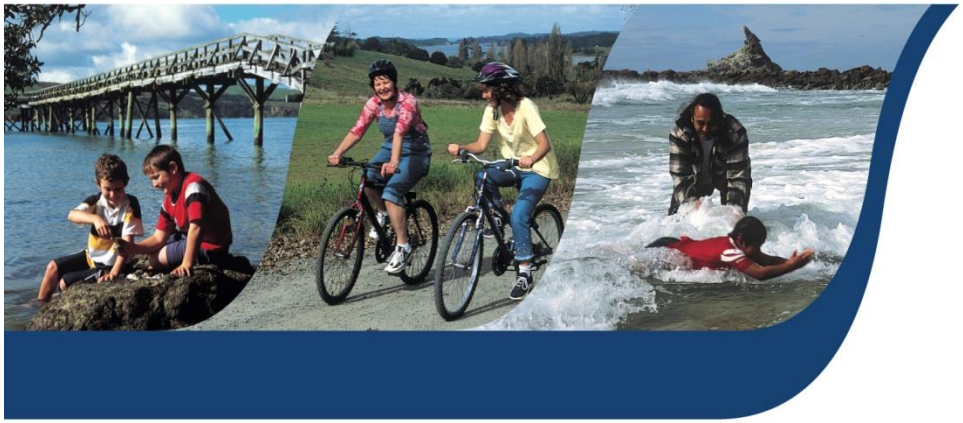

Kaipara District Council

Asset Management Plan 2015

Stormwater

June 2015

Status: Final

Kaipara te Oranganui
KAIPARA DISTRICT
Two Oceans Two Harbours

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REVISION SCHEDULE

Rev No	Date	Description	Signature or Typed Name (documentation on file).			
			Prepared by	Checked by	Reviewed by	Approved by
A	25 March 2014	First Draft	AMG	PR		
B		Draft Including Client Comments	AMG			
C		Draft for Exec Team Review	C Bishop			
D		Draft for Commissioners Review	C Bishop			
E	Aug 2014	Final Draft	PT		CD	JB
F	Oct 2014	Final	BT		CD	JB
G	Nov 2014	Final Review Financial Numbers	BT		CD	JB
H	Jun 2015	Final after LTP	RS	RG	PC	CM

Kaipara District Council

Stormwater Asset Management Plan

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Executive Summary

Introduction

Council operates five community stormwater schemes for Dargaville, Baylys Beach, Kaiwaka, Mangawhai and Te Kopuru in order to protect people, dwellings, private property and public areas from flooding by managing stormwater, discharges and collecting contaminants in a manner that protects the environment and public health.

The purpose of this Asset Management Plan (AMP) is to summarise Kaipara District Council's (Council) strategic and long-term management approach for the provision and maintenance of Stormwater assets.

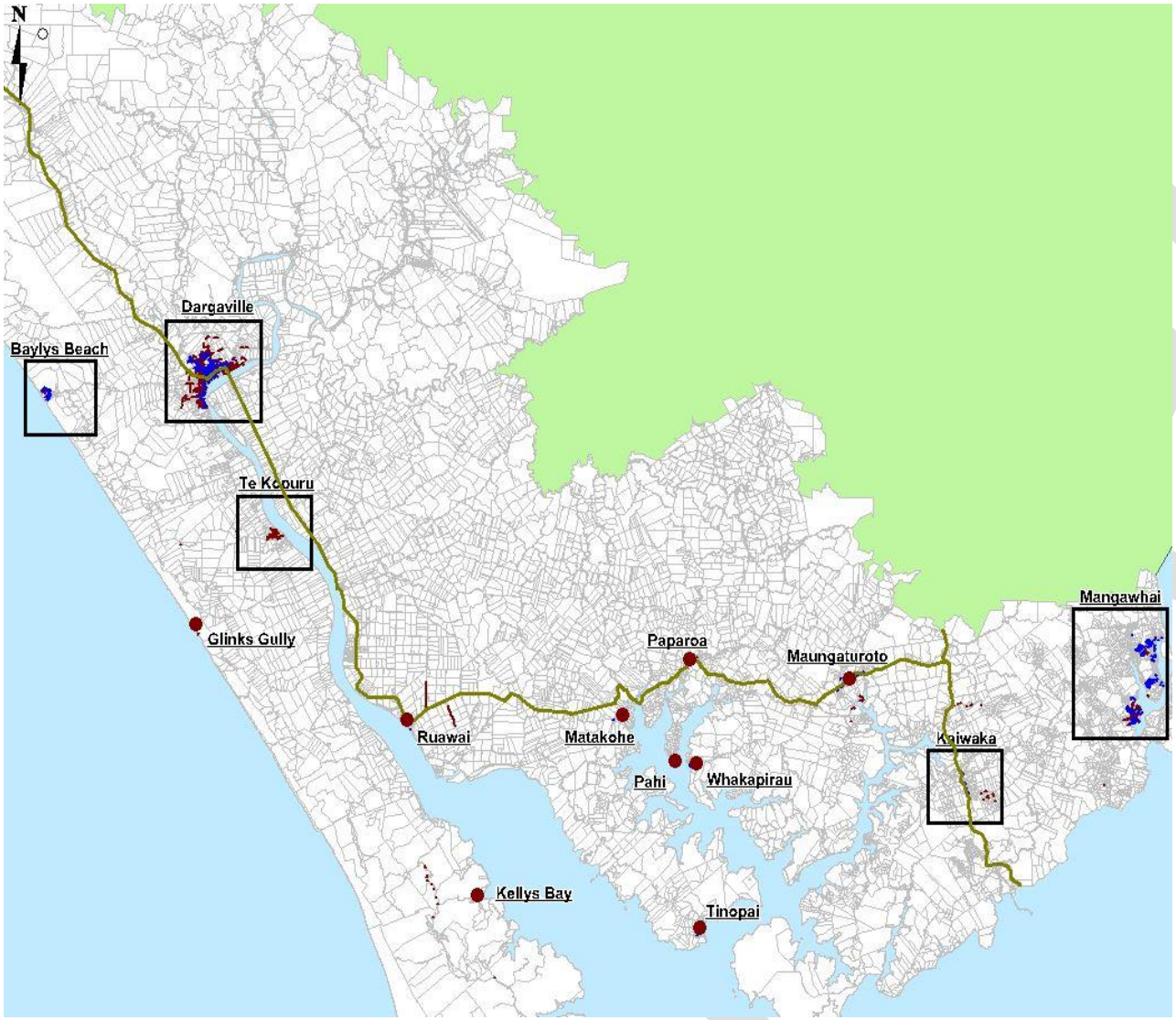
The AMP provides discussion of the key elements affecting management of Council's Stormwater assets, including the legislative framework, links to Community Outcomes, Policies and Strategy, the proposed Levels of Service and performance measures and demand, environmental and service management.

Asset performance, condition and value are examined and a Financial and Lifecycle Strategy is presented to define the investment planned to address issues and to ensure that an uninterrupted service is provided to customers now and into the future.

The provision of sustainable Stormwater systems is about finding a balance between maintaining and enhancing natural watercourses and providing piping to enable urbanisation to occur while collecting and treating Stormwater runoff from the effects of urbanisation prior to it entering the receiving environment waters such that they are not detrimentally affected.

With the changing climatic conditions, potentially higher intensity storms are likely to occur and thus a conservative approach to managing Stormwater is considered appropriate.

With the Kaipara Harbour bounding a large proportion of the Kaipara District this provides a significant focus for effectively managing stormwater runoff and minimising adverse effects on that major receiving environment.



Council looks forward to working with the community in the provision of sustainable stormwater systems.

The Assets

The purpose of this Asset Management Plan (AMP) is to summarise in one place Kaipara District Council's (Council) strategic and long-term management approach for the provision and maintenance of its stormwater assets including detailed information about the Assets.

The five Council operated community stormwater schemes in Dargaville, Baylys Beach, Kaiwaka, Mangawhai and Te Kopuru protect the communities from flooding by removing stormwater, collecting contaminants and then discharging the stormwater in a manner that protects the environment and public health. The location of each of these communities within Kaipara District is illustrated in the figure below.

Stormwater systems predominantly incorporated into the road network are provided in Glinks Gully, Kellys Bay, Pahi, Whakapirau, Tinopai, Paparoa and Matakohe and Maungaturoto.

An overview of the stormwater assets in the District is provided in the Asset Overview and Asset Valuation summary tables below.

Stormwater asset overview summary

Community	Pipeline length(m)	Open Drains(m)	Manholes	Floodgates	Inlet/Outlet
Baylys	3,960	10	55		0
Dargaville	35,275	34,671	673	57	23
Kaiwaka	1,646	262	9		106
Mangawhai	22,604	7,047	359		31
Te Kopuru	149	4,760	2		14
Grand Total	**63,633**	**46,750**	**1,098**	**57**	**174**

Note:

- Open drains length includes length of Swale Drains, Drain and Open Drain.
- Pipeline length includes length of Gravity Main, Culvert, Catch Pit lead and Service Main.

Summary of stormwater asset valuations (2013)

Community	Replacement Costs $	Depreciated Replacement Cost $	Annual Depreciation $
Dargaville	19,810,710	12,272,407	229,043
Baylys	1,138,749	964,875	13,937
Kaiwaka	411,216	382,808	4,398
Mangawhai	7,531,631	6,352,634	96,884
Te Kopuru	234,447	96,136	3,605
Maungaturoto*	209,162	195,160	2,365
Pahi*	1,095,682	1,007,987	13,607
Stormwater Total	**$30,431,597**	**$21,372,008**	**$363,838**

Note * = Maungaturoto and Pahi SW systems form part of the Roading asset base

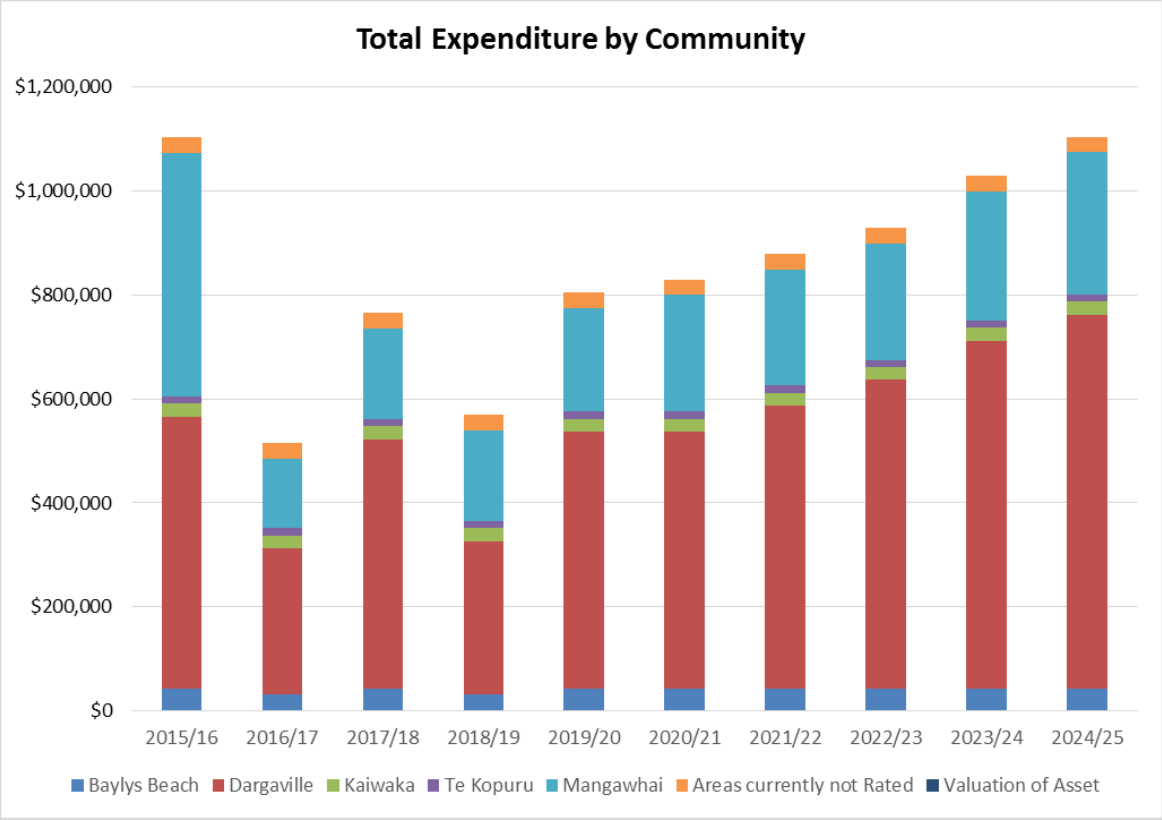
Key Issues

Key matters requiring attention for the stormwater service are summarised in the table below.

Issue	Location
Incomplete or lack of finalised Stormwater Management Plan (SMP).	All
Stormwater network capacity unknown	Dargaville, Baylys Beach
Lack of O and M manuals for detention ponds	Dargaville, Mangawhai
Distinction between urban versus roading stormwater assets	Dargaville, Mangawhai, Kaiwaka, Te Kopuru
Safety concerns of residents around deep open drains	Dargaville, Mangawhai
Possibility of steel pipes installed in 1970's remaining in network	Dargaville
Poor performance / lack of soakage systems	Mangawhai
Infiltration issues with wastewater network	Dargaville, Maungaturoto, Kaiwaka
Asset Information • Inventory – accuracy, completeness • Criticality – definition • Condition • Performance • Lives • Lack of maintenance history	All

Financial Strategy

The Financial and Lifecycle Strategy defines the operational, maintenance, renewal and new capital expenditure over the next 10 years. A summary of the planned expenditure by community and by category is shown in Figure 1-1 and 1-2 below.



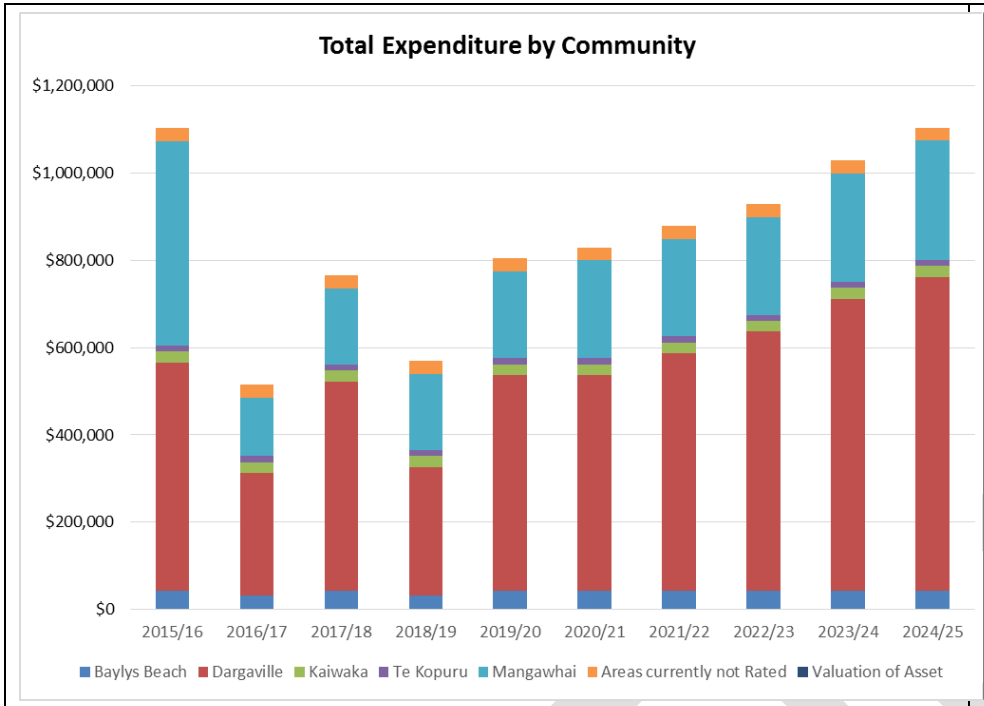


Figure 1-1: Total Expenditure by Community

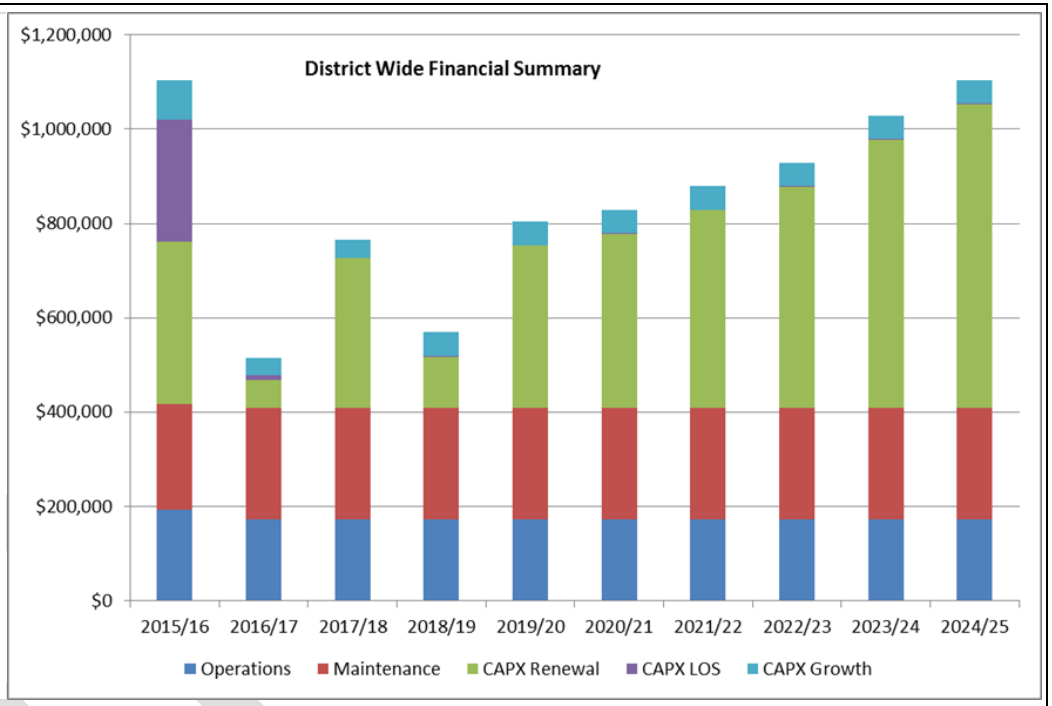


Figure 1-2: District Wide Financial Summary

Continuous Improvement

Making the Kaipara District an excellent place to live is a key goal for Council. Council's desire to improve community well-being needs to be balanced with the need to keep rates at an affordable level and for the organisation to operate in a financially prudent manner.

Council has developed an Improvement Plan to capture issues and plan the improvements required to the stormwater assets and asset management practices. A summary of the Improvement Plan is included in Appendix B.

Timing for completion of the activities may vary depending on Council priorities. This may result in re-prioritisation of activities from year to year, while maintaining bottom-line budgets.

The key improvements to be achieved over the next three years to facilitate achievement of core asset management and delivery of the stormwater business are:

- Review and define appropriate levels of service.
- Review the Asset Register to ensure all known assets are properly recorded.
- Complete the data cleansing project to reduce the number of unknown asset attributes or wrongly identified asset attributes (roading versus urban).
- Review current status of Stormwater Management Plans, update and complete as required, and adopt across the District.
- Undertake a formal condition assessment of critical Stormwater Assets (in alignment with Water Supply and Waste Water Services) including physical inspections, to feed into the renewals programme.
- Clarify ownership of assets across the District (roading versus urban), including responsibilities for townships that are not serviced.
- Review of data management procedures, including the development of a system for recording maintenance and costs at asset component level in the asset register.
- Review the adequacy of Developers handover requirements contained within Councils Engineering Standards. Identify a programme to enhance handover requirements including asset schedules and capital cost recording for each asset created.
- Update hydraulic model of the Dargaville stormwater network and undertake a flood study to assess the performance of the Dargaville network. Poor performing assets should be further analysed to understand consequence of failure for potential inclusion in forward works renewals programme.
- Development of Soakage Design Manual including Engineering Design Standards and SMP references.
- Review and update Council's overall risk management framework and implement outcomes of this update into the AMP and other Council and contract documents.
- Produce a methodology for asset renewal requirements from which a renewal programme can be developed based on performance and condition ratings. Prioritise renewals based on a combination of criticality and condition/performance. Development and prioritisation of the renewals programme to be repeated annually.
- Identify Consent required improvements and timing, and develop an Improvement Plan.

1 Strategic Context

1.1 Purpose

The purpose of this Asset Management Plan (AMP) is to summarise in one place, Kaipara District Council's (Council) strategic and long-term management approach for the provision and maintenance of its stormwater assets.

The AMP demonstrates responsible management of the District's assets on behalf of customers and stakeholders and assists with the achievement of strategic goals and statutory compliance. The AMP combines management, financial, engineering and technical practices to ensure that the levels of service required by customers is provided at the lowest long term cost to the community and is delivered in a sustainable manner.

This AMP outlines and summarises the Council's strategic and management long-term approach for the provision and maintenance of stormwater services to properties located in urban centres throughout the District (excluding those serviced by the Raupo Drainage District i.e. Ruawai, or communities serviced largely by roadside drains e.g. Maungaturoto, which are included under the Roading activity).

A list of the acronyms and abbreviations used in this AMP are included in Appendix F.

1.2 Service Description and Scope

Council provides urban stormwater systems in Dargaville, Baylys, Mangawhai, Kaiwaka and Te Kopuru. Stormwater systems predominantly incorporated into the road network are provided in Glinks Gully, Kellys Bay, Pahi, Whakapirau, Tinopai, Paparoa and Matakohe.

Council undertakes the following with assistance from their Maintenance Contractor, and other service providers as required:

- Asset Management
- Customer Services
- Network Operations and Maintenance
- Capital and Renewal Works Programme
- Consent Renewal, Monitoring and Compliance

The scope of this AMP is to determine current and future stormwater standards, levels of service and funding levels. The AMP should be used to drive and manage the stormwater business throughout the following year, with forecasts for the next 10 years.

In providing stormwater systems, Council's aim is to protect people, dwellings, private property and public areas from flooding by removing stormwater, and to discharge stormwater and collect contaminants in a manner that protects the environment and public health.

Council's approach to stormwater management is to minimise the impacts on the built environments by reducing adverse effects from stormwater runoff on the environment. The stormwater network is progressively developing and management requirements will need to be continuously reviewed to ensure the assets are maintained appropriately.

1.3 Key Issues

The key issues Council are currently managing as part of the stormwater activity are summarised in Table 1-1 below. These issues are further addressed in Section 2.1 (Asset Details) and Section 5 (Improvement Plan) of this AMP.

Table 1-1: Key Issues for Council's Stormwater Activity

Issue	Description
Ownership of Stormwater Assets	Further clarification of ownership and associated operation and maintenance responsibilities is needed across the District. Currently there are discrepancies between urban, roading and private stormwater systems.
Extending services to other townships	Formal, reticulated stormwater systems may be required in the future for Paparoa, Tinopai, Maungaturoto and Pahi to cater for growth and visitors. This is discussed further in sections 1.8 and 2.1.8 and will need to be continually reviewed during future updates of the AMP.
Public Safety	The community wish to pipe the deep open drains in urban areas. When concerns are raised, these should be investigated to understand the community's reasons why the drain needs to be piped and then each case assessed with regards to safety, health and water quality aspects to determine if the piping is warranted.
Water Quality	Understanding and complying with the environmental requirements of NRC with respect to stormwater quality, ensuring these requirements are appropriate for the risks involved and affordable to the Kaipara community. Any requirements will need to be incorporated in the development of Stormwater Management Plans for each township.
Asset Data	The current asset register contains a number of unknown and incorrectly-coded asset attributes. This affects Council's asset knowledge, asset valuations and data confidence.

Issue	Description
Coastal Discharges	A better understanding of the impact that urban stormwater discharge has on the receiving environment they discharge into is required. This is the current experience at Mangawhai with the renewal of the stormwater discharge consents currently in progress.

1.4 Assumptions

Council has made a number of assumptions in preparing the Asset Management Plan, which are described in Table 1-2 below.

Table 1-2: Key Assumptions

Assumption Type	Assumption	Discussion
Financial assumptions	That all expenditure has been stated in 01 July 2015 dollar values (GST exclusive) and no allowance has been made for inflation.	The LTP will incorporate inflation factors. This could have a significant impact on the affordability of the plans if inflation is higher than allowed for, however Council is using the best information practicably available from Business and Economic Research Limited (BERL).
Growth forecasts	A reasonable degree of reliability can be placed on the population and other growth projections that have been used as forecast assumptions. However, these are projections and need to be carefully tracked to ensure that they continue to be a reliable indicator of likely future trends.	If the growth is significantly different it will have a significant impact. If higher, Council may need to advance capital projects. If it is lower, Council may have to defer planned works.
Network capacity	That Council's knowledge of network capacity is sufficient enough to accurately programme capital works.	If the network capacity is lower than assumed, Council may be required to advance capital works projects to address congestion. The risk of this occurring is low; however the impact on expenditure could be large. If the network capacity is higher than assumed, Council

Assumption Type	Assumption	Discussion
		may be able to defer works. The risk of this occurring is low and is likely to have little impact.
Changes in legislation and policy	That there will be no major changes in legislation or policy.	The risk of major change is high due to the changing nature of government and politics. If significant changes occur it is likely to have a significant impact on the required expenditure. Council has not mitigated the effect of this.
Resource consents	That Council will be granted necessary resource consents for key projects.	If these consents are not granted, Council will need to consider alternative arrangements for these projects which may impact the budget and timeframe of the projects. If existing consents are not renewed, a new asset may be required to replace the existing asset, through a new capital project.

1.5 Relationship to Community Outcomes, Council Policies and Strategies

Council's **vision** for the stormwater service is *to ensure that stormwater flooding and discharge to the environment is contained and managed to minimise impacts to people, property and the environment.*

Community Outcomes are spelled out in the Long Term Plan (LTP) which describes how Council aims to maintain and improve the well-being of the District. Community outcomes focus on the things that are within Council's scope and influence.

Community Outcomes that the stormwater activity contributes to most are shown in Table 1-3 below. Levels of service and performance measures to which these are related are presented in Section 1.10

Table 1-3: Stormwater Services and Community Outcomes

Stormwater Services contribute to the following Community Outcomes	How this service contributes
Safety and good quality of life	Minimise flooding of dwellings by ensuring stormwater overland flow paths have adequate freeboard to buildings. Ensure that stormwater systems do not present a safety hazard.
Sustainable Economy	Minimise flood damage to properties by ensuring stormwater systems have adequate capacity.
Special character and healthy environment	Minimise scour from stormwater by controlling and discharging stormwater flows at protected outfalls.

1.6 Stakeholders and Consultation

There are many individuals and organisations that have an interest in the management and / or operation of Council's stormwater assets. The following key external and internal stakeholders are identified for this AMP:

External

- The Kaipara District community, including residents and ratepayers
- Residential and commercial water consumers
- Government agencies (e.g. Department of Health, Ministry for the Environment, Audit NZ)
- Local Iwi
- Civil Defence and Emergency Management
- Northland Regional Council
- Maintenance Contractor
- Visitors to the District.

Internal

- Councillors
- Commissioners

- Water Services Manager and Water Services Team
- Finance Manager
- Information Services Manager
- Records and Information Manager.

