectivity and efficiency of data capture can be achieved.

- Review and update unit replacement costs and lifespan estimates for asset components and incorporate the outcomes from these into the AssetFinda database in preparation for the next valuation.

- Reassess projections of future Operation and Maintenance costs to take into account the impact of capital and renewal programmes over time.

- Reassess estimated replacement year values for renewal predictions based on updates to condition and performance data and improved attribute data.

- The review and improvement of the plan requires commitment of adequate resource and budget to complete the selected improvement tasks.

- The need for designations for stormwater purposes to be researched further as access to the system for the purpose of maintenance is considered as one of the most significant issues for proper management and maintenance of the system. This access issue has the potential to be a "high risk" area to the Council in the future management of the asset.

12 Glossary

The following terms and acronyms or abbreviations may be used in this Activity Management Plan.

Terminology	Abbreviation	Description
Activity		An activity is the work undertaken on an asset or group of assets to achieve a desired outcome.
Annual Plan		The Annual Plan is a one year "slice" of Council's Long Term Plan (LTP).
Asset		A physical component utilised within the Activity, which has value, enables services to be provided and has an economic life of greater than 12 months.
Asset Disposal Plan	ADP	Guidelines for decision-making on asset disposal issues.
Advanced Asset Management	AAM	Asset management processes which employ predictive modeling, risk management and optimised renewal decision-making techniques to establish asset lifecycle treatment, options and related long term cash flow predictions.
Asset Management	AM	The combination of management, financial economic, engineering and other practices applied to physical assets with the objective of providing the required level of service in the most effective manner.
Activity Management Plan	AMP	A plan developed for the management of one or more Council Activities. It combines multi-disciplinary management techniques (including technical and financial) over the lifecycle of the assets involved in the activity, and for management of all non-asset processes, in the most cost effective manner to provide a specified level of service.
Asset Management System		A system (usually computerised) for collecting, analysing and reporting data on the utilisation, performance, lifecycle management and funding of existing assets.
Asset Register		A record of asset information considered worthy of separate identification including inventory, historical, financial, condition, construction, technical and financial information about each.
Base Life		A theoretical estimate of the anticipated useful life of an asset or component. A generic value for all assets of a particular type and generally does not take into account individual site or particular in-service conditions.
Capital Expenditure	CAPEX	Expenditure used to create new assets or to increase the capacity of assets beyond their original design capacity or service potential. CAPEX increases the value of an asset.
Capital Renewals		Capital Renewal projects are hybrids between a capital construction request i.e. the upgrade of existing infrastructure for future demand and pure renewal of the existing asset with a similar type, size or model.
Cash Flow		The stream of costs and/or benefits over time resulting from a project investment or ownership of an asset.
Council	CHBDC	Central Hawke's Bay District Council
Components		Specific parts of an asset having independent physical or functional identity and having specific attributes such as different life expectancy, maintenance regimes, risk of criticality.

Terminology	Abbreviation	Description
Condition		Continuous or periodic inspection, assessment, measurement and grading of the physical status of an asset.
Creation Augmentation Plan	CAP	Creation/Augmentation/Acquisition Plan. Provides guidance on decision-making processes for new asset installations and upgrade works and includes predictions of tasks for the forward work programme
Critical Assets		Assets for which the financial, business or service levels consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. Critical assets have a lower threshold for action than non-critical assets.
Deferred Maintenance		The shortfall in rehabilitation work required to maintain the service potential of an asset.
Demand Management		The active intervention to influence demand for services and assets with forecast consequences, usually to avoid or defer CAPEX expenditure.
Demand Management Plan	DMP	Guidelines for management of pressure for supply of services within the limitations of the existing system and proposals to address expected future situations relating to service provision.
Depreciated Replacement Cost	DRC	The replacement cost of an existing asset after deducting an allowance for wear or consumption to reflect the remaining economic life of the existing asset.
Depreciation		The wearing out, consumption or other loss of value of an asset whether arising from use, passing of time or obsolescence through technological and market changes. It is accounted for by the allocation of the historical cost (or revalued amount) of the asset less its residual value over its useful life.
Economic Life		The period from the acquisition of the asset to the time when the asset, while physically able to provide a service, ceases to be the lowest cost alternative to satisfy a particular level of service. The economic life is at the maximum when equal to the physical life, however obsolescence on the basis of either condition or performance levels will often result in the economic life being less than the physical life.
Facility		A complex comprising many assets (e.g. a stormwater pump station, rain gauge site, flow structure, treatment facility etc) which represents a single management unit for financial, operational, maintenance or other purposes.
Forward Works Programme	FWP	Predicted future physical works program.
Geographic Information System	GIS	Software that provides a means of spatially viewing, searching, manipulating, and analysing an electronic database.
International Infrastructure Management Manual	IIMM	Guideline manual produced by NAMS for asset management techniques and preparation of Asset Management Plans.
Life Cycle Management Plan	LCMP	Plan documenting the guidelines and decision-making processes for management of the four core activities: Routine Maintenance Plan (RMP); Renewal Replacement Plan (RRP); Capital Augmentation Plan (CAP) and Asset Disposal Plan (ADP).