Council consults with the public to gain an understanding of customer expectations and preferences. This enables Council to provide a level of service that better meets the community needs. The Council's knowledge of customer expectations and preferences is based on:

- Feedback from public surveys
- Public meetings
- Feedback from elected members
- Analysis of customer service requests and complaints
- Consultation via the Annual Plan and LTP process.

Council undertakes customer surveys on a regular basis, using the National Research Bureau Ltd. These Communitrak surveys assess levels of satisfaction with key services, including stormwater, and the willingness across communities to pay for service improvements.

Summary of key survey results from 2014 regarding the stormwater service:

- 76% of residents that are provided with a piped stormwater system, responded with being very/fairly satisfied with the stormwater service (70% in 2012)
- 16% were not very satisfied. (23% in 2012)
- 52% of respondents (including residents not provided with a piped stormwater system), were very/fairly satisfied with the stormwater service, compared with 57 in 2010.

Community satisfaction is a key performance measure of the stormwater service.

1.7 Legislative Framework and Linkages

The Stormwater AMP is related to national and local legislation, regulatory and policy documents as listed in

Table 1-4 through Table 1-7 below.

The legislation and guidelines below are listed by their original title for simplicity. Amendment Acts have not been detailed in this document however are still considered in the planning process. For the latest Act information refer to http://www.legislation.govt.nz/

Table 1-4: Relevant Legislation

Acts
The Health Act 1956
The Local Government Act 2002, especially: • Part 7 • Schedule 10 • The requirement to consider all options and to assess the benefits and costs of each option • The consultation requirements
The Climate Change Response Act 2002
The Civil Defence Emergency Management Act 2002 (Lifelines)
The Resource Management Act 1991
The Local Government (Rating) Act 2002
The Land Drainage Act 1908
The Rivers Boards Act 1908
The Soil Conservation and Rivers Control Act 1941
The Health and Safety in Employment Act 1999
The Utilities Access Act 2010
The Building Act 2004
The Consumer Guarantees Act 1993
The Sale of Goods Act 1908
The Fair Trading Act 1986
Public Records Act 2005

Table 1-5: Relevant Regulatory Requirements

National Policies, Regulation, Standards and Strategies
The Government's Sustainable Development Action Plan
Code of Practice for Urban Sub-division
NAMS Manuals and Guidelines http://www.nams.org.nz
Office of the Auditor-General's publications http://www.oag.govt.nz
Standards New Zealand • AS/NZS 2032:2006 Installation of PVC Pipe Systems • AS/NZS 2280:2004 Ductile Iron Pressure Pipes and Fittings • AS/NZS 3725:2007 Design for Installation of Buried Concrete Pipes • AS/NZS 2566.1:1998 Buried Flexible Pipe Design • AS/NZS 2566.2:2002 Buried Flexible Pipe Installation • NZS 3101.1&2:2006 Concrete Structures Standard • NZS 3910:2003 Conditions of Contract for Building and Civil Engineering Construction • NZS 4404:2010 Land Development and Subdivision Infrastructure • SNZ HB 4360:2000 Risk Management for Local Government • NZWWA New Zealand Infrastructure Asset Grading Guidelines 1999 National Guidelines • NZ Pipe Inspection Manual 2006 • Rawlinsons NZ Construction Handbook.

Table 1-6: Relevant Council Planning and Policy Documents

Local Policies, Regulations, Standards and Strategies
Council District Plan
Council Long Term Plan
Stormwater Asset Management Plan (previous versions)
Northland Regional Plan
NRC Regional Policy Statement
NRC Regional Air Quality Plan
NRC Regional Coastal Plan
NRC Regional Water and Soil Plan
Council Engineering Standards and Policies 2011
Council Procurement Strategy and Policy Documents March 2012

Table 1-7: Relevant Council Bylaws

Council Bylaws
Wastewater Drainage Bylaw 2009 (section 13.3)

Preparation and implementation of this AMP and the associated long-term financial strategies aids Council compliance with these requirements.

Local Government Act 2002 requires Local Authorities to:

- Identify community outcomes and priorities, at least every six years. These must cover social, cultural, economic and environmental dimensions, and indicators are developed to assess the contribution of stormwater services to these outcomes.
- Prepare a range of policies, including Significance, Funding and Financial Policies.
- Prepare a Long Term Plan (LTP formerly the Long Term Council Community Plan or LTCCP), at least every three years, which must identify:
  - Activities and assets;

- How the asset management implications of changes to demand and service levels will be managed;
- What and how additional capacity will be provided, and how the costs will be met;
- How the maintenance, renewal and replacement of assets will be undertaken and how the costs will be met;
- Revenue levels and sources.

Regarding Significance, all local councils must adopt a policy that sets out their approach to determining the significance of proposals or decisions relating to issues, assets and other matters, and any thresholds, criteria or procedures to be used by Council in assessing whether these are significant.

The new legislation puts a stronger emphasis on strategic planning (S.121) that encompasses:

- The systems for supply of water and disposal of waste and stormwater's (cl.3(a)).
- The quality of drinking water and wastewater (including stormwater) (cl.3(b)).
- Current and future demands for water and wastewater (including stormwater) services and related effects on the quality of supply and the discharges to the environment. (cl.3(c)).
- Options for meeting current and future demands with associated assessments of suitability (cl.3(d)).

Local Government (Rating) Act 2002, the funding companion to this proposed new LGA:

- Permits Councils to strike a rate or charge for any activity they choose to get involved in (Section 16).

Resource Management Act 1991 and amendments:

The RMA 1991 is an established planning framework covering land designation processes and resource consents for activities that affect the environment. Northland Regional Council (NRC) is responsible for monitoring compliance with certain environmental provisions of this Act.

The RMA is key legislation influencing how stormwater is managed, in particular the effect of the stormwater discharges on the environment. Council is required to gain approval to discharge from the drainage networks under the RMA. Council are working with NRC to understand the Regional Plans for managing stormwater discharges in urban areas.

Council is also involved in the control of development and subdivisions under the RMA and the District Plan, to manage effects on the environment.

Building Act 2004:

The Building Act 2004 and its related provisions set standards for stormwater control as they relate to buildings. Under the Building Act, a territorial authority has a regulatory role in receiving and assessing building consent applications. Council is responsible for producing PIMs (Project Information Memoranda) and LIMs (Land Information Memoranda). Information on drainage plans, flood records, maintenance history, notices and correspondence should be included in these memoranda. Council may reject a building consent where there is a risk of flooding. The Building Act also stipulates the minimum level of flood protection for houses.

Health Act 1956 contains:

The Health Act requires Council to provide sanitary works, including drainage works for all lands, buildings, and pipes used in connection with such works.

The stormwater network is significant as defined in Council's Significance Policy, due to its complexity, asset value and risk to the community. This service is expected to be delivered in perpetuity and the asset is maintained and replaced as required to enable this. For significant services, the Office of the Auditor-General defines a higher level of customer consultation. This includes evaluating level of service options, and undertaking consultation on level of service options with the community and other relevant stakeholders.

Health and Safety in Employment Act 1992:

Requires the provision of safe work places for all activities by staff and contractors, and the maintenance of an audit trail to demonstrate compliance.

Public Records Act 2005

Council is required to create and maintain full and accurate records including all matters that are contracted out to an independent contractor. This includes records which relate to property or assets owned and/or administrated by the local authority such as contract documents and asbuilts of public utilities and service such as: roading, drainage, sewerage and stormwater, water supply, flood control, power generation and supply, refuse disposal and public transport.

National Environmental Standards

The Resource Management Act promotes the sustainable use of resources. Its primary vehicle for addressing the discharge of effluent to the environment is via the Regional Waste and Soil Plan at Regional Level; and District Plans at District level. Given these plans are controlled at their respective jurisdictive levels there are now varying, inconsistent standards across Regions and Districts.

One method of ensuring consistent application across New Zealand is provided in sections 43 and 44 of the Resource Management Act. These allow the Minister for the Environment to enact regulations called National Environmental Standards. When a National Environmental Standard is enacted the same standards must be applied regardless of jurisdiction.

The following National Environmental Standards are in force:

- Air quality standards
- Sources of human drinking water standard
- Telecommunications facilities
- Electricity transmission

The National Environmental Standards listed below are at various stages of development, ranging from initiating consultation to being legally drafted:

- Contaminants in soil
- Ecological flows and water levels
- Future sea-level rise
- Plantation forestry

This AMP has considered the impact of those National Environmental Standards that are in force at the time of the current update.

Links with Other Documents

This AMP is a key component in the Council's strategic planning function. This plan supports and justifies the financial forecasts and the objectives laid out in the Long Term Plan (LTP). It also provides a guide for the preparation of each Annual Plan and other forward work programmes.

1.8 Demand Management

This section of the plan analyses factors affecting demand including population growth, social and technology changes. The impact of these trends is examined and demand management strategies are recommended to address demand and ensure:

- Existing assets' performance and utilisation are optimised
- The need for new assets is reduced or deferred
- Council's strategic objectives are met
- Provision of a more sustainable service
- Council is able to respond to customer needs.

The process of demand management provides Council with a high level tool to identify where infrastructure growth is likely to occur over a period of time. It enables a natural structured growth of the public system to occur. Without this type of assessment ad-hoc development of localised stormwater systems occurs and can leave a burdensome, somewhat redundant legacy for Council to operate and maintain.

Demand management strategies provide alternatives to the creation of new assets in order to meet demand and look at ways of modifying customer demands so that the utilisation of existing assets is maximised and the need for new assets is deferred or reduced.

Precise demand forecasting for the management of stormwater infrastructure is a difficult undertaking. This AMP has largely been based on historical data and growth predictions provided by Statistics NZ in order to identify potential future demand on the public stormwater infrastructure.

The impact of growth is currently managed in multiple ways:

- **Regulatory control**

Integrating the stormwater management objectives in all new developments from initial planning and design stages. This is the basic approach of the 2011 Engineering Standards.

- **District Plan (DP)**

The DP is the legal framework that is used for land use planning. The proposed DP does not allow an increase in downstream flows post development.

- **Catchment Management Planning**

Catchment management planning is a key tool for facilitating the integrated approach to stormwater management to achieve the desired environmental outcomes. The draft SMPs developed to date are planned to be updated during the 2014/2015 period then formally adopted by Council.

- **Education**

Education is an important tool for providing property owners with an understanding of their role and responsibility for managing their private stormwater systems. Environmental awareness is increasing as the community realises the need to protect the environment, however at the same time property owners expect to be able to develop their property without restriction. Council has undertaken limited education to date but it is a demand management mechanism that can be considered in the future. Education promotes environmental awareness and the effects of activities such as car washing, where contaminants may enter the stormwater system through sumps.

The components of demand management are shown in Table 1-8.

Table 1-8: Examples of Stormwater Demand Management Strategies

Demand Component	Stormwater Examples
Operation: Looks at Levels of Service provided by the infrastructure and the application of Best Practicable Options for sustainable long-term management.	Application of Low Impact Design within developments to reduce the demand on the public stormwater infrastructure and promote the natural environment. Integration of National and International standards for stormwater device design into Engineering Standard documents.
Incentives: Encourage the application of Low Impact Design and the use of rainwater tanks throughout the community.	Community education and interaction to promote the use of water reuse from rainwater tanks to reduce clean water usage from the public supply.
Community Education/Interaction: Develop partnerships with the communities in the District.	Promotion of work days and community planting to promote the receiving environment. Production of Engineering Standards to aid development in the selection of the Best Practicable Option for stormwater management. Printed/electronic factsheets to promote stormwater and the receiving environment.
Connection Denial: Regulation of connections to the public system to promote long-term stability.	Where development lies outside of the prescribed growth zones, or where substantial increases in growth are identified Council may consider the option to force developers to treat and attenuate stormwater runoff from the development within their site boundaries.

1.8.1 Population Growth

The last Census undertaken in 2013 recorded the population at 18,960. This is an increase of 825 or 4.5%. Prior to this there was a growth increase of 5.6% following the 2006 Census.

Historically, population growth figures have been much lower than currently with a 2.8% increase in population for the Kaipara district over the 10 year period from 1996 to 2006.

The focus of growth recently has been Mangawhai with most other areas experiencing little growth and indeed with Dargaville and Maungaturoto populations retracting.

The 2012/2022 LTP predicts little or no growth in the long term. A key consideration is how this growth is split across the District, with significantly less growth in western and northern areas of the District. The predicted level of growth as set out in the 2012/2022 LTP is presented in Table 1-9.

Table 1-9: Annual Rating Unit Growth Forecasts 2012/2022:

Area	Current Population (2013)	Years 1 – 4 2012/2013 –2015/2016	Years 6 – 10 2016/2017 – 2021/2022
Dargaville / Baylys	4,626	1.50%	1.50%
Glinks Gully	72	0.00%	0.00%
Kaiwaka	576	1.00%	1.50%
Maungaturoto	756	1.00%	1.50%
Te Kopuru	465	0.00%	0.00%
Mangawhai	2,415	1.60%	2.50%
District (including all other areas)	18,969	1.36%	1.69%

While the above growth predictions are relatively low, the District is growing in other ways as an increasing number of visitors are in the District during the summer season from October to April, particularly during the weekends.

The large number of non-residential owners of holiday homes in the District is one of the main contributors to growth, especially in Mangawhai and its surrounding areas, but also Maungaturoto, Pahi, Tinopai, Baylys Beach, Kai Iwi Lakes and Paparoa.

A study of the impact non-resident holiday home owners have on the District is listed as a future action in the Three Year Improvement Plan for this AMP.

Future demand for stormwater services is driven by:

- Extent and location of urban growth.
- Changing environmental expectations.
- Frequency and intensity of rainfall events.

There is currently no identified growth driven capital projects for stormwater over the next three years. Where infrastructure is installed, this will likely be installed by developers. A provision has been made within the capital works budget for Council to contribute towards increasing the capacity of stormwater infrastructure installed by developers, if it will benefit the wider community.

Stormwater is unique from other Council services as stormwater is not consumed or directly influenced by population growth. The level of surface permeability and the frequency and intensity of rainfall events are the two main parameters impacting future stormwater flows and demands.

Increases in growth in the District creates increase in hard surfaces (driveways, buildings and roads etc.) which places additional demand on existing stormwater assets, or requires new stormwater assets. Currently, the proportion of the District that is impervious is unknown but is a factor considered in the development of Stormwater Management Plans (SMP). It is acknowledged that this will increase with growth, especially in the Mangawhai development area. Council uses three options to manage the increases in imperviousness as follows:

- Tolerate the consequences.
- Increase soakage.
- Provide piped solution to cater for the increased flow.

In general, the forecasts assume that any additional demand for services created by the increased growth levels will be absorbed by the rating base growth and by more efficient delivery of services.

1.8.2 Increase in Demand for Stormwater Services

As development occurs in growing coastal areas such as Mangawhai, Pahi, Tinopai, Whakapirau and Baylys, there is an increasing expectation from ratepayers for Council to provide stormwater management systems to minimise the impact of flooding, erosion and water quality degradation. This is being driven by the ratepayer's desire for an appropriate level of protection from stormwater flooding, an increasing awareness of the natural environment and a desire to minimise adverse environment impacts.

A particular characteristic of the Kaipara is that approximately 64% of the ratepayers reside within the District and 36% outside the area. For Mangawhai these figures are 38% within the District and 62% outside the area and for the balance of the District the figures are 74% and 26% respectively.

1.8.3 Technological Change

Historically the methodology for dealing with stormwater runoff was to quickly remove it from urban and risk areas as quickly as possible through pipe networks and dedicated overland flow paths. Discharges were made direct to the receiving environment with little regard to the potential contaminants that they may contain, and the effects they could have on the stability and functioning of the ecosystems.

Over the past two decades there has been a philosophical shift in this principle as new technologies have been developed to promote Low Impact Design in the management of stormwater. This involves implementing solutions to mimic the natural environment prior to development, and managing the impacts on the receiving environments.

Such advancements in stormwater management include the application of a treatment train approach, (i.e. the use of two or more treatment methods in series to provide more effective contaminant removal), such as the use of ground soakage to maximise groundwater recharge and riparian planting around watercourses.

This shift in philosophy is supported by Council and guidance for its application is provided in the Engineering Standards and supporting documentation.

Technological advances in stormwater management are leading to more economically feasible devices entering the mainstream market and becoming more widely used. Stream restoration and riparian planting is replacing the standard lined channel, whilst the general treatment train approach to water quality is being applied to greatly improve discharge quality to lessen the effect on the receiving environment.

Council considers the use of wetlands and detention basins for stormwater management are integral parts to mimicking the natural flow regime in the receiving environment, whilst providing good levels of treatment.

Council is committed to working with NRC to implement new technology for stormwater management throughout the District. A constant awareness of technology changes is necessary to most effectively predict future trends and their impact on the utility infrastructure assets.

This can be achieved through Council staff attending conferences, seminars and presentations along with seeking advice from professional advisors.

1.8.4 Economic Trends

New Zealand is currently experiencing a significant growth in sectors and areas. The area from Tauranga to Auckland is experiencing considerable growth and outlying areas such as Mangawhai are beginning to see the positive effects of this growth with increased interest in building and property sales.

Extension of the Northern Motorway to Warkworth may see more commuters prepared to settle in Mangawhai.

Certainly Mangawhai is very affordable compared to Orewa and is attracting a share of retirees.

1.8.5 Legislative Change

Legislative change can significantly affect the Council's ability to meet minimum levels of service, and may require improvements to infrastructure assets. Changes in environmental standards and the Resource Management Act 1991, may affect stormwater discharge requirements.

In addition, changes in legislation can influence the ease at which new Resource Consents are obtained or existing Consents are renewed. Experience has demonstrated that Resource Consent conditions are becoming more stringent with increased monitoring requirements being commonplace and the likelihood of additional treatment being necessary.

The Ministry to the Environment (MfE) is promoting a series of National Environmental Standards that can be enforced as regulations under the Resource Management Act. One of the sections under development relates to Ecological Flows and Water Levels in rivers, lakes, wetlands and groundwater resources. Although the receiving environment is already assessed in Resource Consent applications, the impact of this Standard is likely to require greater consideration of discharge quantities and quality of stormwater into the receiving environment.

1.8.6 Customer Expectations

As communities develop, stormwater runoff is an increasing concern and the impact of flooding, erosion and water quality degradation is more prominent. With the intensity of development in areas such as Mangawhai, the misconception that stormwater can run down the side of the road or through properties and soak away without creating flooding or erosion nuisance has been eliminated. The ratepayers now expect a higher level of flood protection due to awareness of the impact of stormwater quality on the environment. The cost of maintaining or improving the stormwater management systems and complying with water quality discharge conditions needs to be clearly communicated to the communities.

1.8.7 Environmental Considerations

Existing stormwater infrastructure may have been developed prior to the implementation of current quantity and quality legislative or regulatory requirements. It is acknowledged that in such cases Council may be required to provide additional infrastructure to mitigate impacts on the receiving environment.

1.8.8 Changes in Weather Pattern

The MfE advise that climate scientists estimate Northland's temperature could increase 0.9°C by 2040, and 2.1°C by 2090[1]. This compares to a temperature increase in New Zealand during last century of about 0.7°C[2]. To put this in perspective, the 1997/1998 summer, which was particularly long, hot and dry, was only about 0.9°C above

[1] Ministry for the Environment, Climate Change Projections for the Northland Region. 2 August 2012: http://www.mfe.govt.nz/issues/climate/about/climate-change-affectregions/northland.html
[2] NIWA, Past Climate Variations over New Zealand: http://www.niwa.co.nz/our-science/climate/information-and-resources/clivar/pastclimate

New Zealand's average for the 1990s. Northland is expected to experience more frequent and intense heavy rainfall events which will increase the risk of flooding and could be four times as frequent by 2090.

Some of the potential impacts of climate change of stormwater and associated public infrastructure could include:

- Increased flood frequency resulting from more intense rainfall
- Increased number of systems that do not have an appropriate Level of Service capacity, due to increased overall rainfall
- Increased coastal flooding through higher tide and surge levels
- Potential overwhelming of existing treatment devices leading to increased contaminant loadings in the receiving environment
- Increased coastal and fluvial erosion resulting from increased tide variations and discharges from the stormwater system.

NRC monitors rainfall at five sites throughout the District to understand the long-term effects of climate change on rainfall patterns. In addition The National Institute of Water and Atmospheric Research (NIWA) maintain rainfall monitoring through an automatic station in Dargaville.

Although the definitive effects of climate change are not known guidance is provided in a number of publications from a number of organisations. The Intergovernmental Panel on Climate Change (IPCC) releases guidance at regular intervals considering global impacts of climate change. The Ministry for the Environment distils the information from the IPCC publication into "*Climate change effects and impacts assessment: A guidance Manual for Local Government in New Zealand*" and the summary report "*Preparing for Climate Change: A Guide for Local Government*" which provides New Zealand specific Climate Change Data.

Table 1-10 below is an extract from the MfE publication and highlights the potential effects of Climate Change on stormwater networks.

Table 1-10: Effects of Climate Change on Stormwater Network

Resource	Key Climate Influences	Impacts of Climate Change
Stormwater reticulation	Increased rainfall	Increased frequency and/or volume of system flooding. Increased peak flows in streams and related erosion. Groundwater level changes. Changing flood plains and greater likelihood of damage to properties and infrastructure.
Rivers	Increased Rainfall	River flows likely to, on average, increase in the west and decrease in the east of New Zealand. More intense precipitation events would increase flooding (by 2070 this could range from no change, up to a fourfold increase in the frequency of heavy rainfall events). Less water for irrigation in northern and eastern areas. Increased problems with water quality.
Drainage	Increased Rainfall	Increased frequency of intense rainfall events could occur throughout New Zealand, which would lead to increased surface flooding and stormwater flows, and increased frequency of groundwater level changes.
Coastal areas	Sea-level rise Storm frequency and intensity Wave climate Sediment supply	Effects of sea-level rise and other changes will vary regionally and locally. Coastal erosion is likely to be accelerated in areas it is already occurring. Erosion may become a problem over time in coastal areas that are presently either stable or are advancing.

The development of the Council's Engineering Standards 2011 provides design rainfall for Dargaville, Tinopai, Maungaturoto and Mangawhai areas of the District, being the main population centres. The rainfall depths provided in the Engineering Standards have been estimated up to the 100 year event; 72 hour duration and include adjustment for 95% confidence.

For developments in other areas the Engineering Standards acknowledges NIWA's High Intensity Rainfall Design System (HIRDS) version 2, which outlines rainfall depths + 1.65 standard error + 17% climate change allowance.

Council manage the impact of urban growth and development on the stormwater infrastructure and receiving environment through the application of Stormwater Management Plans (SMPs) and planning provisions set out in the District Plan. Council currently has SMPs for Mangawhai and Baylys Beach areas of the District and a Stormwater Development Plan for Dargaville.

The functions of the SMPs include the following:

- Assess stormwater management of the wider catchment and not just the development site
- Integrate with District and Growth Plans of the District to assess future performance of the stormwater network
- Identify potential quality issues that could prevail as a result of future development
- Identify catchment wide stormwater management principles to reduce ad-hoc localised facilities
- Act as a vehicle to communicate with Iwi, the community and other stakeholders
- Identify potential risks (both flood and flow related)
- Identify mitigation options for the stormwater network

The outputs from the SMPs can be used to define capital work's programmes and developer contributions.

1.8.9 Summary

Table 1-11 below provides a summary of how the above issues will impact on the management of stormwater assets.

Table 1-11: Summary of Issues Affecting Stormwater Assets

Issues	Impact on Stormwater Assets
Population Growth	Increased urbanisation will lead to capital expenditure on stormwater networks. This will be through either an extension to the existing system, where development can connect into the system or through newly constructed local systems. These systems will be needed to ensure that the Level of Service for stormwater management is achieved.
Technical Change	The changes in the technical approach to stormwater management, including regulatory and statutory requirements will impact on the future design of stormwater assets. It is unlikely that retrospective design will be required, however, the renewing of stormwater discharge consents are likely to be required to meet these standards.
Legislative Changes	The proposed MfE National Environmental Standard related to flow and level is currently open for discussion. It is likely that this will come into operation and impact on the design of the stormwater network.
Customer Expectations	Council's 2011 Engineering Standards include the Levels of Service that are committed to providing to the community. There is potential for certain developments in certain areas to require greater levels of service to be provided, for example development in very flat catchments.
Environmental Considerations	It is likely that environmental considerations to protect the natural environment and available resources will become more important and regulated.
Climate Change	The potential impacts of Climate Change on stormwater infrastructure design to the year 2090, is currently provided for within the 2011 Engineering Standards. The potential impacts of Climate Change are not static and Council will adopt the most up to date information published by the IPCC and central New Zealand Government when this data is released.

1.8.10 Impact of Trends on Infrastructure Assets

Impacts highlighted in the above sections confirm the requirement for Council to develop a robust public stormwater infrastructure system that provides the desired Level of Service whilst promoting natural ecosystems in the receiving environment and protecting water resources for users / stakeholders.

The public stormwater system should retain a degree of flexibility to provide Levels of Service to meet growing demands of urbanisation and population growth.

Currently, time the long-term capital cost of developing a District wide stormwater network to meet these criteria is not known.

1.9 Environmental Management

Urban stormwater runoff contains a range of contaminants which typically include organic and inorganic materials, metals and hydrocarbons. During very intense rainfall events contamination of stormwater from the wastewater network may also be present. The quality of stormwater runoff therefore has a significant impact on the quality of the receiving environment, being streams and rivers.

There is a greater awareness of the environmental issues related to the quality of stormwater runoff on the receiving environments of our streams, rivers and ground water and its impacts on our cultural, social and economic well-being.

Council, in conjunction with NRC and communities are dedicated to protecting receiving environments, to protect it for future generations and to improve on the existing states. This is achieved through:

- Management of silt runoff from new development earthwork areas (including silt pond requirements for developers)
- Management of point source contamination risks (through the Engineering Standards 2011 and community education)
- Monitoring the receiving environments.

It is likely that as time progresses and more knowledge is gained from monitoring programmes about the effects of contaminants on the receiving environments that more stringent conditions will be applied on Resource Consents granted by NRC, including, but not limited to:

- Targeted contaminant removal (for example reduction in zinc loads)
- Increased overall treatment efficiency of stormwater management devices
- Greater application of Low Impact Designs in the overall stormwater management on a catchment basis.

Council will promote the best practicable option for the operation of the public stormwater infrastructure on behalf of the community as a whole, implementing strategies and programmes as appropriate. Review of existing consents, engineering standards and the provisions of the District Plan will be undertaken at regular intervals to allow comprehensive development guidance to be provided.

The stormwater network discharges into either rivers, streams or the Coastal Marine Area (CMA).

Table 1-12 identifies those systems that discharge directly into the CMA, which may receive increased focus by NRC.

Table 1-12: Stormwater Discharge Zones

Township	CMA Zone	Outfall Numbers
Dargaville	Not CMA	66 Floodgates
Baylys	Marine 2	Via natural watercourses
Kaiwaka	Not CMA	N/A
Mangawhai	Marine 1	34
Te Kopuru	Not CMA	N/A

NRC undertakes summer monitoring at popular swimming locations in the District, two freshwater and eight coastal sites. Samples are taken weekly between December and April each year to ensure the water is safe for swimming. Each site is given a grading based on the results compared to the Ministry for the Environment's "*Microbiological Water Quality Guidelines for Marine and Freshwater Recreational Area*" publication, (2002).

The 2010/2011 Annual Report states that 96% compliance was achieved during the 2010/2011 summer period across all 14 sites.

The results of this monitoring programme can be used to identify non-compliant locations and trigger investigations into possible sources of contamination, and creation of targeted treatment programmes.

1.10 Proposed Levels of Service (LOS) and Performance Measures

Levels of Service (LOS) are attributes that Council expects of its assets to deliver the required services to stakeholders. A key objective of an AMP is to match the LOS provided by the stormwater activity with agreed expectations of customers and their willingness to pay for that level of service.

The LOS provide the basis for the lifecycle management strategies and works programmes identified in the AMP.

LOS should reflect the current industry standards and be based on:

- **Customer Research and Expectation** - information gained from stakeholders on expected types and quality of service provided
- **Statutory Requirements** - legislation, regulations, environmental standards and Council bylaws that impact the way assets are managed. These requirements set the minimum Level of Service to be provided
- **Strategic and Corporate Goals** - guidelines for the scope of current and future services offered and manner of service delivery, and define specific LOS that the Council wishes to achieve
- **Best Practices and Standards** - specify the design and construction requirements to meet the Levels of Service and needs of stakeholders.

The LOS for stormwater have been developed to contribute to the achievement of the stated Community Outcomes that were developed in consultation with the community (Section 1.5), and taking into account:

- the Council's statutory and legal obligations
- the Council's policies and objectives
- the Council's understanding of what the community is able to fund.

The LOS that Council has adopted for this AMP are derived from the 2012/2022 Long Term Plan consultation process. Table 1-13 below details the Levels of Service and associated performance measures for the stormwater activity

The LTP performance measures are reported through the annual reporting process. Council's current actual performance will be reported in the 2012/2013 Annual Report.

The AMP Improvement Plan includes an action for Council to review its' stormwater LOS to identify if there is further opportunity for improved efficiencies and / or best practice that can be incorporated into the service framework.

The current LOS have been separated into two areas – Customer and Technical. Operational LOS are not detailed in this AMP. They are captured and monitored by Council as part of the Roading Maintenance Contract currently held by Transfield, which includes Stormwater Operations and Maintenance.

Several new LOS have been developed and are included in this AMP, such as the number of requests regarding blockages / emergency repairs, and compliance with resource consent conditions.

Consistency of LOS monitoring has been an issue, with historic performance measures being changed almost annually. These are presented in Appendix E. In order to get an appreciation of the performance of the stormwater activity, consistency in the Levels of Service being measured is required over a longer period of time.

Table 1-13: Levels of Service and Performance Measures

(Based on Non-financial Performance Measures Rules 2013)

Performance indicator/service level	Target 2013/2014	Target 2014/2015	Target 2015/2016
1. System Adequacy			
(a) The number of flooding events that occur in a territorial authority district.	2	2	2
(b) For each flooding event, the number of habitable floors affected. (Expressed per 1000 properties connected to the territorial authority's stormwater system.)	10	10	10
2. Discharge compliance			
Compliance with the territorial authority's resource consents for discharge from its stormwater system, measured by the number of:			
(a) abatement notices	0	0	0
(b) infringement notices	0	0	0
(c) enforcement orders, and	0	0	0
(d) convictions,	0	0	0
received by the territorial authority in relation those resource consents.			
3. Response times			
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.	2 hour for urgent events	2 hour for urgent events	2 hour for urgent events

4. Customer satisfaction The number of complaints received by a territorial authority about the performance of its stormwater system.	18	18	18

2 The Assets

The Assets section of the AMP is set out as follows:

- Asset Details – summary of Council's five stormwater schemes and related assets
- Critical Assets – summary of Council's critical assets for stormwater and how these will be managed
- Asset Values – summary of the stormwater asset valuation.

2.1 Asset Details

2.1.1 Overview

The stormwater assets that are within the scope of this AMP service residential and business areas in the following townships:

- Dargaville
- Baylys
- Kaiwaka
- Mangawhai
- Te Kopuru

These townships all have piped urban stormwater networks of varying scales. Rural areas and the smaller townships are currently serviced primarily by roading infrastructure. These assets are covered in the Roading AMP.

The location of each of these communities within Kaipara District is illustrated in the figure below.

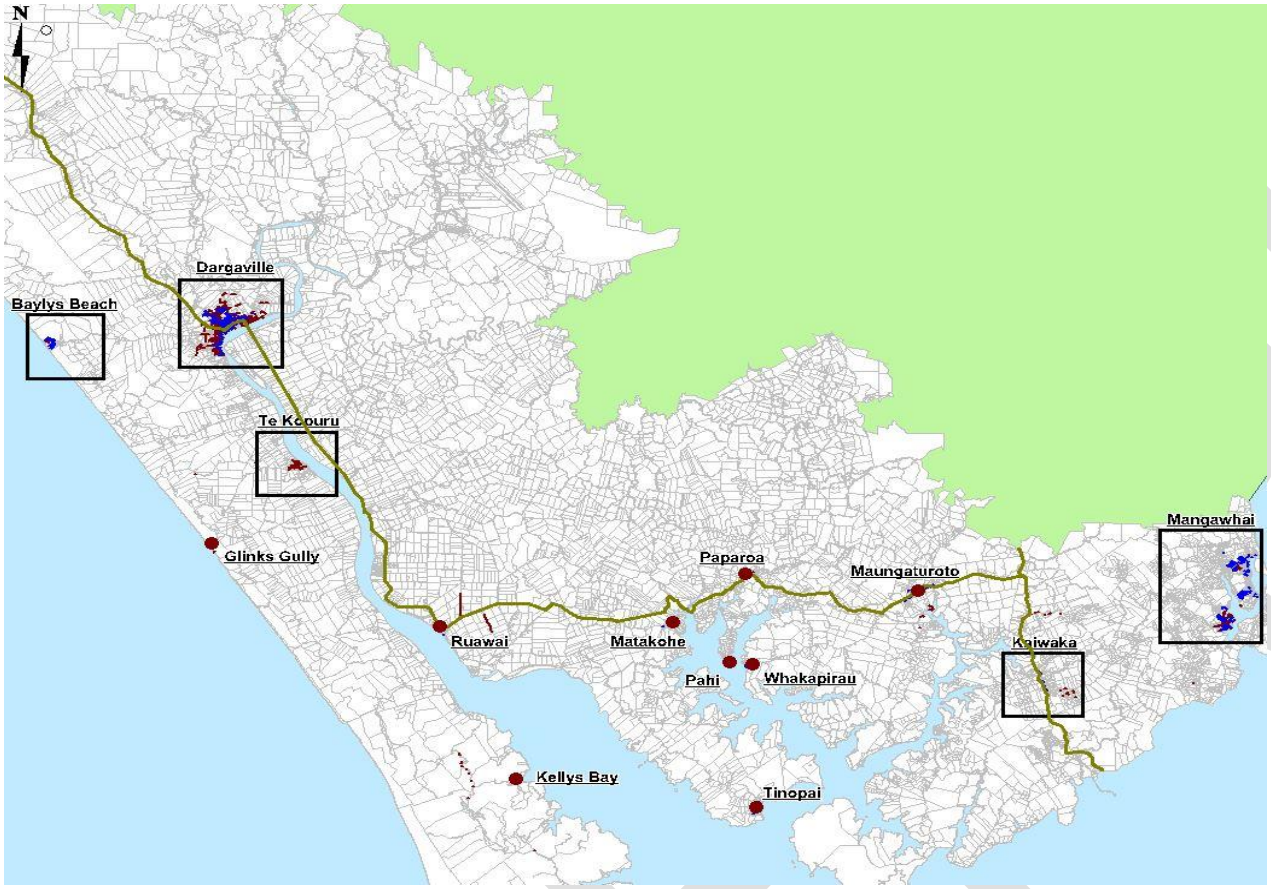


Figure 2-1: Location of Communities with Stormwater Schemes

An overview of the stormwater assets in the District is provided in Table 2-1 below. See Section 2.3 for discussion of the asset valuations.

Table 2-1: Asset Overview Summary

Community	Pipeline Length (m)	Open Drain(m)
Baylys	3,960	10
Dargaville	35,275	34,671
Kaiwaka	1,646	262
Mangawhai	22,604	7,047
Te Kopuru	149	4,760
Grand Total	**63,634**	**46,750**

NB: Various natural assets such as overland flow paths and soft assets including riparian planting are located throughout the District.

The valuation total for the District is summarised in Table 2-2 below.

Table 2-2: Summary of Stormwater Asset Valuations

Community	Replacement Costs	Depreciated Replacement Cost	Annual Depreciation ($)
Dargaville	$19,810,710	$12,272,407	$229,043
Baylys	$1,138,749	$964,875	$13,937
Kaiwaka	$411,216	$382,808	$4,398
Mangawhai	$7,531,631	$6,352,634	$96,884
Te Kopuru	$234,447	$196,136	$3,605
Maungaturoto*	$209,162	$195,160	$2,365
Pahi*	$1,095,682	$1,007,987	$13,607
Stormwater Total	**$30,431,597**	**$21,372,007**	**$363,839**

Note * = Maungaturoto and Pahi SW systems form part of the Roading asset base

This AMP focuses on three main asset components for stormwater, which are:

- Reticulation (including manholes and connections)
- Detention
- Flood Protection.

The scope of the stormwater assets (proportion of optimised replacement cost for all stormwater assets) by type is illustrated in the below figure.

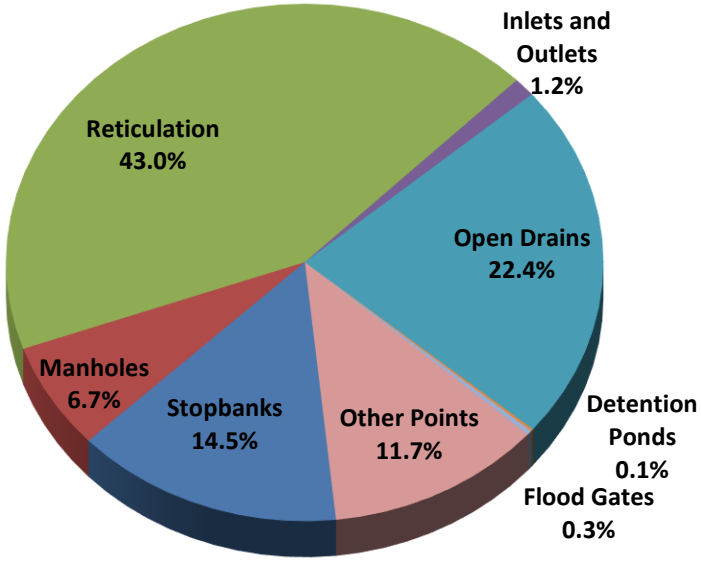


Figure 2-2: Scope of Stormwater Assets by Component Type

2.1.2 Asset Data

Council has a number of information systems that store asset data and enables various analysis to aid in the management of the activity. Details of each system and its capabilities are included in Section 4.2 (Asset Management Systems and Processes).

It is recognised that condition and performance data relating to the stormwater assets is not well documented. The current asset register contains a number of unknown, incomplete and incorrectly-coded asset attributes. This affects Council's asset knowledge and asset valuations and does not provide a sound basis for determining maintenance needs and forecasting renewals of stormwater assets.

The improvement of Council's data collection and entry processes is identified as a future activity within the improvement plan, along with a "data cleansing" project to reduce the number of unknown / incorrect asset attributes currently in the asset register.

Following completion of the improvements, Council will move towards using previously un-utilised functions of their support tools, such as the recording of maintenance history at asset component level in AssetFinda each time a works order is completed.

As more information is recorded, an initial assessment and listing of renewal needs will be able to be created from AssetFinda. This could create a risk of significant changes to the level of expenditure required, and will need to be reviewed and assessed by Council in line with Council's Renewals Policy.

The data improvement actions included in the Improvement Plan are listed in Table 2-3.

Table 2-3: Improvement Plan Actions – Data Management

ID No. (Improvement Plan)	Improvement Action	Forecast Completion Date
10	Review the Asset Register to ensure all known assets are properly recorded, including the stopbanks, floodgates and detention ponds Response – Information exists in hardcopy needs to be inputted into AssetFinda.	Jun-2015
12	Asset Condition - Undertake the physical inspection and formal condition assessment of all critical stormwater assets (pipes, open drains, floodgates, etc.).	Condition Assessments commenced 2014
13	Complete the data cleansing project to reduce the number of unknown asset attributes. Response – Data needs to be in AssetFinda to enable cleansing to be completed.	Jun-2016
14	Review Data Management procedures Response – Review to date has confirmed AssetFinda as suitable Asset Management System to go forward with. Now need to bring in house and implement.	Jun-2016
15	Record the maintenance history with each works order at asset component level in AssetFinda. Response – Reliant on AssetFinda system operating in house and Contractor using work order system.	Jun-2016

ID No. (Improvement Plan)	Improvement Action	Forecast Completion Date
16	Clarify asset ownership across the district (particularly new SW infrastructure) including definitions around road drainage based activities and stormwater activities. Response – Initial review completed requires documentation in AMP	Jun-2015
17	Review adequacy of developers handover requirements contained within Engineering Standards. Identify programme to enhance – include for soakage testing requirements for engineering plan approvals, asset schedules and capital cost recording for each asset created Response – Draft document exists required to be included in an Engineering Standard.	Jun-2015

Pipelines

The stormwater network is made up of 64.2km of pipeline, as shown in Table 2-4 below.

- 41% of pipe diameters are unknown (26.4km),
- 61% of pipe materials are unknown (39.2km),
- 43% of pipes have both unknown diameters and unknown materials (27.8km). Figure 2-3 below summarises the known and unknown pipeline materials.

Table 2-4: Kaipara Stormwater Pipeline Diameter / Material Summary by Length (m)

Data source: AssetFinda June 2015

Diameter (mm)	AC	CONC	CORST	EW	GEW	N/A	NOVAF	Nova flex	PVC	RCRRJ	Unknown	UPVC	Grand Total(m)
Unknown		596				180	34	9	71	835	23,018	19	24,761
<100											48		48
101-150	5	11	-	-	7	-	237	-	792	21	1,560	1,071	3,723
151-200	27	-	-	-	-	-	-	-	114	-	75	4	227
201-225		811	-	-	109	11	-	-	41	880	2,538	-	4,390
226-300	218	3,074	10	20	84	-	-	-	507	9,364	4,343	-	17,626
301-350		97									39		137
350+	67	2,299	64	-	151	-	-	-	150	7,761	5,473	-	15,964
Grand Total (m)	317	6,888	74	20	350	190	271	9	1,675	18,861	37,094	1,095	66,845

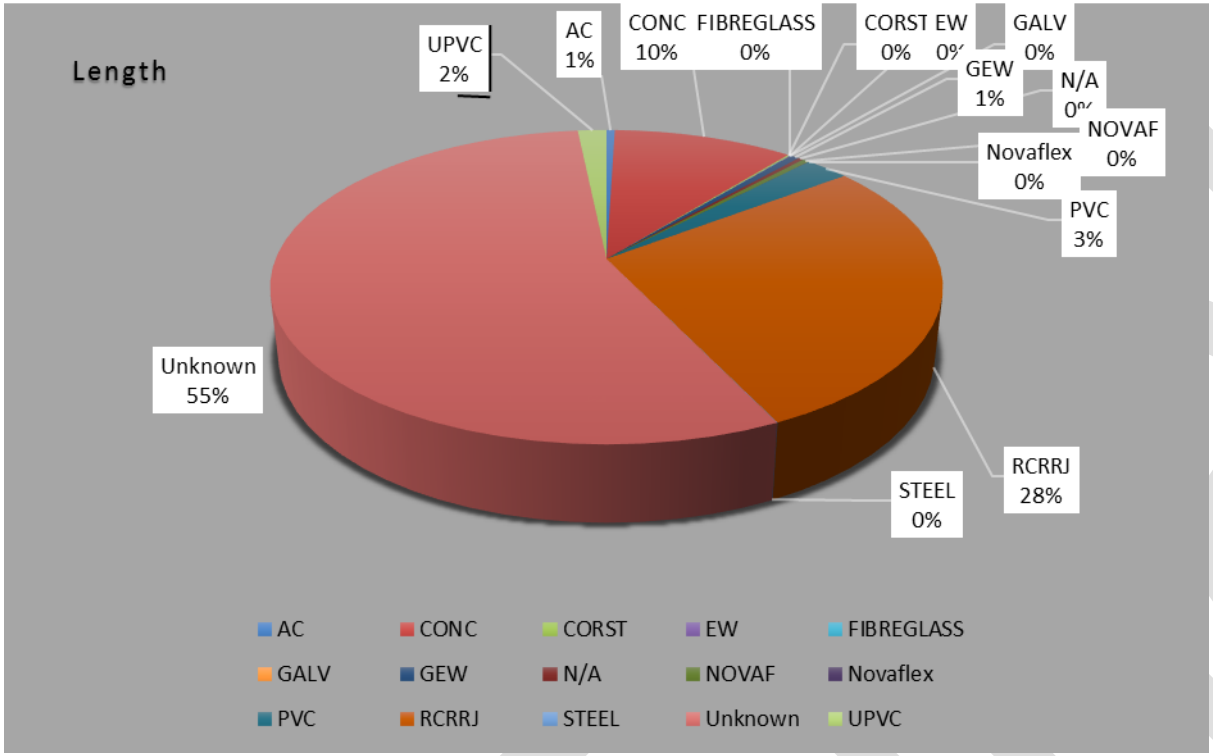


Figure 2-3: Kaipara Stormwater Pipeline Material Summary

A review of the asset register to ensure all assets have been properly recorded has been identified as an item in the Improvement Plan in section 5.1, along with a data cleansing project to reduce the number of unknown asset attributes in the asset register.

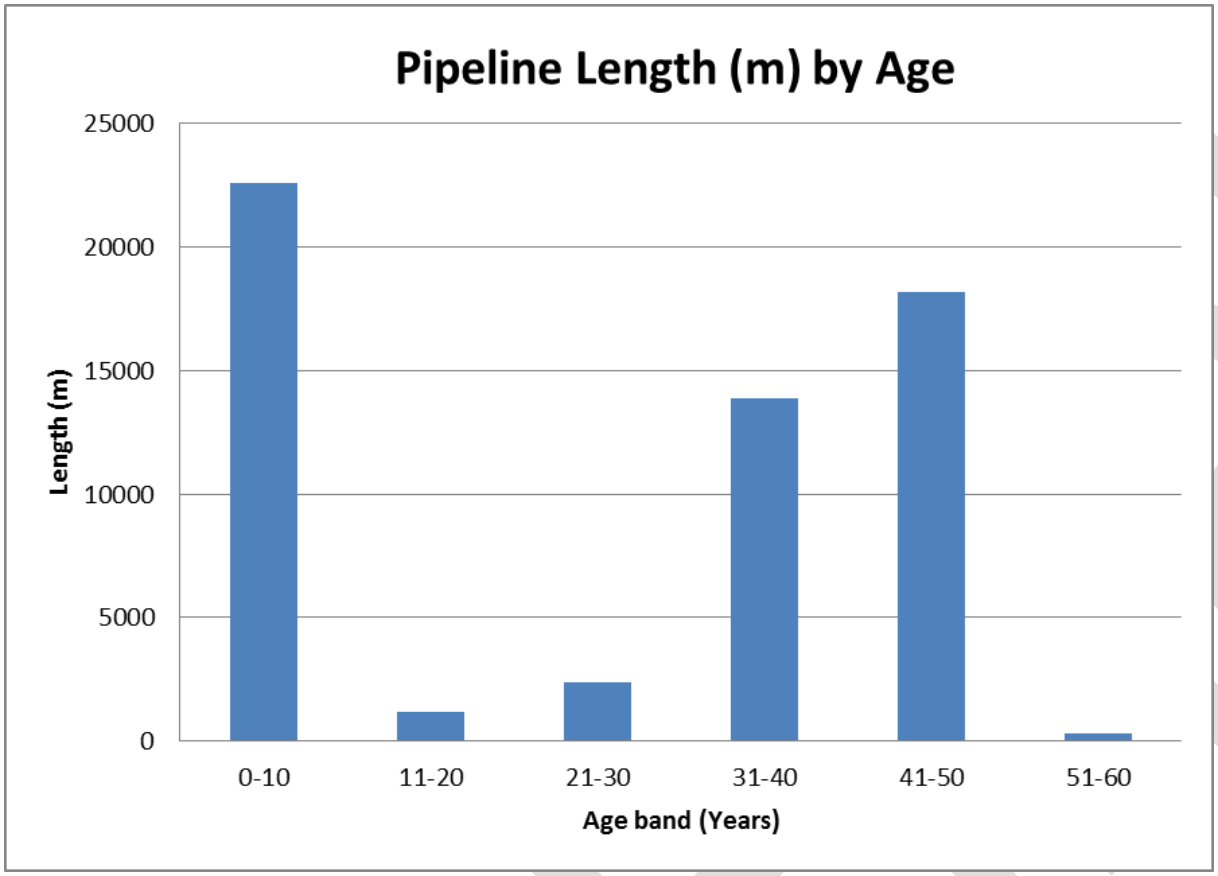


Figure 2-4: Kaipara Stormwater Pipeline Age Summary

Figure 2-4 above shows that 100% of pipe ages are known, with majority of stormwater pipelines being under 42 years old. Pipeline ages are currently the primary driver for assessing pipeline conditions, and determining renewals. Council recognises this approach is not best practice and the development of a renewal programme based on performance and condition ratings has been identified as an item in the Improvement Plan in section 5.1.

2.1.3 Dargaville

Dargaville is the main service and visitor centre for the District, and is seen as the gateway to the Kauri Forest. It is a unique town of approximately 4,470 people, positioned on the banks of the Wairoa River.

The Dargaville urban area is serviced by a piped stormwater network and is protected from river flooding by 66 floodgates and various stopbanks. A series of floodwalls was recently installed to protect low-lying areas in the southern-most part of Dargaville exposed to the Wairoa River and the Kaihu River (not included in asset map below). The stopbanks and floodgates located outside the urban area are part of the Raupo Drainage District and do not form part of this AMP.

A summary of Dargaville's Stormwater assets is included in Table 2-5. The layout and location of Dargaville's stormwater assets are illustrated in the Asset Map in Figure 2-5 below.

Table 2-5: Dargaville Asset Summary

	Pipeline Length (m)	Open Drains (m)	Manholes	Inlets / Outlets	Detention Ponds	Floodgates	Floodwalls / Stopbanks (m)
Physical Quantity	35,275	34,671	673	23	1	57	6,625
Asset condition Rating	Unknown at present	Unknown at present	Unknown at present	Unknown at present	Unknown at present	Unknown at present	Unknown at present
Depreciated Replacement Cost							$12,272,407

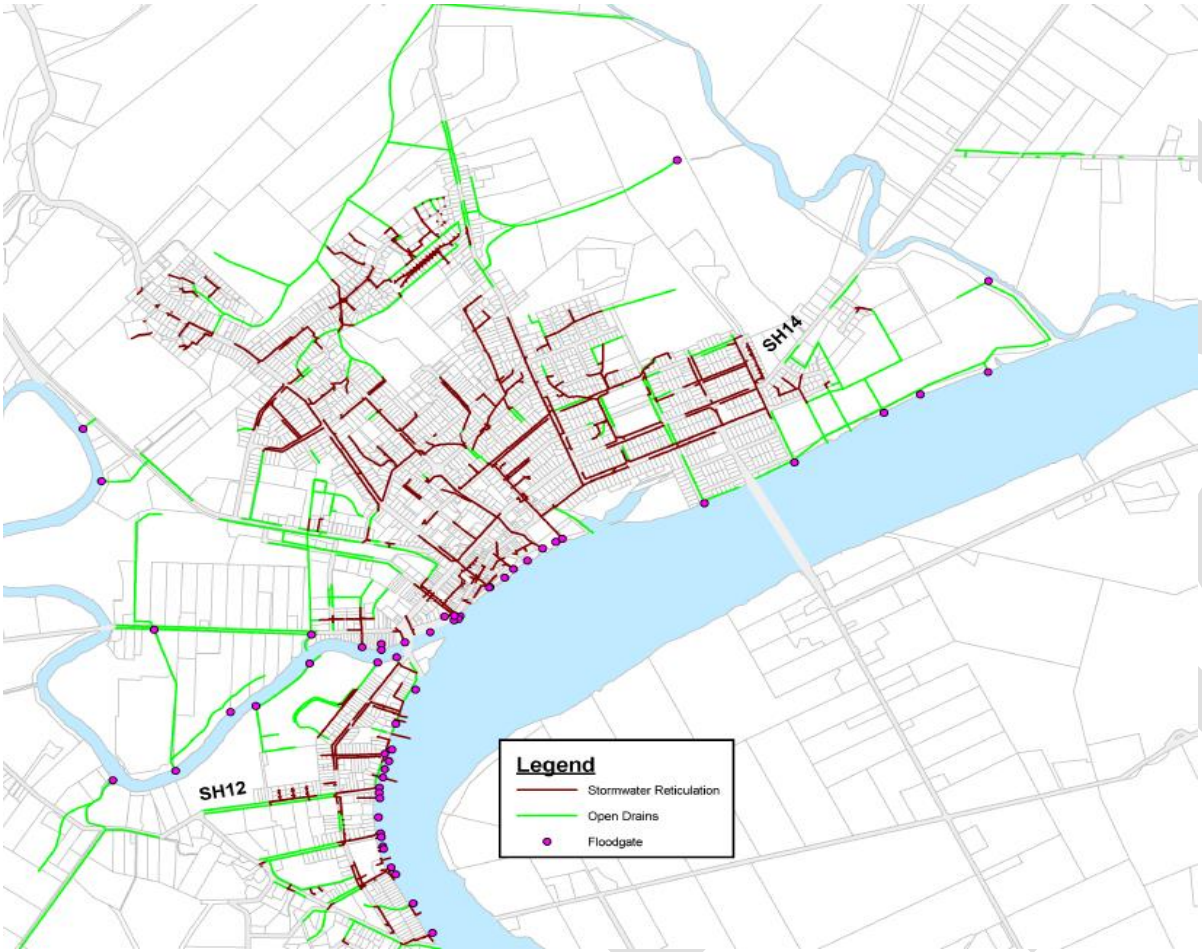


Figure 2-5: Dargaville Asset Map

2.1.3.1 Reticulation

The Dargaville network is comprised of a mixture of old and new infrastructure, which generally copes well with rainfall events. There is around 32.2km of stormwater pipeline, and 15.5km of open drains. The breakdown of material and size of the reticulation network is detailed in Table 2-6 below.

Around 50% of pipe diameters are unknown (16.1km) and 79% of materials are also unknown (25.3km). Of the diameters that are known, most are 300mm, and the predominant known pipe materials are concrete and RCRRJ. This will be investigated as part of the "data cleansing" project detailed in the Improvement Plan in section 5.1.

There is also around 83m of steel pipes showing in the asset register, installed in the 1970s. Investigation will be required to confirm the condition of these assets. This has been identified as a future improvement in the Improvement Plan in section 5.1.