Terminology	Abbreviation	Description
Level of Service	LOS	The expected standard of delivery of the activity. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental acceptability and cost.
Local Government Act.	LGA	Key legislation governing activities of Territorial Local Authorities.
Life Cycle		1. The cycle of activities that an asset (or facility) goes through i.e.: from planning and design to decommissioning or disposal. or 2. The period of time between a selected date and the last year over which the criteria (e.g. costs) relating to a decision or alternative under study will be addressed.
Long Term Plan (Community Plan)	LTP	Essential document required by legislation that specifies the communities desired outcomes for Council activities and provides the overall direction and guidance for this Activity within the District.
Maintenance		All actions necessary for retaining an asset as near as practicable to its original condition, but excluding rehabilitation or renewal.
Maintenance Standards		Preventative maintenance schedules, operation and maintenance manuals, technical specifications within the Facilities Management Contract.
Maintenance - Planned		Maintenance works that can be scheduled and are not reactive (i.e. all works other than those to attend to an immediate unforeseen failure). Planned maintenance activities fall into 3 categories: periodic, predictive and preventative maintenance.
Maintenance - Periodic		Activities necessary to ensure the reliability or sustain the design life of an asset (e.g. cleaning, calibration, mowing, lubrication).
Maintenance - Predictive		Condition-monitoring activities used to predict the failure (e.g. non-destructive inspection and testing, including visual inspection surveys, heat and vibration monitoring, recording operating hours, analysis of failures).
Maintenance - Preventative		Maintenance that can be initiated without routine or continuous checking (e.g. using information contained in maintenance manuals or manufacturer's recommendations, such as repainting, checking and adjusting tolerances) and is not condition-based.
Routine Maintenance Plan	RMP	Collated information, policies and procedures for the optimum maintenance of an asset, or group of assets.
Monitoring		Interpretation of resulting data, to indicate the condition of a specific component so as to determine the need for some preventative or remedial action.
NAMS	NAMS	New Zealand National Asset Management Steering Group. NAMS is a committee of INGENIUM which produces manuals to guide practitioners in the field of asset management.
New Work		Works which create new assets or increase the capacity of existing assets beyond their original design capacity or service potential. New Work increases the value of the asset.
Objective		An objective is a general statement of intention relating to a specific output or activity. They are generally longer-term aims.
Operation		The active process of utilising an asset that will consume resources such as manpower, energy, chemicals and materials. Operation costs are part of the life cycle costs of an asset and are contained within the Routine Maintenance Plan.

Terminology	Abbreviation	Description
Optimised Depreciated Replacement Cost	ODRC	The optimised replacement cost after deducting an allowance for wear or consumption to reflect the remaining economic or service life of an existing asset.
Redundant		1. Designed backup systems. or 2. Services or assets no longer required.
Redundancy – Back up Systems		An asset or component which, if it fails, does not result in a complete loss of service, e.g. if two pipes follow the same route, failure in one leaves the service operational (albeit at a reduced capacity). Redundancy is planned for and is very beneficial in critical systems such as trunk mains and pump stations to ensure that the required level of service can be maintained through a variety of adverse conditions.
Redundancy - Obsolescence		An asset or system that is no longer required and should it fail, would not be replaced. Redundant assets of this type are not included in the calculations for depreciation and are planned for abandonment or removal to waste at the end of their useful / economic life, rather than replacement or upgrade.
Renewal		Works to upgrade, refurbish, rehabilitate or replace existing facilities with facilities of equivalent capacity or performance capability.
Repair		Action to restore an item to its previous condition after failure or damage.
Replacement		The complete replacement of an asset that has reached the end of its life, so as to provide a similar or agreed alternative level of service.
Risk Management		The application of a formal process when considering risk which results in a range of outcomes and their probability of occurrence.
Routine Maintenance Plan	RMP	Guidelines for management of routine operation and maintenance activities for assets throughout the District.
Renewal Rehabilitation Plan	RRP	Guidelines for management of renewal and rehabilitation activities for assets which produces a forecast of works of this type for the forward work programme.
Strategic Plan		Plan for the long term goals and strategies of an organisation.
Upgrading		The replacement of an asset that materially improves the original service potential of the asset.
Valuation		Estimated asset value, which may depend on the purpose for which the valuation is required, i.e. replacement value for determining maintenance levels or market value for life cycle costing.