Table 2-6: Dargaville Stormwater Pipeline Diameter / Material Summary by Length (m)

Diameter (mm)	AC	CONC	CORST	GEW	NOVAF	PVC	RCRRJ	Unknown	UPVC	Total length (m)
Unknown		385			34		36	16808	10	17,272
1-100						429		367	100	904
101-150	5				231	148		1108	13	1,505
151-200	25					29		75		129
201-250		216		65		94	333	2448		3,156
251-350	150	611	10	84		110	1205	3440		5,609
351-450	58	368		109		99	818	2107		3,559
451-600		305	64			38	94	914		1,415
601-750		17					407	316		740
751-900							304	168		472
901-1200		58					99	106		263
1201-1950							248			248
Grand Total (m)	**238**	**1,959**	**74**	**258**	**265**	**948**	**3,545**	**27,857**	**122**	**35,274**

Data source: AssetFinda June 2015

A considerable number of deep open drains have been piped in Dargaville residential streets to address safety concerns of residents and improve performance of the stormwater network. Recent reviews of customer complaints have identified there are still areas where open drains are causing safety issues for residents. Further investigation will be required to address these areas, and this has been identified as a future improvement in the Improvement Plan in section 5.1.

Limited smoke testing has been conducted in Dargaville in the past to verify possible infiltration of stormwater into the wastewater network. However little assessment of the data has been undertaken and further investigation is required to understand the extent and implications of this issue on the wastewater system. The development of an unplanned discharge mitigation strategy is budgeted within the lifespan of the Wastewater AMP, which will include consideration of inflow and infiltration issues.

2.1.3.2 Detention

A detention pond in Awakino Road, Dargaville was recently vested to Council. This pond aids with alleviating flooding in residential areas by storing floodwaters during times of peak rainfall. Wet ponds also improve stormwater quality. More ponds are expected to be vested in Council as part of future development.

To date Council does not have Operations and Maintenance manuals for any of the ponds across the District, including Awakino Road. This has been identified as a future improvement in the Improvement Plan in section 5.1. A template needs to be developed with key information required to manage these ponds including wetland planting, public safety design and maintenance requirements.

2.1.3.3 Flood Protection

Historically, a lack of capacity has been the major performance issue for Dargaville's stormwater network, with flooding in low lying areas. These capacity issues were addressed through a targeted capital works programme. Council approved a programme of stormwater improvements works in 2002 and about $3 million has been completed to date including about $1 million for stopbanks.

A series of floodwalls were installed more recently to protect low-lying areas in the southern-most part of Dargaville exposed to the Northern Wairoa River and the Kaihu River.

There are also 66 urban floodgates, which along with the stopbanks and floodwalls are used to prevent the backflow of river water in times of high flows into the commercial areas of Dargaville. The industrial and commercial area adjacent to the Wairoa River is an area that has historically been prone to flooding during periods of heavy rain and low barometric pressure when floodgates sometimes jam open and breaches of floodwalls and stopbanks can lead to tidal waters entering the main street.

The floodgates, stopbanks and floodwalls are considered to be critical assets. A formal criticality assessment has been recognised as a future improvement in the Improvement Plan in section 5.1.

Figure 2-6: Stopbank in Urban Dargaville

A hydraulic model of the Dargaville stormwater network was created in 2003. The model needs to be updated as part of a Flood Study to assess the performance of the network. This study will be used to confirm the impact of upgrades recently completed and will assist in identifying any further areas where capacity may be an issue.

NRC also identified flood prone areas in the District and these are shown in the District Plan (Operative in Part). A Stormwater Development Plan for Dargaville was completed in 2003 and detailed possible upgrades required to the stormwater network. This plan also identified flood prone areas but needs to be updated and developed into a formal Stormwater Management Plan (SMP) reflecting the principles of the 2011 Engineering Standards. This has been recognised as a future improvement in the Improvement Plan in section 5.1.

Possible issues with under-capacity have been identified in Murdoch Street in Dargaville. Further investigations have been recommended as part of the design works under the New Capital budget in 2012/2013.

2.1.3.4 Summary of Issues and Remedial Actions

The key issues relating to the Dargaville stormwater network as identified by Council, or in this AMP, along with potential remedial actions as identified in the February 2013 Improvement Plan, are listed in

Table 2-7.

Table 2-7: Dargaville Issues and Remedial Actions

Issue	Remedial Action Identified in Improvement Plan		
	ID No.	Improvement Action	Forecast Completion Date
Infiltration issues between stormwater and wastewater networks.	N/A	Investigation into any possible infiltration issues between the stormwater and wastewater networks will be carried out as part of actions identified in the Wastewater AMP Improvement Plan.	N/A
Outdated Stormwater Management Plan for the Dargaville stormwater network.	2	Identify the current status of the Stormwater Management Plans (SMP's). Review and prioritise the work to be undertaken. Compile a programme to undertake the completion and adoption of the SMP's.	Sep-2015
	5	Undertake the development of the Stormwater Management Plan for Dargaville to gain an understanding of capacity constraints in the system and optimal options to mitigate risks.	Dec-2015
Safety concerns of residents around deep open drains.	8	Investigation of resident's safety concerns of open drains in Dargaville.	N/A
Possible lack of capacity in Murdoch Street and other areas of Dargaville.	9	Undertake Dargaville Flood Study.	Dec-2015
Lack of O&M manual for detention ponds, including management and safety information.	19	Develop a template for operations and maintenance manual for ponds with key information required for developers.	Dec-2015
Steel pipes installed in 1970's as shown in the asset register.	22	Investigation into condition and possible replacement of remaining steel pipes in the Dargaville area.	Jun-2016

2.1.4 Baylys

Baylys is located on the west coast and experiences seasonal population increase from non-residential owners of holiday homes and visitors. The new Sunset West Subdivision has not reached the growth level previously expected, with just 12 sections out of a possible 60 currently sold.

Baylys Township is mainly serviced by a reticulated system consisting of a piped network with manholes and kerbside sumps. Many properties discharge to soakage and open drains.

A summary of Baylys stormwater assets is included in Table 2-8. The layout and location of the Baylys stormwater assets are illustrated in the Asset Map in Figure 2-7 below.

Table 2-8: Baylys Asset Summary

	Pipeline Length (m)	Open Drains (m)	Manholes	Inlets / Outlets	Detention Ponds
Physical Quantity	3,960	10	55	-	-
Asset Condition Rating	2[3]	Condition assessment commenced 2014	Condition assessment commenced 2014	Condition assessment commenced 2014	Condition assessment commenced 2014
Depreciated Replacement Cost	$964,875				

[3] A generic condition rating of 2 has been assigned where historical data and reviews by Operations staff indicate the operational condition of the assets as being in "good condition".

Figure 2-7: Baylys Asset Map

2.1.4.1 Reticulation

There is approximately 3.8km of stormwater pipeline in Baylys, and 10m of open drains.

The breakdown of material and size of the reticulation network is illustrated in Table 2-9 below.

Most pipes are 300mm in diameter and the predominant known pipe material is concrete. Around 11% of pipe diameters are unknown (409m), and 6% of pipe materials are unknown (229m). This will be investigated as part of the "data cleansing" project detailed in the Improvement Plan in section 5.1.

Table 2-9: Baylys Stormwater Pipeline Diameter / Material Summary by Length (m)

DIAMETER (mm)	AC	CONC	RCRRJ	Unknown	UPVC	Total length (m)
Unknown		143	82	173	1	399
100					382	382
150					147	147
200					4	4
300	69	358	1185	20		1632
375			74	26		100
450		184	341			525
525		91				91
600		136	112			248
750			300			300
900		13	24			37
1200			95			95
Grand Total (m)	**69**	**925**	**2213**	**219**	**533**	**3960**

Data source: AssetFinda June 2015

Desktop assessments and reviews by Operations staff of the Baylys reticulation show it to be in good condition operationally.

2.1.4.2 Flood Protection

A Stormwater Management Plan (SMP) was developed in 2003, and is currently still in draft form. This draft SMP needs to be updated to reflect the principles of the 2011 Engineering Standards and be adopted formally by Council. This has been recognised as a future improvement in the Improvement Plan in section 5.1.

Historically there were flooding problems due to undersized pipes draining the catchment into Cynthia Place. These have recently been upgraded and roadside drains deepened to increase capacity. This will be reviewed further as part of the SMP process.

2.1.4.3 Summary of Issues and Remedial Actions

The key issues relating to the Baylys stormwater network as identified by Council, or in this AMP, along with potential remedial actions as identified in the Improvement Plan are listed in Table 2-10 below.

Table 2-10: Baylys Issues and Remedial Actions

Issue	Remedial Action Identified in Improvement Plan		
	ID No.	Improvement Action	Forecast Completion Date
Outdated Stormwater Management Plan for the Baylys stormwater network.	2	Identify the current status of the Stormwater Management Plans (SMP's). Review and prioritise the work to be undertaken. Compile a programme to undertake the completion and adoption of the SMP's.	Dec-2015
	4	Undertake the development of the Stormwater Management Plan for Baylys to gain an understanding of capacity constraints in the system and options to mitigate risks.	Dec-2015
Possible lack of capacity in Cynthia Place catchment.	4	Undertake the development of the Stormwater Management Plan for Baylys to gain an understanding of capacity constraints in the system and options to mitigate risks.	Dec-2015

2.1.5 Kaiwaka

Kaiwaka is a small township on State Highway One built on ridges, with many cafes and speciality shops. It is a stop-off point for many visitors, especially over the summer weekends. The stormwater system is mainly associated with the State Highway and the roads joining it. Kaiwaka is a potential growth area, as identified in the District Plan (Operative in Part).

A summary of Kaiwaka's stormwater assets is included in

Table 2-11. The layout and location of Kaiwaka's stormwater assets are illustrated in the Asset Map in Figure 2-8 below. Some of the reticulation is servicing the road network only, and some may be private. Clarification of the ownership and operations and maintenance responsibilities of these assets is listed as an item in the Improvement Plan in section 5.1.

Table 2-11: Kaiwaka Asset Summary

	Pipeline Length (m)	Open Drains (m)	Manholes	Inlets / Outlets	Detention Ponds
Physical Quantity	1,646	262	9	106	-
Asset Condition Rating	2[4]	Condition assessments commenced 2014	Condition assessments commenced 2014	Condition assessments commenced 2014	Condition assessments commenced 2014
Depreciated Replacement Cost	$382,808				

[4] A generic condition rating of 2 has been assigned where historical data and reviews by Operations staff indicate the operational condition of the assets as being in "good condition".

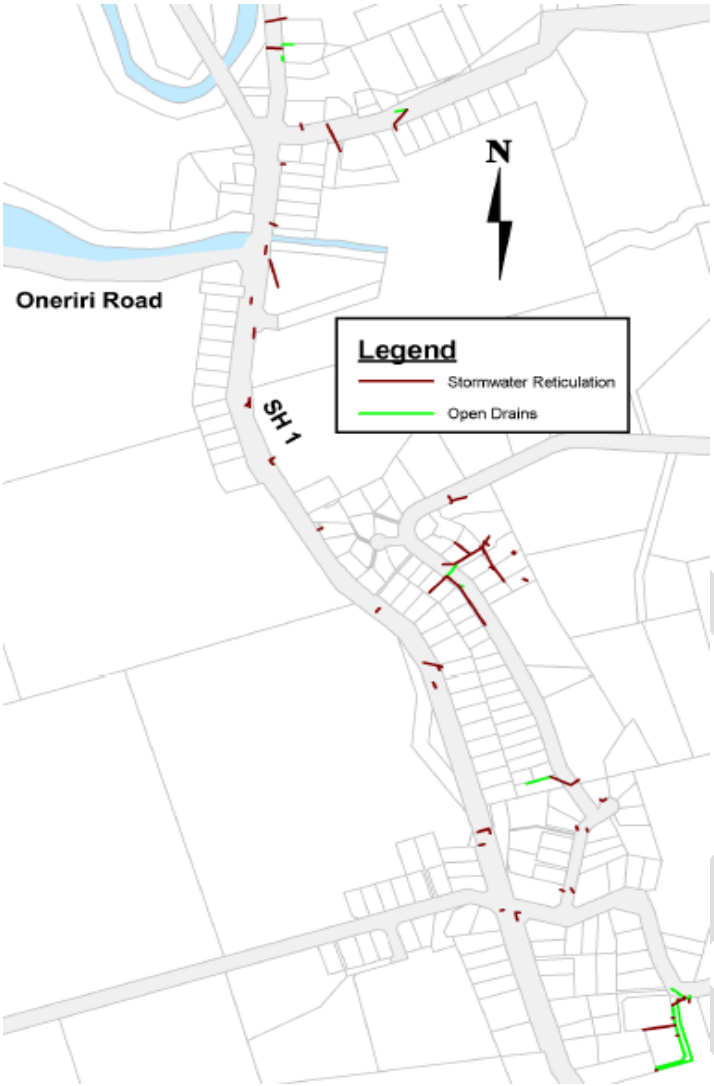


Figure 2-8: Kaiwaka Asset Map

2.1.5.1 Reticulation

There is around 320m of stormwater pipeline in Kaiwaka as shown in Table 2-12, and 262m of open drains. Most pipes are 300mm in diameter and the predominant known pipe material is RCRRJ. Around 34% of pipe diameters are unknown (109m), and 49% of pipe materials are unknown (156m). This will be investigated as part of the "data cleansing" project detailed in the Improvement Plan in section 5.1.

Table 2-12: Kaiwaka Stormwater Pipeline Diameter / Material Summary by Length (m)

DIAMETER	AC	CONC	EW	GEW	PVC	RCRRJ	Unknown	UPVC	Total length(m)
Unknown		157				121	531	1	811
100					23		48	382	452
150					3			177	180
200								4	4
225				11	35	40	13		98
300	69	486	20		5	1,738	49		2,367
375						141	45		186
450		219		6		422	7		655
500		24							24
525		91				17			108
600		136				112			248
750						317			317
900		13				24			37
1050						23			23
1200						95			95
Grand Total (m)	**69**	**1,127**	**20**	**17**	**66**	**3,050**	**692**	**564**	**5,605**

Data source: AssetFinda June 2015

Previous AMPs have stated the assets were known to be in good condition operationally, with few customer complaints.

2.1.5.2 Flood Protection

The hydraulic capacity of the stormwater pipes has been determined to be satisfactory from discussions with Operations staff. To date there has been no Stormwater Management Plan developed for Kaiwaka. This has been identified as a future improvement in the Improvement Plan in section 5.1.

2.1.5.3 Summary of Issues and Remedial Actions

The key issues relating to the Kaiwaka stormwater network as identified by Council, or in this AMP, along with potential remedial actions as identified in the Improvement Plan, are listed in Table 2-13 below.

Table 2-13: Kaiwaka Issues and Remedial Actions

Issue	Remedial Action Identified in Improvement Plan		
	ID No.	Improvement Action	Forecast Completion Date
Lack of Stormwater Management Plan for the Kaiwaka stormwater network.	2	Identify the current status of the Stormwater Management Plans (SMP's). Review and prioritise the work to be undertaken. Compile a programme to undertake the completion and adoption of the SMP's.	Dec-2015
	6	Undertake the development of the Stormwater Management Plan for Kaiwaka to gain an understanding of capacity constraints in the system and options to mitigate risks.	Dec-2015
Ownership and responsibility of assets between road network, urban stormwater network and private connections.	16	Clarify asset ownership across the district (particularly new SW infrastructure) including definitions around road drainage based activities and stormwater activities.	Dec-2015

2.1.6 Mangawhai

Mangawhai is on the east coast off State Highway One and is a popular weekend retreat for Aucklanders. Mangawhai is expected to experience the highest growth levels of the District, mostly associated with visitors and non-residential owners of holiday homes. Several new subdivisions were created over the past 10 years, and there is potential for more in the future. A particular characteristic of Kaipara is that approximately 64% of ratepayers reside within the District and 36% outside the area. In Mangawhai these figures are 38% within the District and 62% outside the area.

A summary of the Mangawhai and Mangawhai Heads stormwater assets is included in Table 2-14. The layout and location of the Mangawhai / Mangawhai Heads stormwater assets are illustrated in the Asset Maps in Figure 2-9 and **Error! Reference source not found.** below.

Using figures it is evident that some of the reticulation shown is servicing the road networks only, and some may be private. Clarification of the ownership and operations and maintenance responsibilities of these assets is listed as an item in the Improvement Plan in section 5.1.

Table 2-14: Mangawhai Asset Summary

	Pipeline Length (m)	Open Drains (m)	Manholes	Inlets / Outlets	Detention Ponds	Soak pits
Physical Quantity	22,604	7,047	359	31	3	72
Asset Condition Rating	2[5]	Condition assessment commenced 2014	Condition assessment commenced 2014	Condition assessment commenced 2014	Condition assessment commenced 2014	Condition assessment commenced 2014
Depreciated Replacement Cost	$6,352,634					

[5] A generic condition rating of 2 has been assigned where historical data and reviews by Operations staff indicate the operational condition of the assets as being in "good condition".

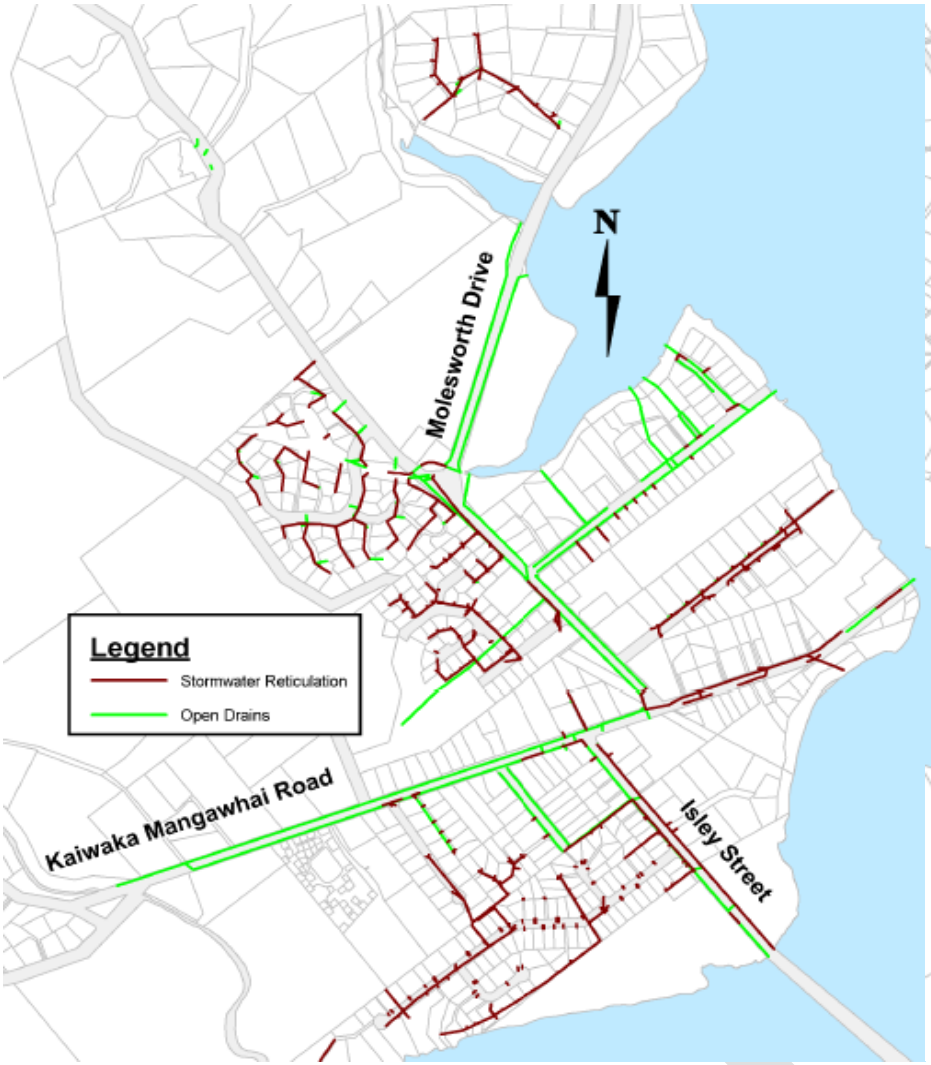


Figure 2-9: Mangawhai Village Asset Map

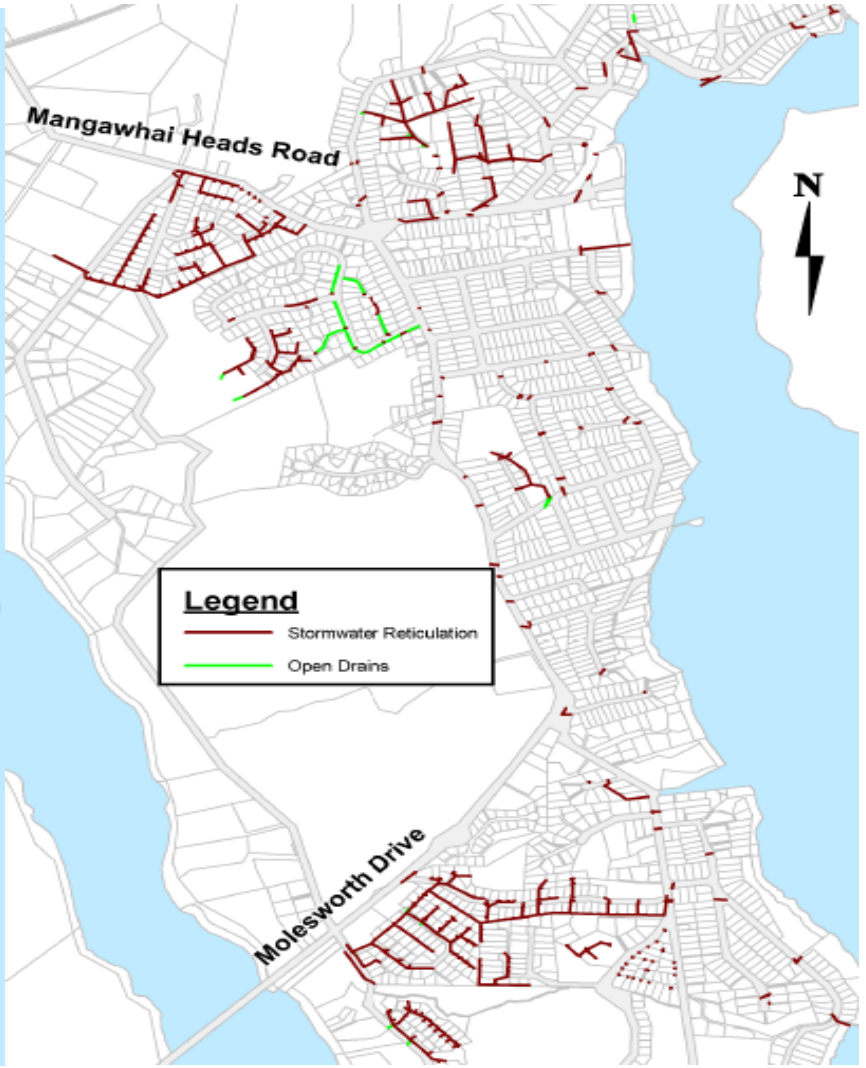


Figure 2-10: Mangawhai Heads Asset Map

2.1.6.1 Reticulation

There is approximately 27.7km of stormwater pipeline at Mangawhai as shown in Table 2-15, and 1.4km of open drains. Most pipes are 300 or 525mm in diameter and the predominant known pipe material is RCRRJ. Around 41% of pipe diameters are unknown (11.1km), and 48% of pipe materials are unknown (13.4km). This will be investigated as part of the data cleansing project detailed in the Improvement Plan in section 5.1.

Table 2-15: Mangawhai Stormwater Pipeline Diameter / Material Summary by Length (m)

Diameter (mm)	Column Labels										
	AC	CONC	FIBRE GLASS	GEW	N/A	NOVAF	PVC	RCRRJ	Unknown	UPVC	Total length(m)
Unknown		33			180		19	754	5,295	8	6,289
100-150		6	6			6	160	21	33	431	663
151-200	2						85				87
201-250		315	5		11			734	93	2	1,160
251-350		920					286	5,830	624		7,660
351-450		228		35			13	1,996	1,005		3,277
451-550		108						733	263		1,104
600								601	327		928
750		11						214			225
900								440			440
1050								352			352
1200		18						186	84		288
1350								67			67
Grand Total	**2**	**1,639**	**11**	**35**	**191**	**6**	**563**	**11,928**	**7,724**	**441**	**22,540**

Data source: AssetFinda June 2015

The piped network is relatively new as it was installed as part of recent developments in the area, and as part of the capital works programme in recent years. It is known to be in very good condition through discussions with operations staff, with no reported capacity-related problems.

As part of the previous Long Term Plan, many deep open drains on the main roads in Mangawhai Village were progressively piped and filled in to address the safety and amenity concerns of the community. An example of this, are the piped systems that have recently been installed in Molesworth Drive and Moir Street, as shown in Figure 2-11 below.

There are still some more shallow open drains remaining that may be piped in future. These will be assessed on a case by case basis to improve safety for the community.

Figure 2-11: Moir Street Before and After

Inspection of Figure 2-9 and **Error! Reference source not found.** suggests these new pipe lengths may still be showing as open drains in Council's asset register AssetFinda. This will be investigated as part of the "data cleansing" project detailed in the Improvement Plan in section 5.1.

2.1.6.2 Detention

Three detention ponds in Mangawhai were vested to Council following developments in Pearl Street, Molesworth Drive and Fagan Place. Council also has responsibility for cleaning pond 1 Kedge Drive. These ponds aid with alleviating flooding in residential areas by storing floodwaters during times of peak rainfall run-off. Wet ponds also improve stormwater quality. More ponds are expected to be vested with Council as part of future development.

To date Council does not have Operations and Maintenance manuals for any of the ponds across the District. This has been identified as a future improvement in the Improvement Plan in Section 5.1. A template should be developed with key information required to manage these ponds including wetland planting, public safety design and maintenance requirements.

Historical records document a water quality issue around the Norfolk Drive and Seabreeze Road area, where the stormwater system was installed in peat layers and the discharge is said to have high hydrogen sulphide levels. Council are working with the landowner on a solution which is likely to be a treatment pond at Estuary Drive before the stormwater is discharged into the Coastal Marine Area (CMA). This pond is included in 2014/2015 budgets.

2.1.6.3 Flood Protection

Stormwater management has historically relied on soakage at Mangawhai Heads and open drains in Mangawhai village. New piped stormwater systems have recently been installed in the new subdivision areas. Properties in Mangawhai currently discharge to the piped network, private soak pits (which generally do not perform well), or to the road.

There is general lack of soakage at Mangawhai Heads with general clogging up of soakage systems by silt, grit and other materials causing flooding. There are also depressions that have no natural overland flow outlets. New piped systems may be required to provide positive outlets. The areas around Estuary Drive, Pohutukawa Place, Wood Street and Wharfdale Crescent have been identified for further investigation following customer complaints of flooding.

A Stormwater Management Plan was prepared in 2006 to provide guidance philosophies for developers and sets out the Levels of Service for this catchment including; water quality improvements, stabilising overland flow paths, the addition of grills on culverts inlets / outlets to improve child safety, and improved coastal outfalls. This draft Stormwater Management Plan needs to be updated to reflect the principles of the 2011 Engineering Standards and be adopted formally by Council. This has been recognised as a future improvement in Section 5.1 and is currently proposed to be undertaken in 2014/2015.

An assessment conducted in 2009 recorded 34 coastal outfalls from the Mangawhai stormwater system, discharging to the Coastal Marine Area (CMA). Mangawhai is used extensively for recreational purposes and is a popular swimming beach. It has the highest protection zone in the Regional Coastal Plan and is monitored in the

summer period by NRC as detailed in Section 1.9. A survey of these assets is included as an item in the Improvement Plan, in order to facilitate discussions with NRC around consenting requirements.

Figure 2-12: Coastal Outfall, Mangawhai

2.1.6.4 Summary of Issues and Remedial Actions

The key issues relating to the Mangawhai stormwater network as identified by Council, or in this AMP, along with potential remedial actions as identified in the February 2013 Improvement Plan, are listed in Table 2-16 below.

Table 2-16: Mangawhai Issues and Remedial Actions

Issue	Remedial Action Identified in Improvement Plan		
	ID No.	Improvement Action	Forecast Completion Date
Outdated Stormwater Management Plan for the Mangawhai stormwater network.	2	Identify the current status of the Stormwater Management Plans (SMP's). Review and prioritise the work to be undertaken. Compile a programme to undertake the completion and adoption of the SMP's.	Sep-2015
	3	Undertake the development of the Stormwater Management Plan for Mangawhai to gain an understanding of capacity constraints in the system and options to mitigate risks.	Jun-2016
Possible water quality issue around Norfolk Drive / Seabreeze Road area.	3	Undertake the development of the Stormwater Management Plan for Mangawhai to gain an understanding of capacity constraints in the system and options to mitigate risks.	Jun-2016
Poor performance and lack of soakage around Mangawhai Heads leading to residential flooding.	23	Development of Soakage Design Manual including. Engineering design standards and Stormwater Management Plan references.	Jun-2016
Lack of O&M manual for detention ponds, including management and safety information.	19	Develop a template for an operations and management manual for ponds with key information required from developers.	Jun-2015
Possible discharge of coastal outfalls from Mangawhai stormwater network into Coastal Marine Area.	11	Survey all the coastal outfalls in the five urban townships with Mangawhai as the highest priority.	Sept-2015

Issue	Remedial Action Identified in Improvement Plan		
	ID No.	Improvement Action	Forecast Completion Date
Lack of stormwater system at Molesworth Drive near the Industrial Area.		Install new stormwater reticulation either along Molesworth Drive to the estuary or under Molesworth Drive to the bush area. A feasibility study needs to be undertaken and detailed design. Construction to be undertaken early 2015.	2015 - 2016

2.1.7 Te Kopuru

The township of Te Kopuru is located on a flat plateau above the Wairoa River. Stormwater is primarily managed through the 4.7km of open drains shown in Figure 2-13 below, discharged to various gullies and then into the river. There is also around 74m of stormwater pipeline in Te Kopuru as shown in Table 2-18. A summary of the Te Kopuru stormwater assets is included in Table 2-17. The layout and location of the Te Kopuru stormwater assets are illustrated in the Asset Maps in Figure 2-13.

Table 2-17: Te Kopuru Asset Summary

	Pipeline Length (m)	Open Drains (m)	Manholes	Inlets / Outlets	Detention Ponds
Physical Quantity	149	4,760	2	-	-
Asset Condition Rating	2[6]	Condition assessment commenced 2014	Condition assessment commenced 2014	Condition assessment commenced 2014	Condition assessments commenced 2014
Depreciated Replacement Cost	$196,136				

[6] A generic condition rating of 2 has been assigned where historical data and reviews by Operations staff indicate the operational condition of the assets as being in "good condition".

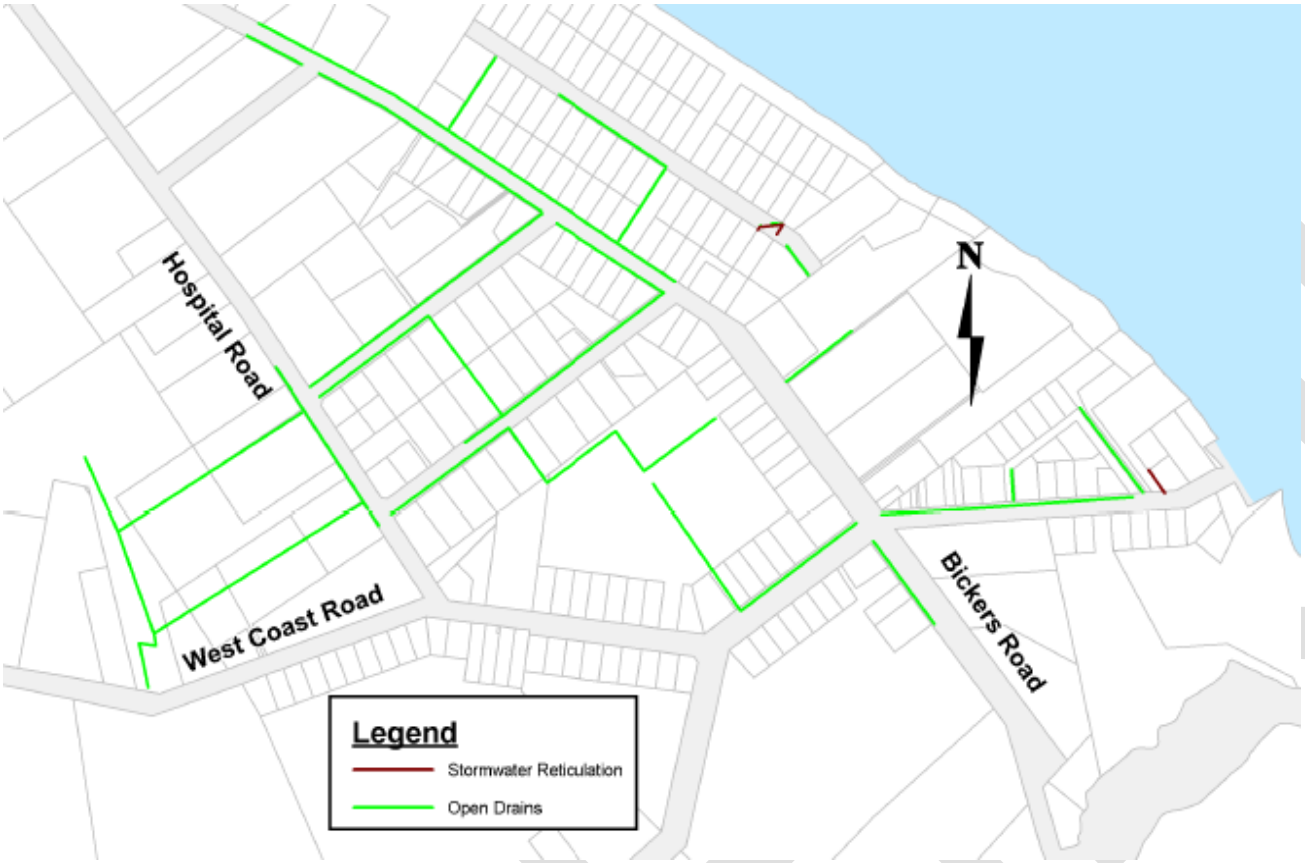


Figure 2-13: Te Kopuru Asset Map

2.1.7.1 Reticulation

Stormwater in Te Kopuru is primarily managed through the 4.7km open drains associated with the roading network. There is also around 74m of stormwater pipeline in Te Kopuru, as shown in Table 2-18. The asset register for Te Kopuru suggests that many assets have unknown attributes, with 51% of pipe diameters and materials both unknown. The reticulation is known to be mainly concrete pipes, although this detail is not recorded in Council's asset register. This will be investigated as part of the data cleansing project identified in the Improvement Plan in section 5.1.

Table 2-18: Te Kopuru Pipeline Diameter / Material Summary by Length (m)

Diameter(mm)	Materials		
	PVC	Unknown	Total length(m)
Unknown		69	69
100	31		31
300		15	15
375		35	35
Grand Total (m)	**31**	**119**	**149**

Data source: AssetFinda June 20145

Due to the system being relatively new, and from operational knowledge, the assets are believed to be in good condition.

2.1.7.2 Flood Protection

There have been some customer complaints of flooding problems with the runoff difficult to drain from the plateau. The flooding had only a minor impact.

There has been no Stormwater Management Plan developed for Te Kopuru. This has been identified in the Improvement Plan in section 5.1

2.1.7.3 Summary of Issues and Remedial Actions

The key issues relating to the Te Kopuru stormwater network as identified by Council, along with potential remedial actions as identified in the February 2013 Improvement Plan, are listed in are listed in Table 2-19.

Table 2-19: Te Kopuru Issues and Remedial Actions

Issue	Remedial Action Identified in Improvement Plan		
	ID No.	Improvement Action	Forecast Completion Date
Lack of Stormwater Management Plan for the Te Kopuru stormwater network.	2	Identify the current status of the Stormwater Management Plans (SMP's). Review and prioritise the work to be undertaken. Compile a programme to undertake the completion and adoption of the SMP's.	Sep-2016
	7	Undertake the development of the Stormwater Management Plan for Te Kopuru to gain an understanding of capacity constraints in the system and options to mitigate risks.	Sep-2016
Minor flooding / drainage issues along plateau.	7	Undertake the development of the Stormwater Management Plan for Te Kopuru to gain an understanding of capacity constraints in the system and options to mitigate risks.	Sep-2016
Ownership and responsibility of assets between road network, urban stormwater network and private connections.	16	Clarify asset ownership across the District (particularly new SW infrastructure) including definitions around road drainage based activities and stormwater activities.	Sep-2016

2.1.8 Townships without service

There are several small townships in the District that are currently not serviced with a public or urban stormwater system. Historically, the stormwater systems for these towns have been related to the roading network through open drainage, culverts etc. Recently, some minor urban reticulation has been installed in both Pahi and Ruawai as part of development in these areas. The operation, maintenance, and capital development needs for these small townships are currently provided for in the Roading AMP.

There may be pressure in future to provide a stormwater service to other non-serviced townships as development occurs in these and neighbouring townships. Consideration will need to be given to the communities' ability to fund such services.

Assets for these townships have been summarised in Table 2-20 below.

Table 2-20: Unserviced Townships Pipeline Summary by Length

Unserviced Townships	Piped Network (m)	Open Drains
Ruawai	645	4,805
Maungaturoto	2,043	232
Pahi	3,303	86

Data source: AssetFinda February 2014

Note: There may also be stormwater pipes in Whakapirau, Tinopai, Paparoa and Matakohe as indicated in previous asset management plans, however AssetFinda does not record these pipes and thus they have not been included in the table above.

Figure 2-14: Open Drains in Kaipara District

2.2 Critical Assets

Critical assets have been defined by the NAMS group as being assets with a high consequence of failure.[7] They are often found as part of a network, in which, for example, their failure would compromise the performance of the entire network.

A formal criticality assessment has not yet been undertaken for the majority of the existing stormwater assets, and this has been recorded in the Improvement Plan for action in 2014.

Historical evidence and local knowledge has identified the assets in Table 2-21 which could be considered to be "critical", in that failure of these assets could compromise the stormwater network. A greater level of management has been applied to some of these assets by way of planned annual inspections and sand-bagging lower lying areas along the Wairoa River in the event of heavy rain warnings.

Further understanding and definition of mitigation measures is required.

Table 2-21: Critical Stormwater Assets

Asset	Potential Consequences of Failure	How Critical Asset Will be Managed
Stopbanks (Dargaville)	Inundation of tidal water into central Dargaville and subsequent flooding of surround areas.	See section 1 for Maintenance and Operating, Renewal and New Capital strategies. Annual inspections of floodwalls / stopbanks.
Floodwall	Inundation of tidal water into central Dargaville and subsequent flooding of surround areas.	
Floodgates in low areas (Dargaville)	Jamming of floodgates leading to influx of tidal waters and subsequent flooding of surrounding areas.	Annual inspections of all floodgates. Inspection of floodgates in low areas around Dargaville prior to high rainfall / tide events.

[7] National Asset Management Steering Group, Association of Local Government Engineering NZ Inc. (2006) 3rd edition (Version 3.0), *International Infrastructure Management Manual*, National Asset Management Steering Group, Association of Local Government Engineering NZ Inc. (INGENIUM)

Asset	Potential Consequences of Failure	How Critical Asset Will be Managed
Pipes >600mm diameter	Increased risk of flooding in the local area and potentially throughout the network as drainage is interrupted. Risks will be location specific and require assessment on a case-by-case basis Replacement costs are likely to be relatively high due to pipe size. Potential liability issues as a result of flooding.	See section 2 for Maintenance and Operating, Renewal and New Capital strategies. To be identified as part of AMP Improvement Plan, item 26 (refer to Appendix B).
Pipes located under buildings	Potential for washout of building foundations to occur if undetected for a long period of time. Repair costs are likely to be expensive due to location of pipe, rerouting should be considered where possible. Increased risk of localised flooding in the location of the failure and in upstream network. Potential liability issues as the result of flooding.	

2.3 Asset Values

2.3.1 Overview

The purpose of valuations is for reporting asset values in Council's financial statements. The Local Government Act 1974 and subsequent amendments contain a general requirement for local authorities to comply with Generally Accepted Accounting Practices (GAAP). The Financial Reporting Act 1993 sets out a process by which GAAP is established for all reporting entities and groups, including all local authorities. Compliance with the New Zealand Equivalent to International Accounting Standard 16; Property, Plant and Equipment (NZ IAS 16) and IAS 36; Impairment of Assets, is one of the current requirements for meeting GAAP.

The most recent Council asset valuation exercise was undertaken in 2013. The valuation process is summarised in the report, *Water Supply and Stormwater Utility Asset Revaluation 30 June 2013*. The following key points should be noted when reviewing the asset valuation data presented in this Section:

- The valuation was carried out in accordance with the procedures set out in the NAMS Group Infrastructure Asset Valuation and Depreciation Guidelines (Edition 2, 2006) and based on straight line depreciation.

- Other standards the asset valuations have been completed in accordance with include:
  - ICANZ – NZ equivalent to International Accounting Standard 16 – Property Plant and Equipment (NZ IAS 16).
  - NZPI Standards.
- The valuation relied on the accuracy of Council's asset database information and assumed it to be correct.
- The adopted valuation treatment for Council's infrastructure assets (including water) was Optimised Depreciated Replacement Cost (ODRC).
- The rates for replacement costs of assets were largely determined by operational personnel that were familiar with the day to day contract monitoring.
- The replacement costs include an allowance for administration, including design and construction monitoring using a 7.5% addition to unit replacement costs for all asset types.
- Land drainage assets are excluded from stormwater assets.
- Drains that are used to drain roads are excluded from stormwater assets.

The valuation was based on substantially complete asset registers, appropriate replacement costs and useful lives, providing a relative degree of confidence in the valuation data.

Asset values for each of Council's five stormwater schemes are presented in this section in terms of current replacement value and depreciated replacement value. Depreciated replacement value is the current replacement cost less allowance for physical deterioration and optimisation for obsolescence and relevant surplus capacity.

2.3.2 Depreciation

Depreciation of assets must be charged over their useful life.

- *Depreciated Replacement Cost* is the current replacement cost less allowance for physical deterioration and optimisation for obsolescence and relevant surplus capacity. The *Depreciated Replacement Cost* has been calculated as:

$$\frac{\text{Remaining useful life}}{\text{Total useful life}} \times \text{replacement cost}$$

- *Depreciation* is a measure of the consumption of the economic benefits embodied in an asset. It distributes the cost or value of an asset over its estimated useful life. Straight-line depreciation is used in this valuation
- *Total Depreciation to Date* is the total amount of the asset's economic benefits consumed since the asset was constructed or installed

- The *Annual Depreciation* is the amount the asset depreciates in a year. It is defined as the replacement cost minus the residual value divided by the estimated total useful life for the asset
- The *Minimum Remaining Useful Life* is applied to assets which are older than their useful life. It recognises that although an asset is older than its useful life it may still be in service and therefore have some value. Where an asset is older than its standard useful life, the minimum remaining useful life is added to the standard useful life and used in the calculation of the depreciated replacement value.

2.3.3 Dargaville

The tables below present current and depreciated replacement values along with remaining useful life for stormwater assets in Dargaville (this data excludes stopbanks / floodwalls which have not yet been valued).

Table 2-22: Dargaville Assets Current Replacement Value

Component	Replacement Costs	Average Useful Life (years)	Average Remaining Life (years)
Stormwater Lines	$16,548,135	63	37
Stormwater Points	$3,262,575	98	70
Total	**$19,810,710**		

Table 2-23: Dargaville Assets Depreciated Replacement Value

Component	Depreciated Replacement Cost	Annual Depreciation Based on Value
Stormwater Lines	$10,471,325	$187,851
Stormwater Points	$1,801,082	$41,192
Total	**$12,272,407**	**$229,043**

2.3.4 Baylys

The tables below present current and depreciated replacement values along with remaining useful life for stormwater assets in Baylys.

Table 2-24: Baylys Assets Current Replacement Value

Component	Replacement Costs	Average Useful Life (years)	Average Remaining Life (years)
Stormwater Lines	$873,405	76	73
Stormwater Points	$265,344	100	71
Total	**$1,138,749**		

Table 2-25: Baylys Assets Depreciated Replacement Value

Component	Depreciated Replacement Cost	Annual Depreciation Based on Value
Stormwater Lines	$716,148	$11,284
Stormwater Points	$248,727	$2,653
Total	**$964,875**	**$13,937**

2.3.5 Kaiwaka

The tables below present current and depreciated replacement values along with remaining useful life for stormwater assets in Kaiwaka.

Table 2-26: Kaiwaka Assets Current Replacement Value

Component	Replacement Costs	Average Useful Life (years)	Average Remaining Life (years)
Stormwater Lines	$81,278	74	71
Stormwater Points	$329,938	100	94
Total	**$411,216**		

Table 2-27: Kaiwaka Assets Depreciated Replacement Value

Component	Depreciated Replacement Value	Annual Depreciation Based on Value
Stormwater Lines	$73,523	$1,099
Stormwater Points	$309,285	$3,299
Total	**$382,808**	**$4,398**

2.3.6 Mangawhai

The tables below present current and depreciated replacement values along with remaining useful life for stormwater assets in Mangawhai.

Table 2-28: Mangawhai Assets Current Replacement Value

Component	Replacement Costs	Average Useful Life (years)	Average Remaining Life (years)
Stormwater Lines	$5,662,675	74	63
Stormwater Points	$1,868,956	98	77
Total	**$7,531,631**		

Table 2-29: Mangawhai Assets Depreciated Replacement Value

Component	Depreciated Replacement Value	Annual Depreciation Based on Value
Stormwater Lines	$4,637,110	$78,163
Stormwater Points	$1,715,524	$18,721
Total	**$6,352,634**	**$96,884**

2.3.7 Te Kopuru

The tables below present current and depreciated replacement values along with remaining useful life for stormwater assets in Te Kopuru.

Table 2-30: Te Kopuru Assets Current Replacement Value

Component	Replacement Costs	Average Useful Life (years)	Average Remaining Life (years)
Stormwater Lines	$189,104	67	65
Stormwater Points	$45,343	100	99
Total	**$234,447**		

Table 2-31: Te Kopuru Assets Depreciated Replacement Value

Component	Depreciated Replacement Value	Annual Depreciation Based on Value
Stormwater Lines	$153,871	$3,152
Stormwater Points	$42,265	$453
Total	**$196,136**	**$3,605**

3 Financial and Lifecycle Strategy and Management

3.1 General Lifecycle Management Plan

3.1.1 Introduction

This section identifies Council's strategy and programme for managing, maintaining and renewing assets within its stormwater scheme. The strategies described within this section have been developed to achieve the Levels of Service identified in Section 1.9 of this plan.

Management of the lifecycle of each asset should optimise performance whilst minimising the total lifecycle costs of both the reticulation and treatment systems. The management process balances the various competing demands and investigates the capacity and performance constraints of each component to establish a regime to achieve the overall objectives.

The objectives of each Lifecycle Management Plan are to:

- Optimise performance and
- Minimise total lifecycle costs

Whilst this section notes the generic strategies used by Council, it is supplemented by specific strategies for each scheme detailed in the sections that follow. The Lifecycle Management Plan for each asset component incorporates the following strategies:

- Operations and Maintenance Strategies, to keep the assets operational
- Renewal Strategies to replace assets as they reach the end of their useful life
- Development Strategies to address growth and demand
- Disposal Strategies, when the asset is no longer required
- Work programmes and the associated financial forecasts, which are developed later for each scheme.

3.1.2 Design Parameters

Design parameters for all new Council stormwater assets are set out in Council's Engineering Standards and Guidelines (2011). In summary these requirements include the following:

- Flood protection requirements for habitable buildings
- Protection of existing overland flow paths, watercourses, wetlands etc

- Catchment Management Planning
- Required design periods for primary and secondary design flow including rainfall depths by community
- Minimum freeboard height to floor levels
- Requirements for pipe size, material, location and layout of reticulation.

3.1.3 Work Categories

Council's lifecycle asset management strategies are divided into the following five work categories:

Asset Operations: The active process of utilising an asset which will consume resources such as manpower, energy, chemicals and materials. The Operations category also incorporates funding to address the AMP Improvement Plan actions and the provision of professional services. The AMP Improvement Plan is generally focussed on a three year timeframe with a nominal allowance for years 4 – 10. As the programme is addressed, new initiatives will be identified and added to the programme and budgets will be revised accordingly.

Asset Maintenance: The ongoing day to day work activity required to keep assets serviceable and prevent premature deterioration or failure. Three categories of maintenance are carried out:

- **Planned Maintenance** – Work carried out to a predetermined schedule, or programmed as a result of identified needs.
- **Preventative maintenance** – Work additional to scheduled inspections and maintenance identified during inspections as essential to continued operation.
- **Responsive Maintenance** – Work carried out in response to reported problems or defects.

Asset Renewal: Major work that restores an asset to its original capacity or the required condition. This includes both planned and reactive renewals.

New Capital: This section of the AMP covers tactics for the creation of new assets (including those created through subdivision and other development) or works which upgrade or improve an existing asset beyond its existing capability or performance in response to changes in supply needs or customer expectations.

Development works fall into two separate categories as follows:

- Council funded
- Developer funded as part of sub-division development or by way of contributions.

Asset Decommissioning / Disposal: Decommissioning and disposal of assets when they are no longer needed. Assets may become surplus to requirements for any of the following reasons:

- Under-utilisation
- Obsolescence
- Provision exceeds required level of service
- Uneconomic to upgrade or operate
- Policy change
- Service provided by other means (e.g. private sector involvement)
- Potential risk of ownership (financial, environmental, legal, social, vandalism).

The day to day operational, inspection and maintenance of the stormwater network was previously carried out by Transfield under the Roading Maintenance Contract 522. With the re-tendering of the roading maintenance contract, Council has taken the opportunity to remove the urban stormwater components from the roading contract and have included these as a variation to Contract 527 *Water Supply and Wastewater Operations and Maintenance Services.* From 01 August 2013, the urban stormwater maintenance is provided by the water supply and wastewater maintenance contractor.

Contract 527, the *Water Supply and Wastewater Operations and Maintenance Services* contract was competitively tendered on the open market and has been extended until June 2014. The contract is administered by Council staff.

All work is performed, and materials used, to comply with the latest edition of the following standards:

- This AMP
- Contract 527 – Water Supply and Wastewater Operations and Maintenance Services Contract
- Kaipara District Council Engineering Standards and Policies 2011.

The maintenance and operation standards for all work activities are specified in the maintenance contract, with performance measures including response times.

3.1.4 Contractual Setting

Council had previously procured the various Asset Management functions through two key contracts (Professional Services Contract 666 and Water Supply and Wastewater Operations and Maintenance Services Contract 527) addressing aspects of the core Asset Management responsibilities in house. Recognising the importance of asset knowledge and their performance, Council have recently restructured and now undertake the wider scope of asset management functions. The field

operations aspect is retained within Contract 527. Additional services to support the Water Services team will be procured on an as required basis and may include investigation and design services. The various functions are noted in Figure 3-1 below.

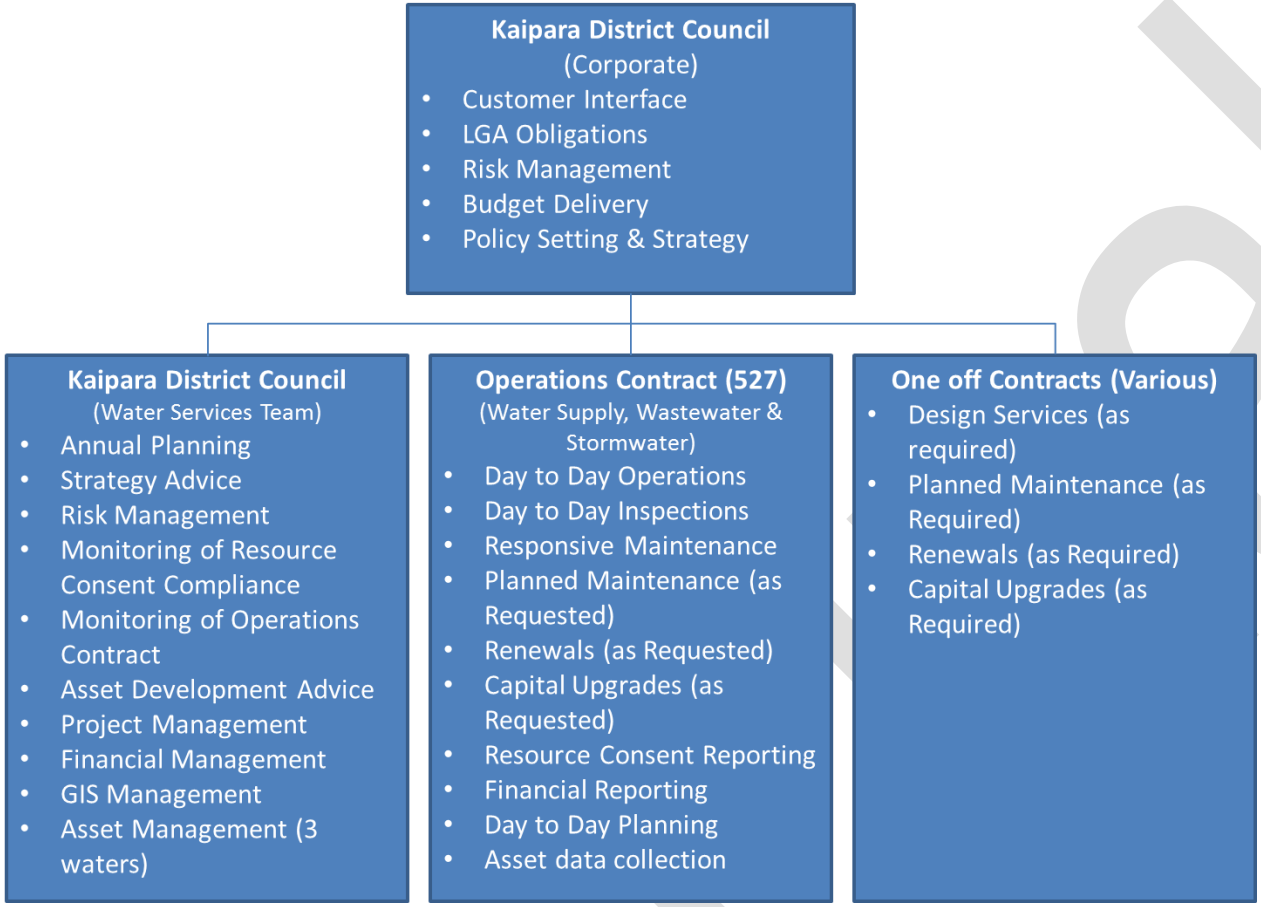


Figure 3-1: Contractual Setting

The Operations contract delivers the Lifecycle Management outcomes on a day to day basis. The specification of the Operations contract incorporates the various inspections that monitor asset condition/capacity and provide the basis for programmed maintenance. The frequency of the programmed inspections is established in the specification of the Operations contract. This is supplemented as required by inspections generated from Council's customer Helpdesk system.

When programmed inspections are undertaken by the Operations contractor, the act of inspection may initiate a series of responses based on the observations of the contractor. These could include;

- Programmed maintenance tasks, based on usage or time
- Responsive maintenance based on condition or capacity
- Planning of a Preventative Maintenance Response based on a prediction of future failure
- Reporting for upgrading or renewal through to the Professional services provider. This occurs when the scope of the intervention is not covered with the Operations contact and requires consideration of alternatives (upgrades) or prioritisation within existing budgets (renewals)
- Ad-hoc inspections of breaks or infrastructure that allow an opportunity to inspect reticulation when responding to an incident
- Collection of data from inspections and interventions for incorporation into Council's GIS system.

3.1.5 Environmental Compliance

A list of Resource Consents held by Council for stormwater activity is included in Appendix D. The compliance with these consents is monitored by the NRC. Council works closely with the NRC in monitoring the performance of Kaipara's stormwater assets.

The day to day monitoring of the performance of stormwater systems is a requirement of the Operations contract. Where Resource Consent non-conformances are observed, the non-compliances are reported to both NRC and Council. This is, in turn, reported in the Annual Report.

3.2 Maintenance and Operating Strategy and Cost Forecast

3.2.1 Strategy

Table 3-1 shows the Council maintenance and operating strategies to ensure that the defined levels of service are provided. The table shows the key service criteria affected and mode and impact of failure if the action is not carried out.

Table 3-1: Maintenance and Operating Strategies

Activity	Strategy	Service Criteria	Impact
General Maintenance	Council will manage the assets in a manner that minimises the long term overall total cost and enables delivery of LOS as	Maintaining existing level of service Cost/Affordability	Low – Medium Increased costs and risk of failure.

Activity	Strategy	Service Criteria	Impact
	defined in Section 1.10 in the most cost effective way over the long term. Competitive pricing will be ensured by utilising our Procurement Strategy, CPP contract structures and performance based term contracts where applicable. A register of all deferred maintenance will be maintained, the total value of which will be recognised in the financial reporting. A review and assessment of levels of deferred maintenance has been identified as a future improvement in the Improvement Plan in section 5.1.		
Unplanned Maintenance – Disaster i.e. climatic event	Council will maintain a suitable level of preparedness for prompt and effective response to civil emergencies and system failures by ensuring the availability of suitably trained and equipped staff and service delivery contractors. Council will provide a response service for obstructions to drainage facilities that may result in flooding of buildings or urban properties.	Responsiveness	Medium Potential flooding of private property and damage to public roads and utilities.
Unplanned Maintenance	Council will provide a repair service and respond to and repair / overcome broken or leaking pipes. A suitable level of preparedness for prompt and effective response to asset failures will be managed by ensuring suitably trained and equipped staff to allow prompt repair of critical assets and mitigation of any hazards. Term contracts specify response times.	Responsiveness (Response time for obstructions to drainage facilities that may result in flooding to buildings is 6 hours)	Medium Flooding of private property and damage to public roads and utilities.

Activity	Strategy	Service Criteria	Impact
Planned Inspections Reticulation Drains Stopbanks, floodgates, floodwalls	Council will undertake scheduled inspections in accordance with good industry practice and as justified by the consequences of failure on Levels of Service, costs, public health, safety or corporate image.	Maintaining existing Level of Service	Medium Flooding of private property and damage to public roads and utilities.
Planned – Preventative Maintenance	Council will undertake a programme of planned asset maintenance to minimise the risk of critical equipment failure or where justified economically. Major maintenance needs will be identified through the scheduled asset condition inspections and those generated from the investigation of customer complaints.	Maintaining existing level of service Cost/Affordability	Medium

3.2.2 Operations and Maintenance Activities

Current operation and maintenance activities undertaken across the stormwater network include:

- Normal routine maintenance to ensure that drains including natural watercourses are kept open and functioning
- Maintaining the capacity of the natural watercourses which collect and convey stormwater run-off from private properties, Council's stormwater systems and the roading network
- Replace any broken pipes, inlets, or collapsed manholes or catchpits
- Repair any scouring due to flooding or malfunctioning of a stormwater drain
- Spraying of stormwater drains annually
- Inspection of the stormwater stopbanks, floodgates and floodwall annually
- Inspection of floodgates located in low spots in Dargaville before high rainfall and high tide events (Note these inspections are currently undertaken by the Roading Contractor)

- Investigations with CCTV survey if necessary when reactive maintenance cannot resolve the network problem
- Record faults and maintenance undertaken (A future improvement has been identified to begin recording maintenance history and costs at asset component level in AssetFinda, see section 5.1).

3.2.3 Expenditure Forecast

The 10 year forecast for operations and maintenance costs for stormwater assets in the Kaipara District are shown in Figure 3-2 and Figure 3-3.

The Operational Expenditure forecast covers:

- All control and operation activities, as described in section 3.2.1
- Actions resulting from improvement planning during preparation of this AMP – see the Improvement Plan in Appendix B
- The Professional Services Contract.

The Maintenance Expenditure forecast covers all planned and reactive maintenance activities, as described in section 3.2.1.

A detailed breakdown of the financial forecast is included in Appendix A.

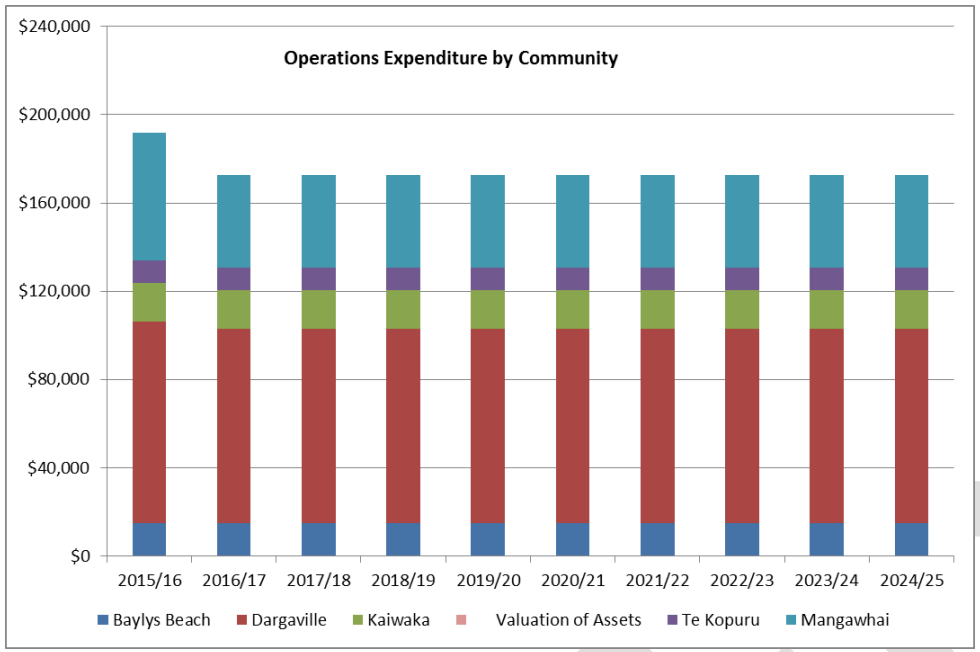


Figure 3-2: Total Forecast Operational Expenditure

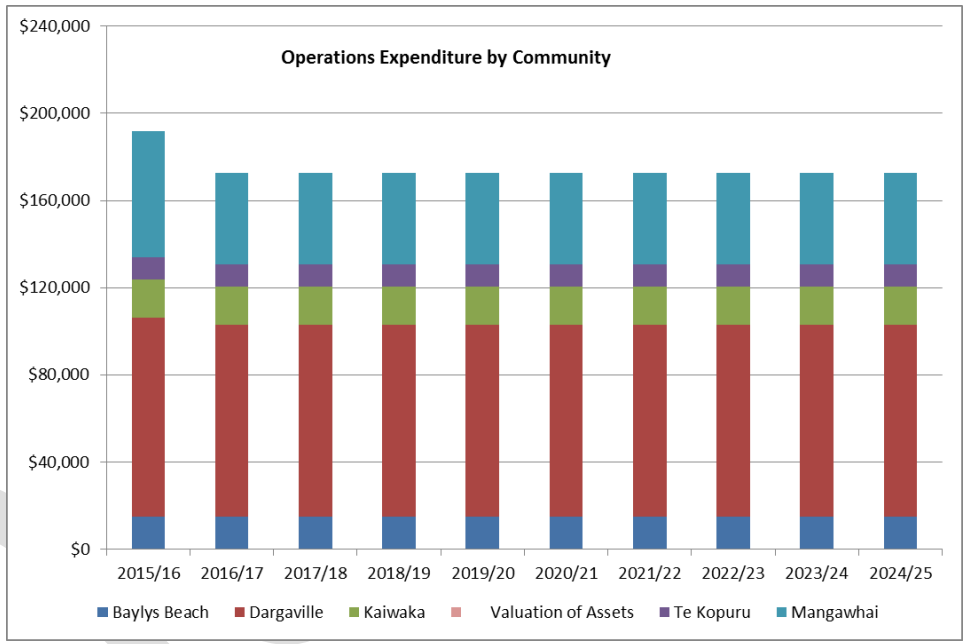


Figure 3-3: Total Forecast Maintenance Expenditure

3.3 Renewals Strategy and Expenditure Forecast

3.3.1 Strategy

Renewal expenditure is major work that does not increase asset design capacity but restores, rehabilitates, replaces or renews an existing asset to its original capacity. Work over and above restoring an asset to original capacity is 'new works' expenditure.

Council reviewed their renewal strategy during 2012/2013 and are moving towards a "just in time" approach - to rehabilitate or replace assets when justified by condition and where there is a significant reduction in performance.

The current asset data situation detailed in section 2.1.2, affects Council's ability to accurately forecast necessary renewals. The current lack of data relating to asset condition, performance and/or maintenance history prevents Council from developing a renewal strategy based on these criteria's. Consequently the current renewals

programme is broadly based on asset lives, further modified through local knowledge and experience gained from the maintenance contract staff and local resources on asset performance. Council's risk management and criticality assessment procedures are currently being reviewed, the outcome of which may affect Council's renewal strategy. Council's current renewal strategy is presented below.

Assets are considered for renewal as they near the end of their effective working life or where the cost of maintenance becomes uneconomical and when the risk of failure of critical assets is sufficiently high.

The Council renewal programme has been developed by:

- Taking asset age and remaining life predictions from the valuation database, calculating when the remaining life expires and converting that into a programme of replacements based on valuation replacement costs
- Reviewing and justifying the renewals forecasts using the accumulated knowledge and experience of asset operations and asset management staff. This incorporates the knowledge gained from tracking asset failures through the customer services system, known location of pipe breaks and overflows, and contractor knowledge.

When justifying renewals the following factors are considered:

- **Asset performance:** Renewal of an asset when it fails to meet the required level of service. Non-performing assets are identified by the monitoring of asset reliability, efficiency and quality during routine inspections and operational activity. Indicators of non-performing assets include repeated and/or premature asset failure, inefficient energy consumption and inappropriate or obsolete components.
- **Risk:** The risk of failure and associated financial and social impact justifies action (e.g. probable extent of damage, safety risk, community disruption).
- **Economics:** It is no longer economic to continue repairing the asset (i.e. the annual cost of repairs exceeds the annualised cost of renewal). An economic consideration is the coordination of renewal works with other planned works such as road reconstruction.
- **Efficiency:** New technology and management practices relating to increased efficiencies and savings will be actively researched, evaluated and, where applicable, implemented.

The current level of condition and/or performance data relating to the stormwater assets is not well documented. The future collection of this data and entry into the AssetFinda database has been identified as an activity to be completed within the improvement plan. Over time, as more information is recorded, an initial assessment and listing of renewals needs will be able to be created from AssetFinda for subsequent review and verification.

Other mechanisms are available to assess renewals requirements. These include:

Extrapolating the theoretical asset life based on the installed date of the asset and the effective life of the specific asset type or component. Under this scenario, all assets should be renewed when they meet the end of their effective life. We understand that a number of factors will impact the life of the asset and in most cases the effective

life of the asset may be considerably longer. Such lists are useful, but should be supported by additional operational knowledge to validate that the asset actually requires renewal, or be subject to field inspection to verify its actual condition as part of reviewing and developing the renewals programme.

- Conducting a structured interview of operations staff with specific knowledge and familiarity with the stormwater networks to identify areas of the network which are not performing to the required level of service. With typical assets having effective lives ranging from 60-80years, this method provides only a snapshot of the network based on the period of time which the operations staff may have been working on the network. In most cases this is likely to be less than 10 years of accumulated knowledge, and will be biased towards where problems have occurred historically
- Reviewing and analysing customer complaints regarding flooding or other asset related faults to determine if the assets are not performing to the required Level of Service and may need replacement or rehabilitation.

Renewals needs will be identified through the operational or maintenance activities completed on the assets and the investigation of customer complaints. Renewal works will be prioritised and programmed in accordance with the following criteria or, in urgent cases, undertaken immediately:

- Public safety risk
- Criticality of assets to network operation
- Criticality of assets to achievement of service standards and community outcomes
- Financial risk of deferring work
- Intensity of usage
- Environmental risk
- Political preference.

A number of assessments were completed as part of this AMP development including:

- Reviewing the previous AMP renewal programme. Two aspects were considered:
  - A baseline renewals budget of $125,000 per annum has been assumed for the Dargaville network (per the last AMP which included a range from $75,000 up to $150,000 per annum).
  - Specific projects identified in previous versions of the stormwater AMP have been removed as there was insufficient knowledge and / or project data to substantiate the need for these projects. The focus is now on identifying and scoping new projects for subsequent design and implementation. Renewals forecasts will be reviewed following on from this identification and scoping phase.
- Reviewing customer service requests to ascertain the type and frequency of stormwater network issues.

- Conducting a structured interview with relevant operations staff to review the urban stormwater networks within each of the communities to understand potential network issues which will likely require asset renewals and to reconcile issues identified from the customer service requests.

This information was then compiled in Table 3-2 below for Renewals (and Table 3-4 for New Capital), and will be used as a basis for developing scoping documents, concept designs, and construction cost estimates in year 1. These will feed into the detailed design phase in year 2 and subsequent construction in year 3 and beyond.

Table 3-2: Dargaville Current Network Issues (Renewals)

Area	Description
Logan Street (from Murdoch Street to Colville Road)	Upgrade of existing pipelines

Ongoing renewals needs will be identified through:

- strategic studies such as the Dargaville Flood Study or development of Stormwater Management Plans
- as critical stormwater assets are identified and data from proactive management and inspections is analysed and then uploaded into AssetFinda
- field information is captured from maintenance activity and inspections and uploaded into the AssetFinda system for analysis

The development of a renewals programme based on performance and condition ratings of critical stormwater assets has been identified as a future improvement in the Improvement Plan in section 5.1.

Deferral of Renewals

Renewal works identified in accordance with Council's renewal strategy may be deferred if the cost is beyond the community's ability to fund it. This can occur when higher priority works are required on other infrastructure assets, there are short-term peaks in expenditure or if an inadequate rating base exists.

When Renewal works are deferred, the impact of the deferral on economic efficiencies and the asset's ability to achieve or contribute to the required standards of service, will be assessed. Although the deferral of some Renewal works may not impact significantly on the short-term operation of assets, repeated deferral will create a liability in the longer term.

3.3.2 Renewal Expenditure Forecast

Renewal programmes have been produced based on the strategy discussed in section 3.3.1

The 10 year (2015/2016 to 2024/2025) forecast for renewal expenditure for stormwater assets in the Kaipara District is shown in Figure 3-4 below. The forecast expenditure information is based on the projected renewals discussed in the following sections of this AMP. Details of the 'AMP Improvements' are included in the Improvement Plan in Appendix B. A detailed breakdown of the financial forecast is included in Appendix A.

As outlined in section 2 (Asset Data), the current level of condition and / or performance data relating to the stormwater network is not accurately documented in Council systems. This lack of data and knowledge affects Council's ability to adequately forecast required renewals to meet the proposed Levels of Service.

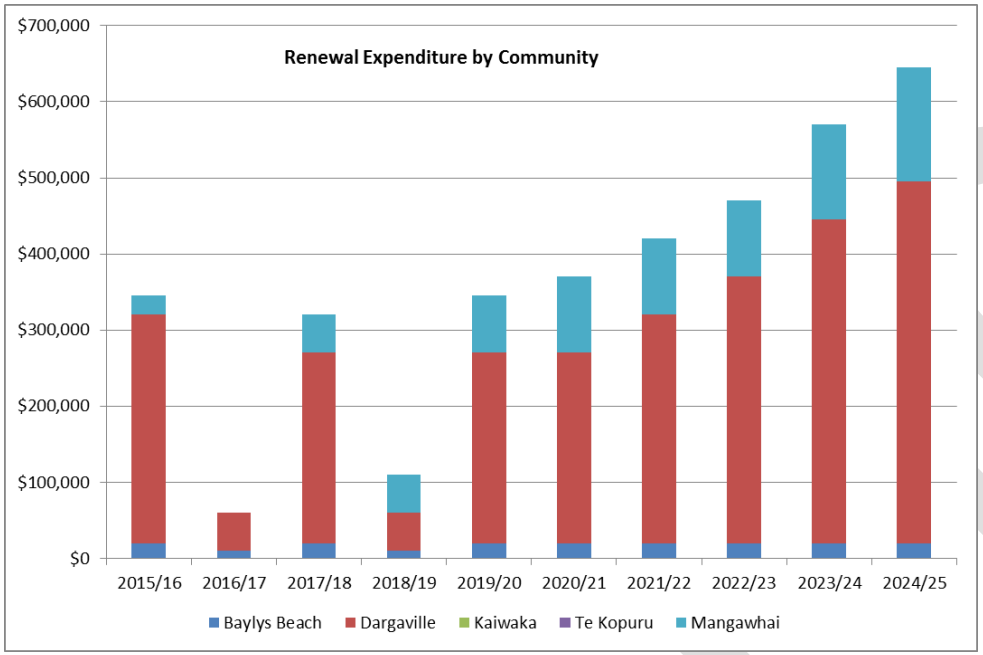


Figure 3-4: Total Forecast Renewal Expenditure

3.3.3 Renewal Expenditure Forecast – Dargaville

3.3.3.1 Overview

The 10 year forecast for renewal expenditure for Dargaville assets is shown in Figure 3-5 below.

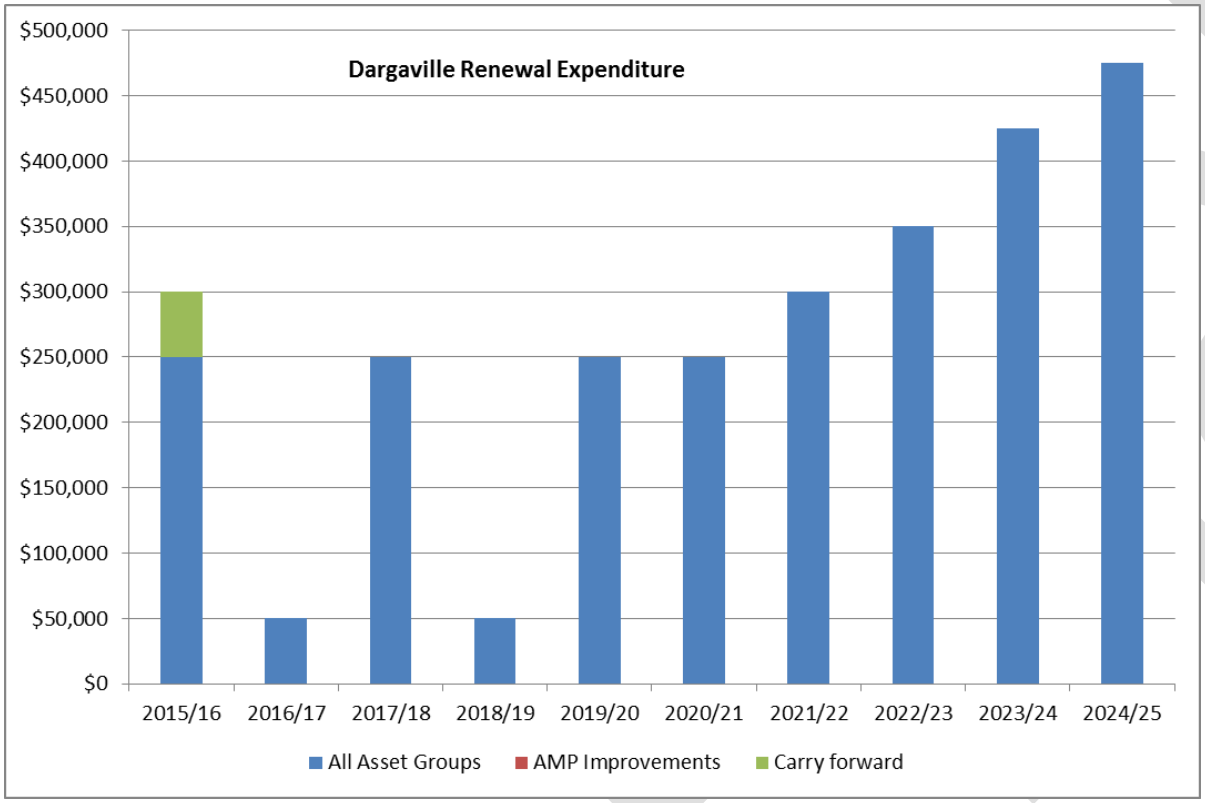


Figure 3-5: Dargaville 10-year Renewals Expenditure Forecast

A provision has been made within Council's Renewals budget to undertake conceptual design for assets in Dargaville that have been identified as potentially in need of renewal. At present, specific assets are still being identified to undergo conceptual design over the next 3 years.

Details of proposed renewal projects over the next 3 years for Dargaville are presented in Table 3-3 below.

Table 3-3: Dargaville Proposed Renewal Projects

Project	Description	Planned Expenditure $	Planned Date
Renewal of All Asset Groups	A considerable backlog of renewal ($7.5 million) was accumulated in Dargaville. Renewal strategy here is to renew at least part of this backlog in next 10 years. Investigation, scoping, design and renewal of assets which are in need of renewal, as identified by operations staff, inspections, local knowledge and customer complaints.	250,000 50,000 300,000 350,000 425,000 475,000	2015/2016, 2017/2018, 2019/2020, 2020/2021 2016/2017, 2018/2019 2021/2022 2022/2023 2023/2024 2024/2025

3.3.4 Renewal Expenditure Forecast – Baylys

A moderate renewal expenditure of $20,000 per year for the years 2015/2016, 2017/2018, and 2019/2020-2024/2025 and $10,000 for each of 2016/2017 and 2018/2019 is allowed for Baylys over the next 10 years to address the accumulated renewals backlog of $174,000.

Table 3-4: Baylys Proposed Renewal Projects

Project	Description	Planned Expenditure $	Planned Date
Renewal of All Asset Groups	Investigation, scoping and concept design of assets in need of renewal, as identified by operations staff, inspections, local knowledge and customer complaints.	$20,000 $10,000	2015/2016, 2017/2018 and 2019/2020 – 2024/2025 2016/2017 and 2018/2019

3.3.5 Renewal Expenditure Forecast – Kaiwaka

No renewal expenditure is predicted at Kaiwaka over the next 10 years due to lack of data and knowledge on the current level of condition and/or performance to adequately forecast required renewals. A formal condition assessment (including physical inspections) has been identified in the Improvement Plan in section 5.1, and is currently planned to be undertaken during 2013/2014 period.

3.3.6 Renewal Expenditure Forecast – Mangawhai

The 10 year forecast for renewal expenditure for Mangawhai assets is shown in Figure 3-6 below. A backlog of renewal ($1.2 million) was accumulated in Mangawhai. Renewal strategy here is to renew at least a part of the backlog in the next 10 years.

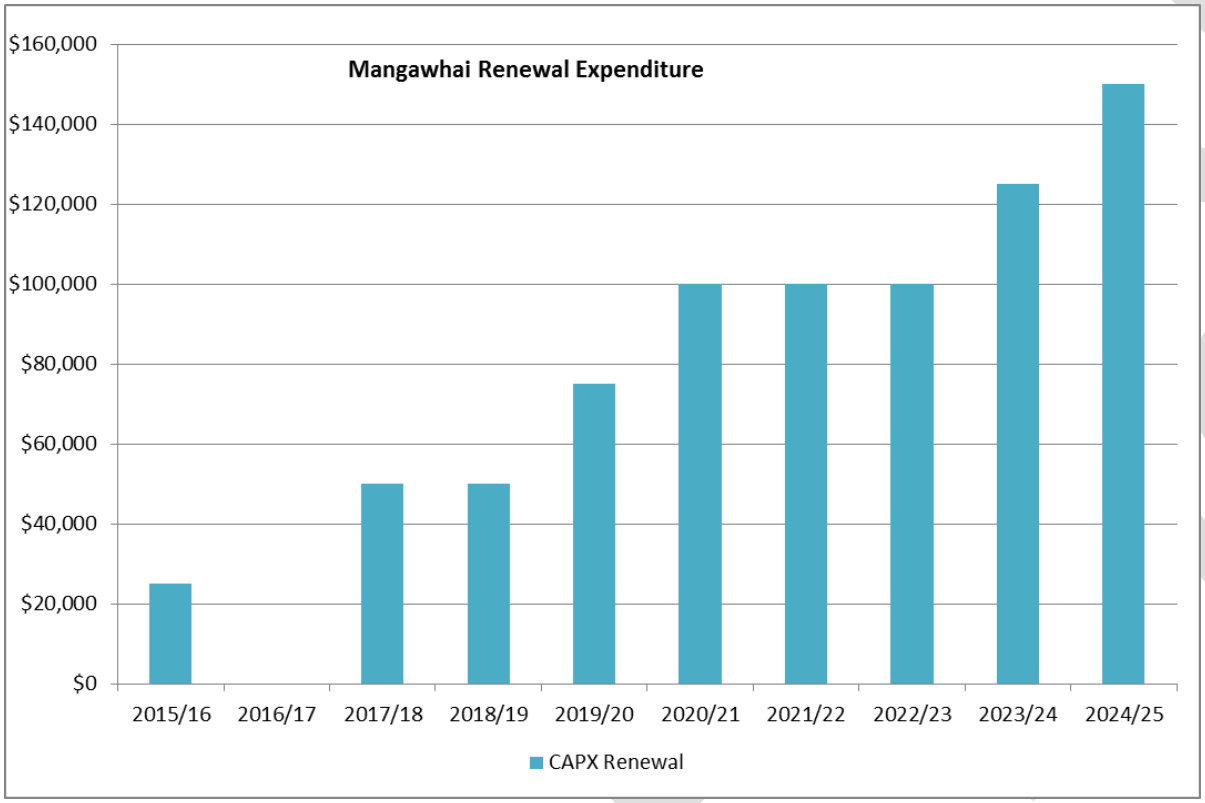


Figure 3-6: Mangawhai 10-year Renewals Expenditure Forecast

Table 3-6: Mangawhai Proposed Renewal Projects

Project	Description	Planned Expenditure	Planned Date
Renewal of All Asset Groups	Investigation, scoping, design and renewal of assets which are in need of renewal, as identified by operations staff, inspections, local knowledge and customer complaints.	$25,000 $50,000 $75,000 $100,000 $125,000 $150,000	2015/2016 2017/2018 - 2018/2019 2019/2020 2020/2021 - 2022/2023 2023/2024 2024/2025

3.3.7 Renewal Expenditure Forecast – Te Kopuru

No renewal expenditure is predicted at Te Kopuru over the next 10 years due to lack of data and knowledge on the current level of condition and/or performance to adequately forecast required renewals. A formal condition assessment (including physical inspections) has been identified in the Improvement Plan in section 5.1.

3.3.8 Historical and Deferred Renewals

Historical and deferred renewals have not been well-documented in the past. Council is committed to improving data capture processes which will enable a more educated approach to renewals forecasting.

3.4 New Capital (Asset Creation, Acquisition, Enhancement) Strategy and Expenditure Forecast

3.4.1 Strategy

New capital works will be planned in response to identified service gaps, growth and demand issues, risk issues and economic considerations.

When evaluating significant new capital proposals, the following issues will be considered:

- The contribution the new or improved assets will make to the current and anticipated future levels of service and community outcomes
- The risks and benefits anticipated to be made from the investment
- The risks faced by not proceeding with the development works. These could include safety risks, social risks and political risks
- Ability and willingness of the community to fund the works
- Future operating and maintenance cost implications.

Significant new capital works will be prioritised and programmed with contributions from:

- Targeted user groups (e.g. special interest groups, industry groups, adjacent residents)
- The general community (through public consultation)
- Council staff and consultants that may be engaged to provide advice to the Council;
- The LTP / Annual Plan process
- The Elected Council (Significant proposals are subject to Council decision and available funding).

There are currently no growth-driven capital projects identified for stormwater over the next three years. Where infrastructure is installed, this will likely be installed by developers. A provision has been made within the capital works budget for Council to contribute towards increasing the capacity of stormwater infrastructure installed by developers if it will benefit the wider community.

We have completed a number of assessments as part of this round of the AMP development including:

- Reviewing the previous AMP New Capital programme. The following aspect was considered:
  - Specific projects identified in previous versions of the stormwater AMP have been removed as there was insufficient knowledge or project data to substantiate the need for the project. The focus is now on identifying and scoping new projects for subsequent design and implementation. New capital forecasts will be subsequently reviewed following on from this identification and scoping phase.

- Reviewing customer service requests to ascertain the type and frequency of stormwater network issues
- Conducting a structured interview with relevant operations staff to review the urban stormwater networks within each of the communities to understand potential network issues which will likely require upgrades of old assets / installation of new assets, and to reconcile issues identified from the customer service requests.

Criterion used in assessing if an asset should be renewed or not is primarily related to:

Levels of Services – if the designed LOS is not being provided and as a consequence flooding of properties is occurring, the severity and nature of flooding will be used to determine if it should be simply renewed or upsized.

Safety – if the presence of an asset i.e. open drain, is in such a condition that it poses a safety risk to the community i.e. erosion or deep sided drains, the risk will be assessed to determine the appropriate form of treatment i.e. piping, fencing or increased maintenance.

Health – if the presence of an asset i.e. open drain, is in such a condition that it poses a health risk to the community i.e. due to stagnant water, the risk will be assessed to determine the appropriate form of treatment i.e. piping or increased maintenance.

This information was then compiled in Table 3-4 below, and will be used as a basis for developing scoping documents, concept designs, and construction cost estimates in year 1 to feed into the detailed design phase in year 2 and subsequent construction in year 3 and beyond.

Table 3-4: Dargaville Current Network Issues (New Capital)

Area	Description
Colville Road (from Park Road to Logan Street)	New piped reticulation to replace open drains
Gordon Street (from Grey Street to Bowen Street)	New piped reticulation to replace open drains
Montgomery Avenue (No 33 – 51)	New piped reticulation to replace open drains
Murdoch Street (from Logan Street to River Road)	Extension of existing pipe to the river to ease possible capacity issue
Logan Street (from Murdoch Street to Basset Street)	New pipe reticulation to replace open drains
Carrington Street (from Victoria Street to Jervois Street)	New piped reticulation to replace open drains
Onslow Street (from Victoria Street to Gordon Street)	New piped reticulation to replace open drains
River Road (from Murdoch Street to Campbell Terrace; and No 3 – 15)	New piped reticulation to replace open drains
Station Road	New piped reticulation to replace open drains

Area	Description
Awakino Road	New piped reticulation to replace open drains

3.4.2 Growth and LOS Expenditure Forecast – District-wide

The 10 year forecast for Growth and LOS capital expenditure for stormwater assets in the Kaipara District is shown in Figure 3-7 below. The forecast expenditure information is based on the projected growth discussed in the following sections of this AMP.

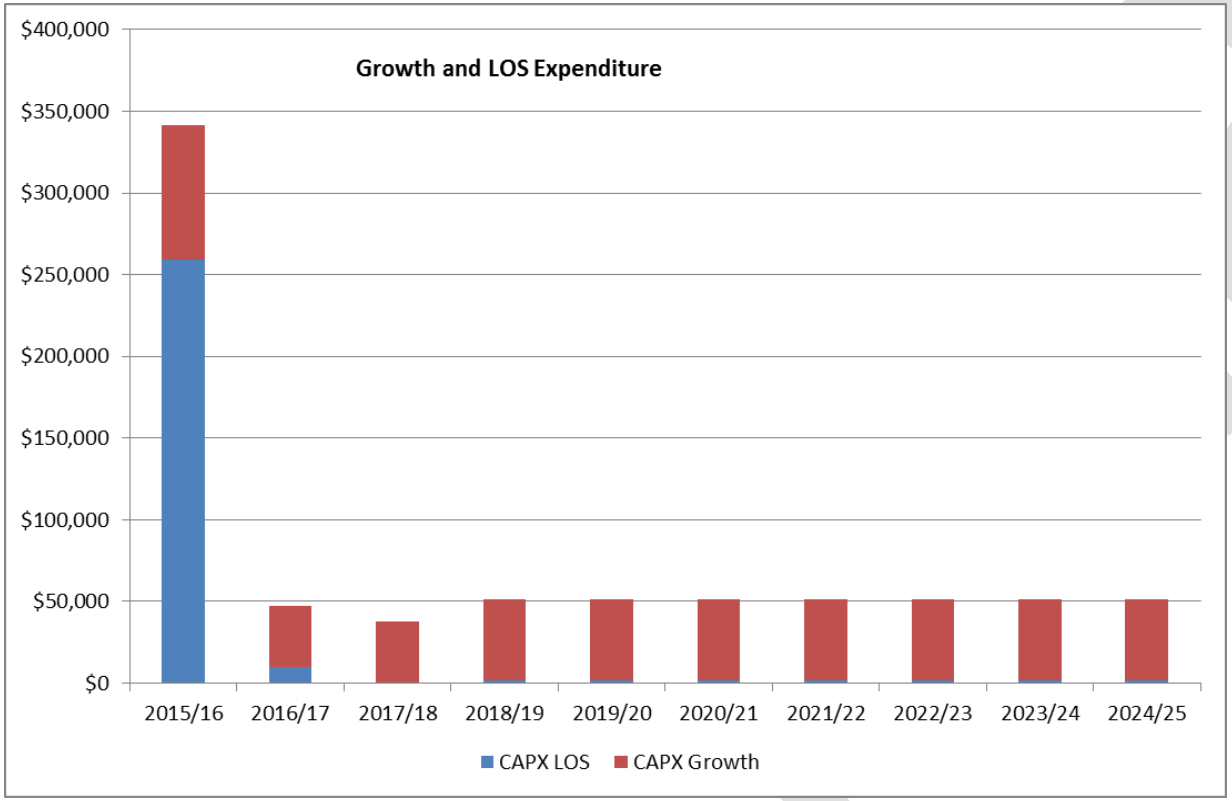


Figure 3-7: Total Growth and LOS Expenditure Forecast

3.4.3 Growth and LOS Expenditure Forecast – Dargaville

The 10 year forecast for new capital expenditure for Dargaville is shown in Figure 3-8 below.

There is currently no growth-driven capital projects identified for Dargaville over the next three years, however revision of growth figures following receipt of 2013 Census data could impact this.

An allowance of $12,500 annually from 2018/2019 has been made for Council to contribute towards increasing the capacity of developer-installed infrastructure if it is deemed beneficial to the wider community.

A provision is also made for compliance with resource consents of $1,500 annually from 2018/2019.

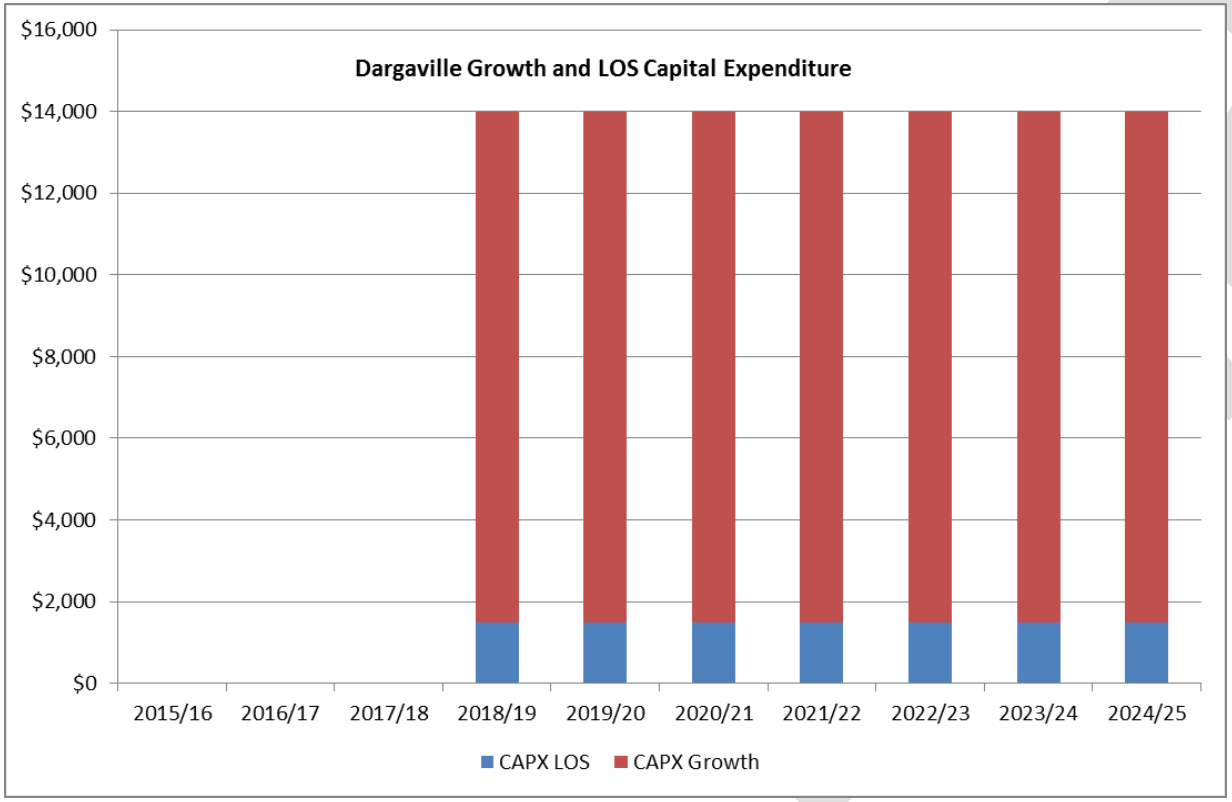


Figure 3-8: Dargaville Forecast Growth and LOS Capital Expenditure

Project	Planned Expenditure	Planned Date
Resource Consent Compliance	$1,500 annually	2018/2019 – 2024/2025
Council Contributions for additional capacity	$12,500 annually	2018/2019 – 2024/2025

3.4.4 Growth and LOS Expenditure Forecast – Baylys Beach

There are currently no growth-driven capital projects identified for Baylys Beach over the next 10 years.

3.4.5 Growth and LOS Expenditure Forecast - Kaiwaka

There are currently no growth-driven capital projects identified for Kaiwaka over the next 10 years.

3.4.6 Growth and LOS Expenditure Forecast - Mangawhai

The forecasted capital works for Mangawhai over the next 10 years are outlined in Figure 3-9 below.

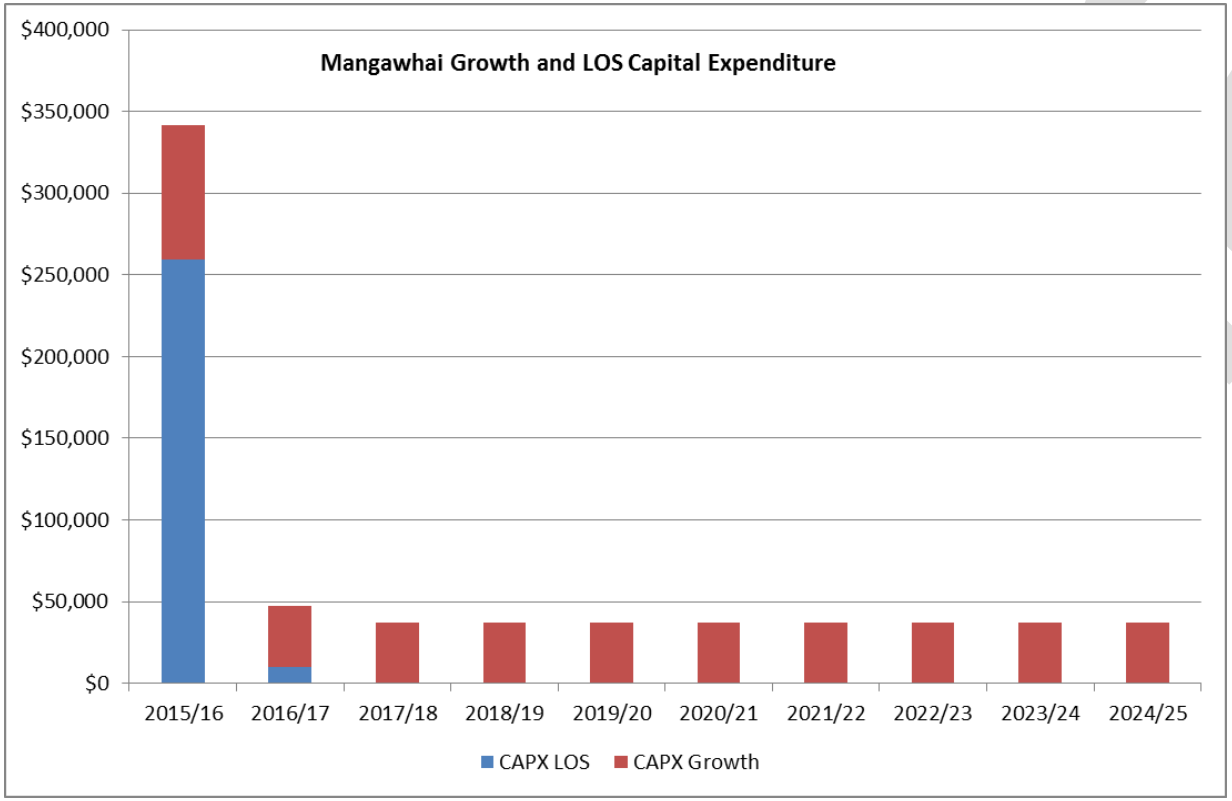


Figure 3-9: Mangawhai 10-year Growth and LOS Capital Expenditure Forecast

There is currently no growth-driven capital projects identified for Mangawhai over the next 10 years. However revision of growth figures from Census data could have an impact on this. An allowance of $37,500 per annum has been made for Council to contribute towards increasing the capacity of developer-installed infrastructure if it is deemed beneficial to the wider community.

A provision was made within Council's Renewals budget for developing scoping documents, concept designs, and construction cost estimates with the detailed design phase in 2014/2015 and subsequent construction in 2014/2015 and beyond.

The installation of a water quality pond at Estuary Drive is proposed to implement measures and comply with Storm water Discharge consent and to implement the activities of the Storm Water Management Plan. A provision of $ 35,000 towards these objectives has been made in the capital works programme for 2015/2016.

Project	Planned Expenditure	Planned Date
Council Contributions for additional capacity	$37,500	annually
Treatment pond at Estuary Drive	$35,000	2015/2016

3.4.7 Growth and LOS Expenditure Forecast - Te Kopuru

There are currently no growth-driven capital projects identified for Te Kopuru over the next 10 years. However revision of growth figures from Census data could have an impact on this.

3.5 Financial Summary

A summary of the planned expenditure for stormwater assets over the next 10 years is shown in 3-10 and 3-11 below.

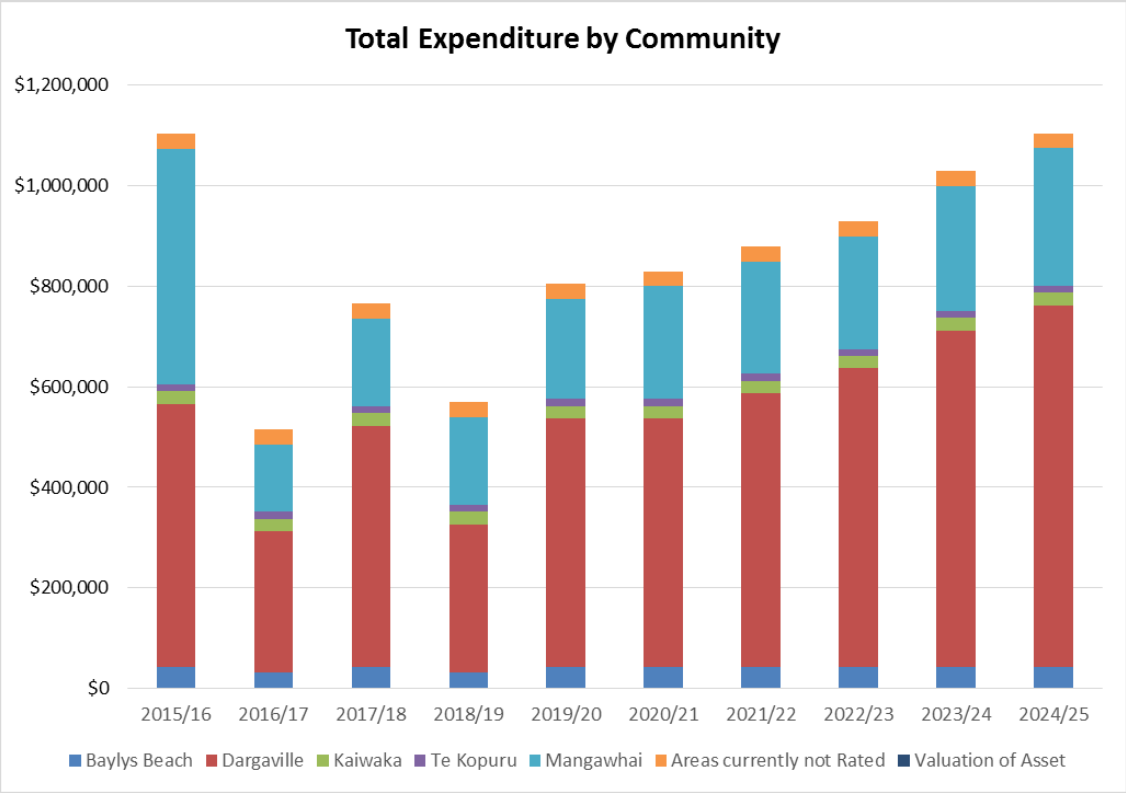


Figure 3-10: Total Forecast Expenditure by Community

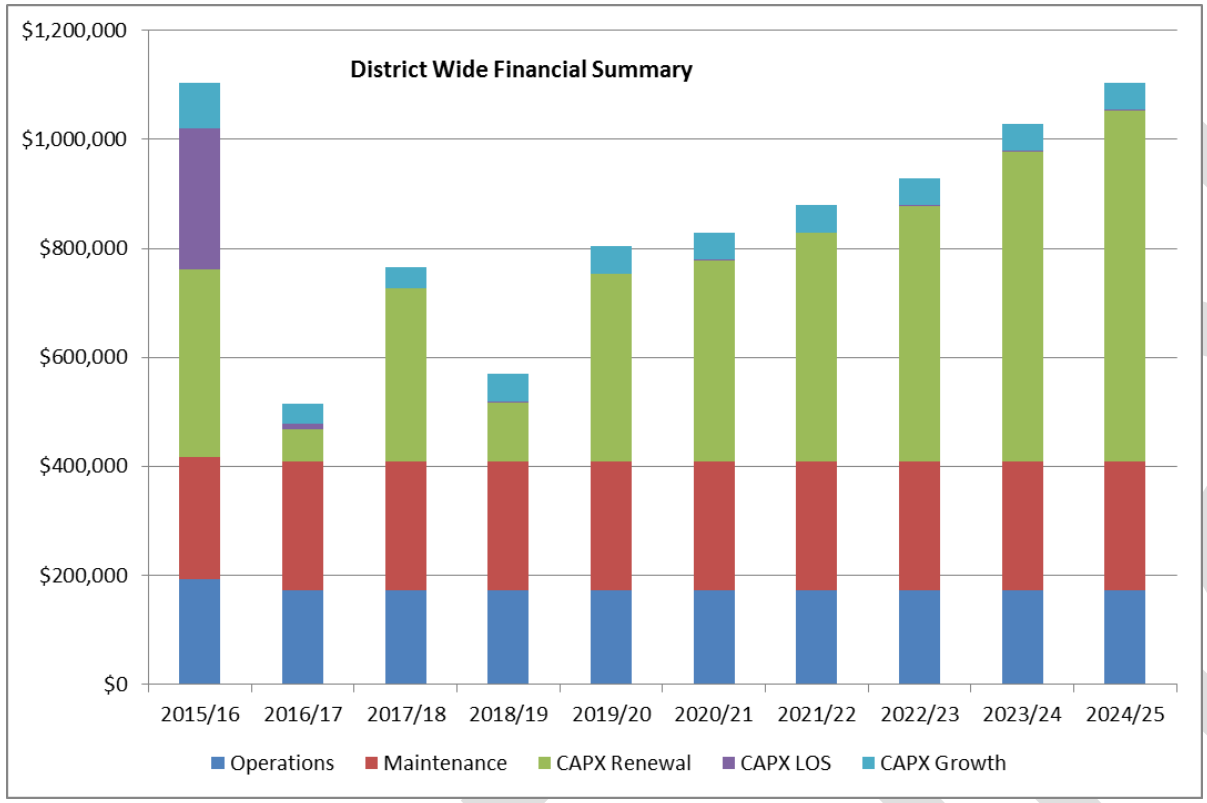


Figure 3-11: Total Forecast Expenditure for Kaipara District

3.6 Asset Decommissioning and/or Disposal Strategy and Financial Forecast

Council does not have formal strategy documents relating to asset disposals. When any such assets reach a state where disposal needs to be considered, the Council will treat each case individually.

There are no current, or planned areas of operation that the Council wishes to divest itself of. Asset disposal therefore is a by-product of renewal or upgrade decisions that involve the replacement of assets.

Assets may also become surplus to requirements for any of the following reasons:

- Under-utilisation

- obsolescence
- provision exceeds required level of service
- uneconomic to upgrade or operate
- policy change
- service provided by another means (e.g. private sector involvement)
- potential risk of ownership (financial, environmental, legal, social, vandalism).

Depending on the nature and value of the assets they are either:

- made safe and left in place
- removed and disposed to landfill
- removed and sold.

Council follows a practice of obtaining best available return from the disposal or sale of assets within an infrastructural activity and any net income is credited to that activity.

3.7 Management of Other Overheads Strategy and Financial Forecast

Allocation of Councils costs in administering and managing the stormwater activity is based on a percentage of the activity cost, employee costs and depreciation costs. The LTP 2015/2025 financial statement summarises a 10 year forecast of the internal charges and overheads applied for the stormwater activity, which are presented in Table 3-5 below.

Table 3-5: 10 year Forecast of Internal Charges and Overheads ($'000)

2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
179	177	177	177	178	178	178	178	178	179

3.8 Depreciation (Loss of Service Potential)

Service potential is defined as the economic benefit embodied in assets that over time declines as the assets age and deteriorate. Depreciation is charged annually to recover from the users of services the equivalent annual decline in service potential and renewals are undertaken to restore it. The loss (or gain) in service potential over time can therefore be described as the difference between the annual renewal and depreciation provisions.

If this figure is negative, the renewals undertaken in that year are lower than the financial depreciation. This would be expected when assets are young, but over the life of all assets the accumulated figure would be expected to be close to zero if the assets were being sustained indefinitely. Service potential is restored through renewals, and is effectively funded through the annual depreciation charge.

Figure 3-12 through to Figure 3-16 below shows a summary of the service potential for each stormwater scheme in the Kaipara District. Cumulative depreciation since the date of the last asset evaluation (effective 01 July 2010) is plotted against cumulative planned renewal expenditure to determine the service potential of the stormwater scheme. The figures are based on the depreciation values reported in the 2010 valuations (effective 01 July 2010) and assume completion of the programmes within the costs and timeframes shown.

The renewal expenditure may be under-represented for 2010/2011 and 2011/2012 due to limitations in getting detailed financial data 1.

Previously, Kaipara District rates have not included a component for depreciation, meaning users of the asset were not contributing to the asset's upkeep or replacement costs. As outlined in the LTP 2015/2025, Council will fund renewals during years 1 to 4 where the level of renewals is less than depreciation in order to assist with affordability for ratepayers. After year four, Council will progressively move towards a position whereby it is fully rate-funding depreciation by the end of the 10 year period. By funding the depreciation, a reserve is set up that can be used to fund the renewal expenditure when it is required.

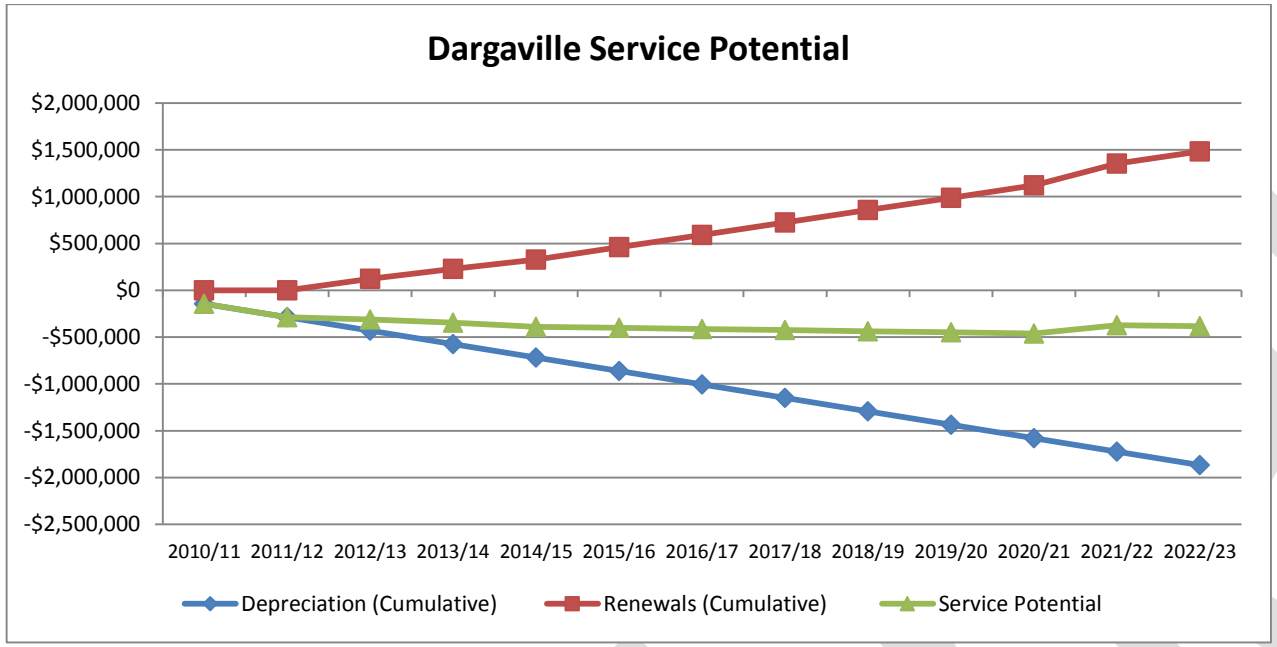


Figure 3-121: Dargaville Forecast Service Potential

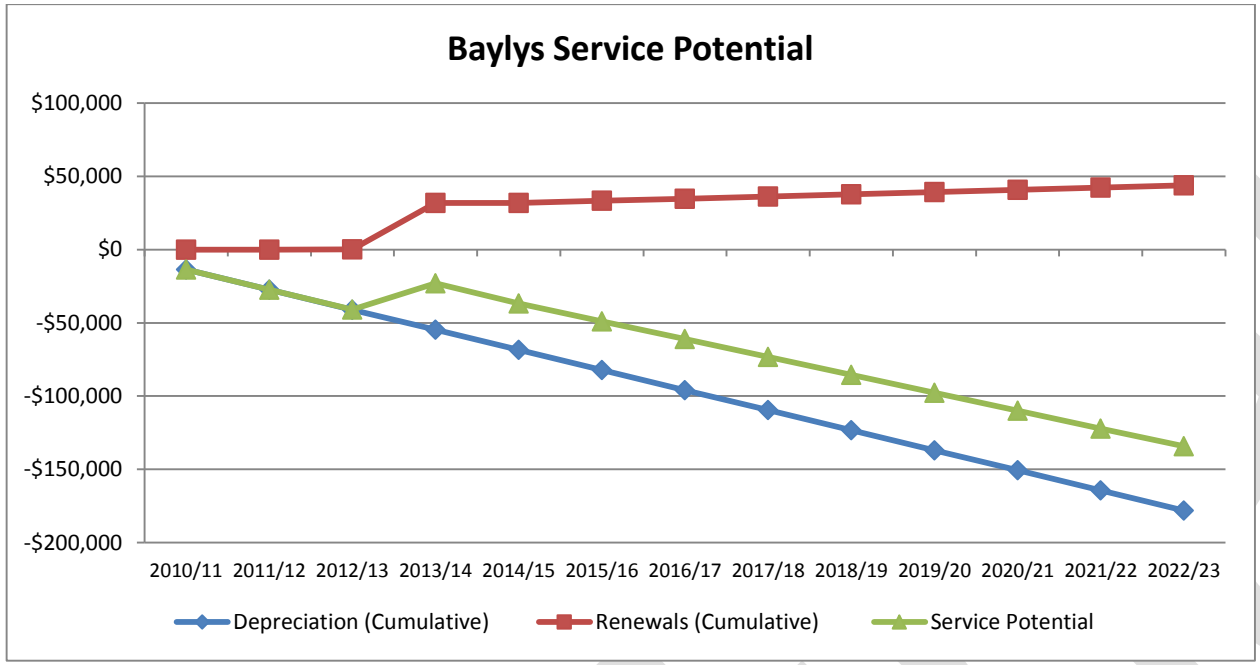


Figure 3-13: Baylys Forecast Service Potential

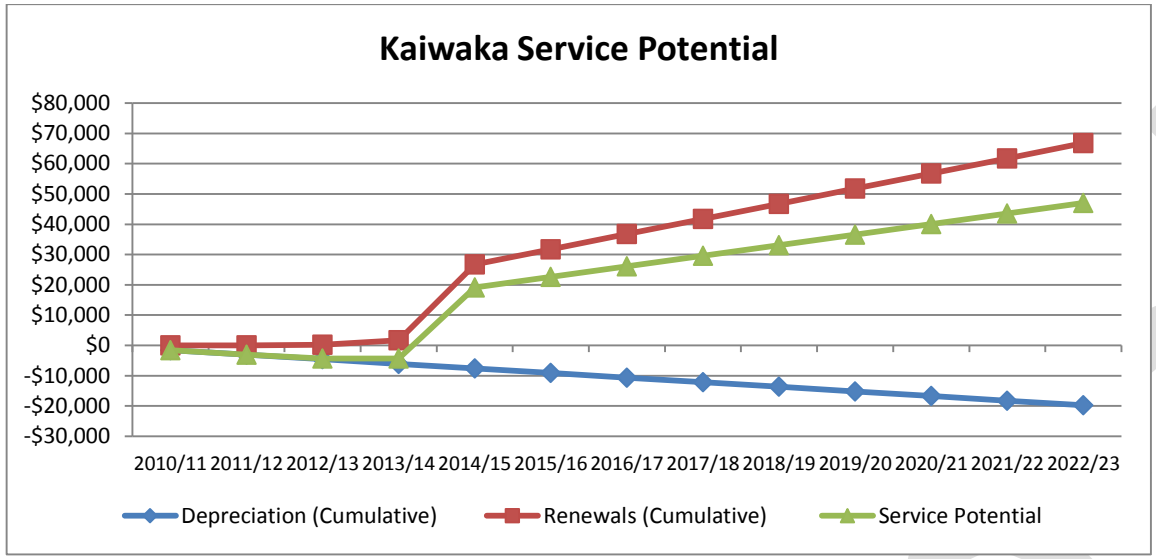


Figure 3-14: Kaiwaka Forecast Service Potential

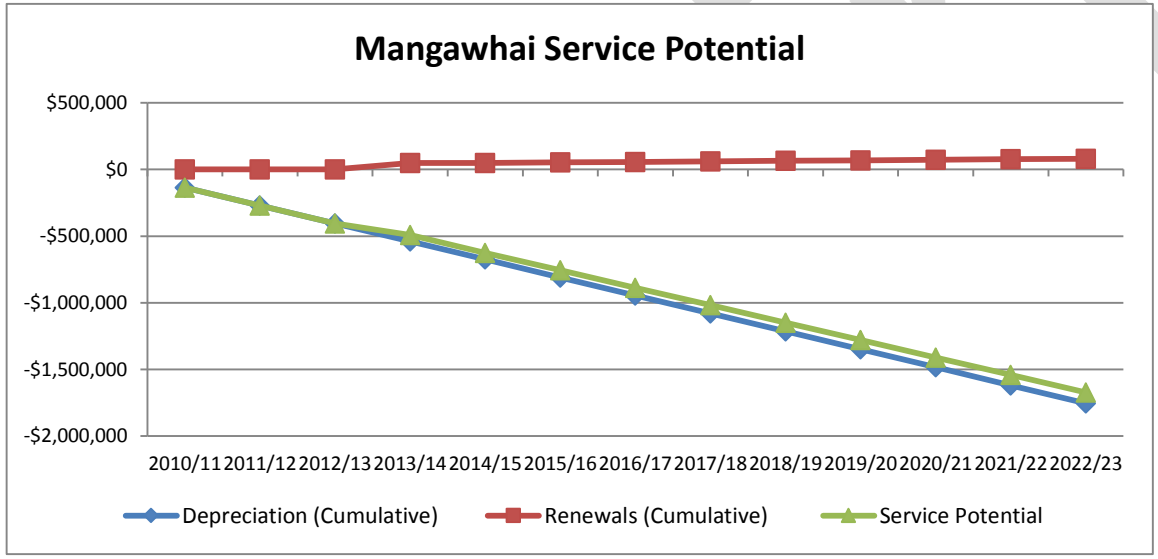


Figure 3-15: Mangawhai Forecast Service Potential

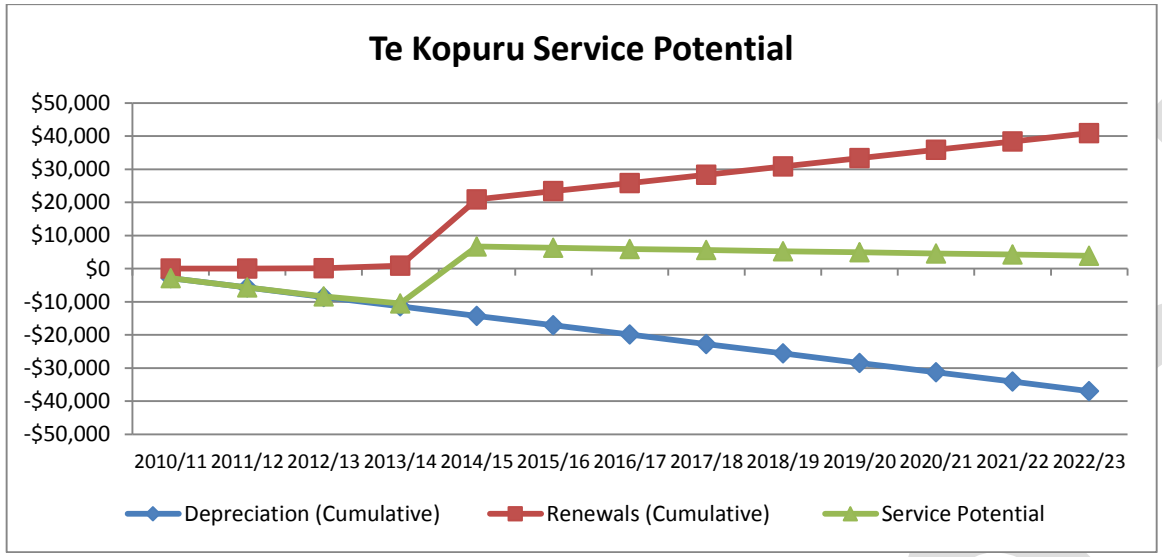


Figure 3-16: Te Kopuru Forecast Service Potential

3.9 Public Debt

The Council borrows as it considers prudent and appropriate and exercises its flexible and diversified funding powers pursuant to the Local Government Act 2002. The Council approves, by resolution, the borrowing requirement for each financial year during the annual planning process. The arrangement of precise terms and conditions of borrowing is delegated to the Corporate Services Manager.

The Council has significant infrastructural assets with long economic lives yielding long term benefits. The Council also has a significant strategic investment holding. The use of debt is seen as an appropriate and efficient mechanism for promoting intergenerational equity between current and future ratepayers in relation to the Council's assets and investments. Debt in the context of this policy refers to the Council's net external public debt, which is derived from the Council's gross external public debt adjusted for reserves as recorded in the Council's general ledger.

Generally, the Council's capital expenditure projects with their long term benefits are debt funded. The Council's other district responsibilities have policy and social objectives and are generally revenue funded.

The Council raises debt for the following primary purposes:

- Capital to fund development of infrastructural assets

- Short term debt to manage timing differences between cash inflows and outflows and to maintain the Council's liquidity
- Debt associated with specific projects as approved in the Annual Plan or LTP. This specific debt can also result from finance which has been packaged into a particular project.

In approving new debt, the Council considers the impact on its borrowing limits as well as the size and the economic life of the asset that is being funded and its consistency with Council's long term financial strategy.

The Borrowing Policy is found in Volume 2 of Council's Long Term Plan. Figure 3-17: Projected Debt Levels Compared to Council's Maximum and Preferred Debt Limits is from the LTP 2015/2025 and shows the projected debt level of Council for the next 10 years.

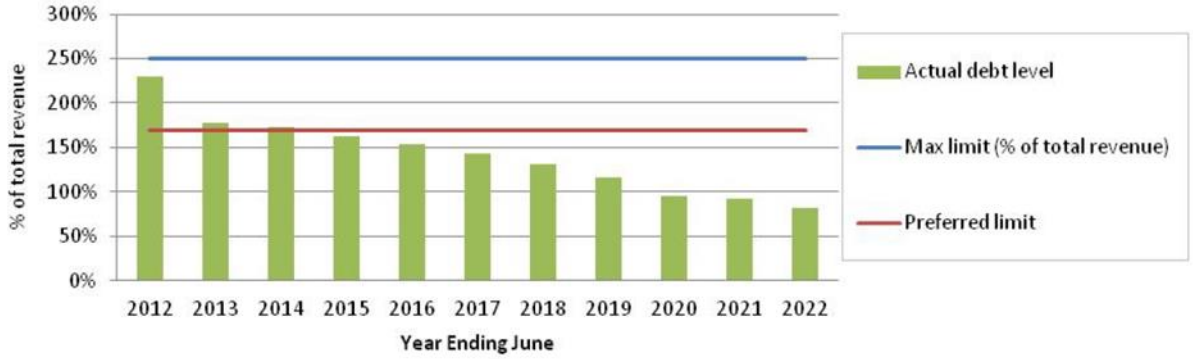


Figure 3-17: Projected Debt Levels Compared to Council's Maximum and Preferred Debt Limits

3.10 Funding Sources

Sources of funding for planned expenditure are documented in the LTP, as decisions need to be firstly made on the role of development contributions under the Local Government Act 2002.

Current funding sources available for the stormwater assets include:

- Targeted rates
- Loans
- Reserve funds
- Development contributions.

The LTP 2015/2025 forecasts the stormwater activity to comprise 3% of Council's operating expenses and 3% of capital expenditure over the next 10 years. The proposed sources of stormwater operating income and capital funding for the next 10 years is summarised in Table 3-6 and Table 3-7 below.

Table 3-6: Forecast Sources of Operating Income ($'000)

	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
General rates, uniform annual general charges, rate penalties	171	165	193	184	207	217	223	225	225	223
Targeted rates for stormwater	1,186	1,094	1,320	1,223	1,392	1,440	1,447	1,446	1,438	1,464
Total	**1,357**	**1,259**	**1,513**	**1,407**	**1,599**	**1,657**	**1,670**	**1,671**	**1,663**	**1,687**

Table 3-7: Forecast Sources of Capital Funding Income ($'000)

	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
Development and financial contributions	14	16	15	17	19	21	24	27	31	34
Increase (decrease) in debt	39	-316	-312	-350	-339	-345	-266	-329	-293	-282
Total	**53**	**-300**	**-297**	**-333**	**-320**	**-324**	**-242**	**-302**	**-262**	**-248**

3.11 Potential Additional Sources of Revenue

There are no forecast subsidies or grants, or Local Authority fuel tax, fines and infringement fees forecast for the stormwater activity over the next 10 years.

3.12 Financial Challenges

The LTP 2015/2025 summarises Council's financial strategy for the next 10 years. Making the Kaipara District an excellent place to live is a key goal for Council. Council's desire to improve community well-being needs to be balanced with the need to keep rates at an affordable level and for the organisation to operate in a financially prudent manner.

In the past, Council has tended to keep rates low, when compared with similar local authorities, and used debt to fund a number of services. The LTP 2015/2025 acknowledges that Council is aiming to build a more sustainable financial management model to change the way in which they use debt and also to ensure that they repay the debt that has already been borrowed. As part of this new approach, Council is planning to maintain the existing Levels of Service for stormwater for the next 10 years. The key challenges for Council will be:

- balancing the proposed operating budget and move towards a more sustainable level of debt
- maintaining reasonable Levels of Service
- providing for the renewal of assets
- keeping rates affordable for ratepayers.

4 Service Management

4.1 Organisation

Figure 4-1 illustrates Kaipara District Council's Executive Organisational Structure.

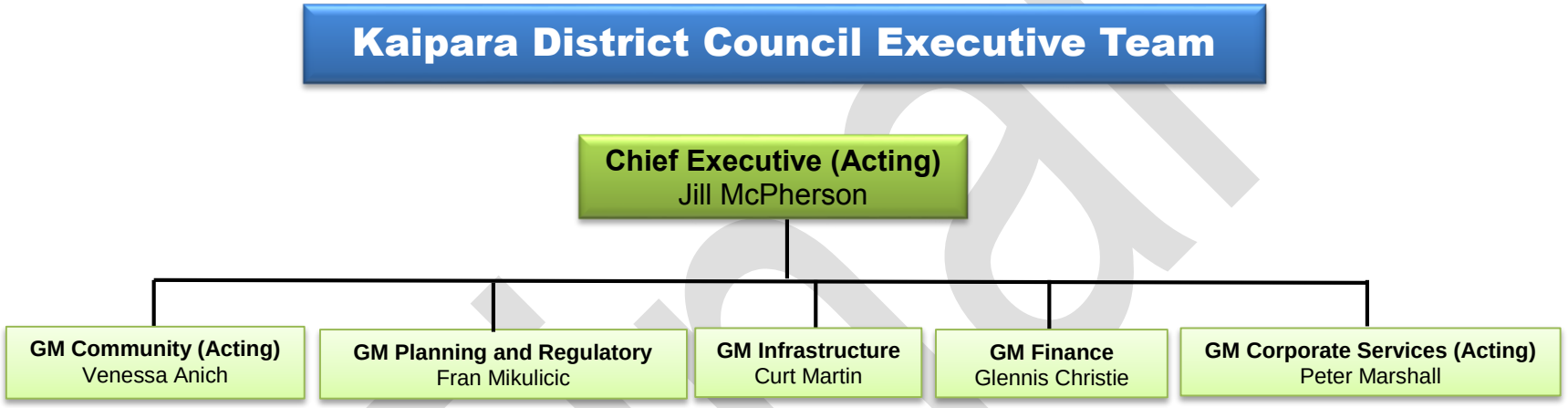


Figure 4-1: Kaipara District Council Executive Organisational Structure

4.2 Asset Management Systems and Processes

4.2.1 Asset Management Systems

Effective information systems are essential for asset management. Ease of information storage and analysis enables good asset management decisions. Council uses the support tools listed in

Table 4-1 to manage the stormwater business:

Table 4-1: Asset Management Systems

System Name	System Purpose	Purpose
MapInfo (GIS)	Asset Location	The location of assets are stored within tables and represented spatially via a series of points, lines or regions.
AssetFinda	Asset Register	Details on the assets size, material, date of installation and other related information for water supply, wastewater and stormwater assets are recorded within AssetFinda.
NCS (Napier Computer System)	Accounting	Council accounting and financial systems are based on Napier Computer Systems (NCS) software and GAAP Guidelines.
KITE (Kaipara Information Technology Environment)	Customer Service Tracking	To record customer enquiries and to register and track tasks allocated to the Maintenance Contractor for follow up investigation and resolution within appropriate timeframes. Also includes Exponare, an inquiry tool into GIS to enable easy viewing of asset information.
Aquavision	Telemetry	The performance of the wastewater pumping stations is monitored via the Aquavision telemetry system.
Advanced Information	Telemetry	The performance of the treatment plants and water supply pumping stations is monitored via the advanced information telemetry system.

4.2.2 IntraMaps

The IntraMaps system is the core system used to house the spatial data related to Councils stormwater, wastewater and water supply assets.

The MapInfo system provides the information supporting the IntraMaps, which is widely used within Council as a user friendly interface to the GIS asset data, enabling quick access to asset location and asset attribute information.

A screen shot of the IntraMaps system is shown in Figure 4-2 below:

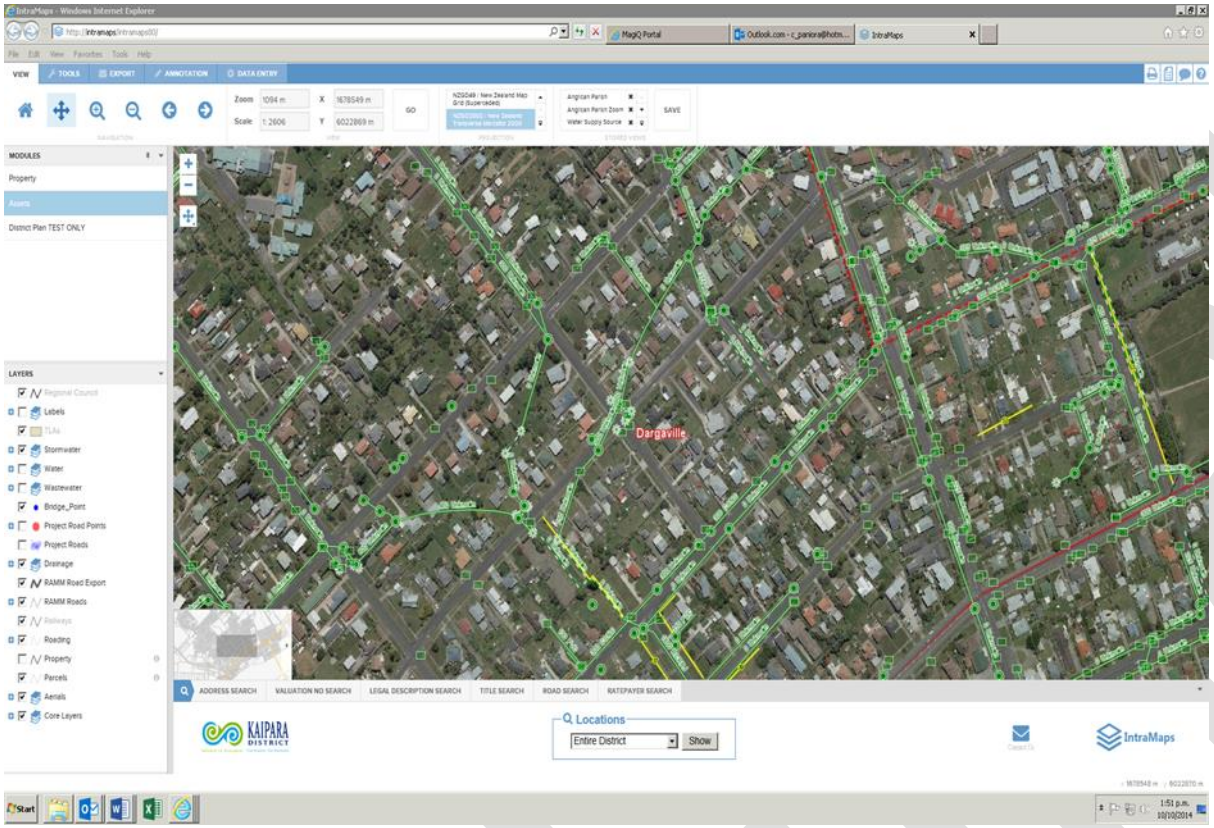


Figure 4-2: IntraMaps Screenshot

The representation of the assets within this system is believed to be reasonably comprehensive, although gaps and inaccuracies in the data are known to exist. A data improvement task has been identified and included in the improvement plan to fix the known anomalies.

Ongoing data improvement and identification and resolution of data anomalies will be resolved primarily through the maintenance contract and projects, as works are completed on the network.

The IntraMaps system is externally hosted and is updated as as-built information is received, and passed on via the data maintenance process. As-built data is sourced from new development, capital works projects and from the Maintenance Contractor.

The data maintenance process is represented in Figure 4-3 below.

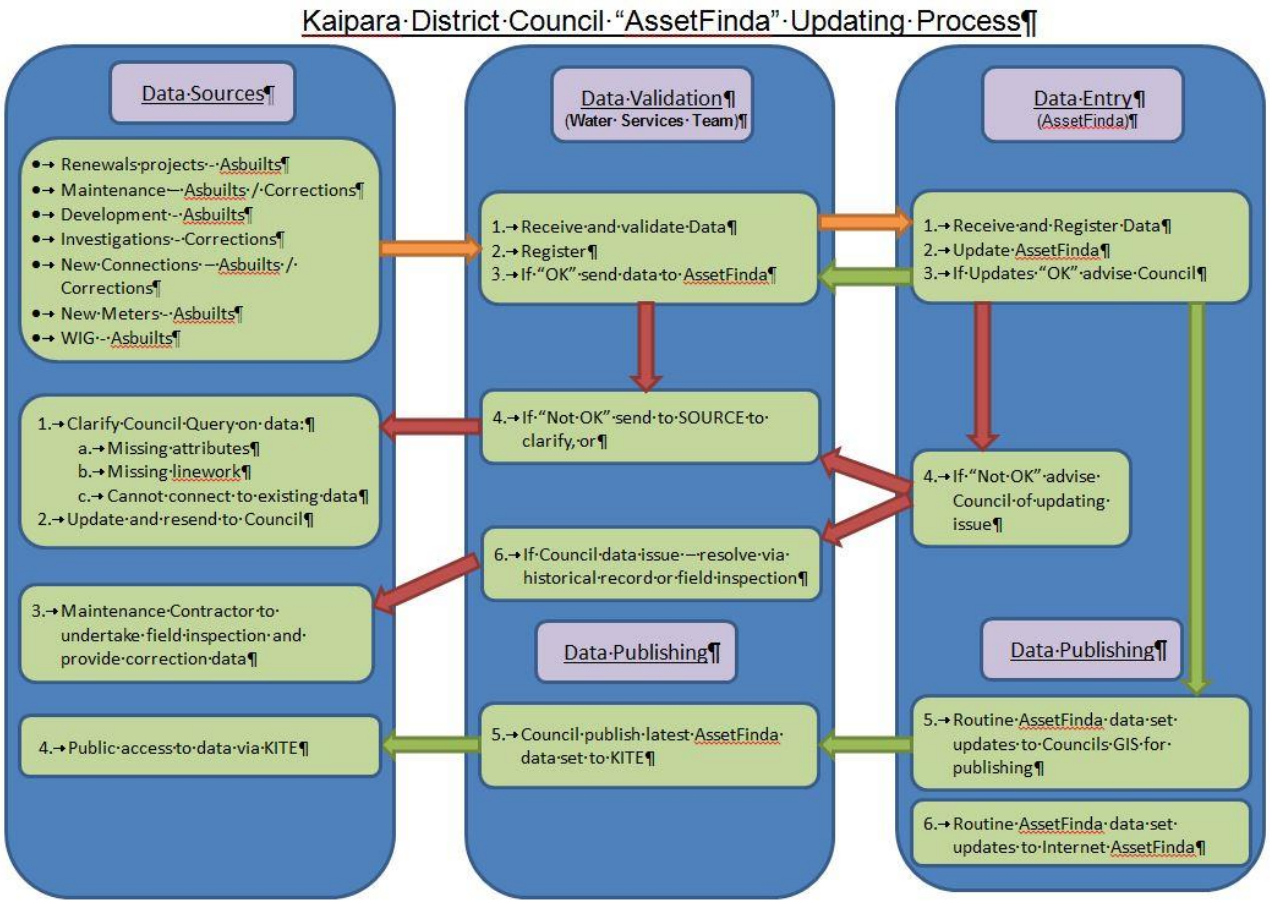


Figure 4-3: Data Maintenance Process

4.2.3 AssetFinda

The AssetFinda system is a MapInfo based tool used to record asset related information. This currently includes basic asset descriptors including; Asset name, size, material, install date, invert levels, condition, and performance. The completeness of the data within these fields is highly variable and the accuracy cannot be currently qualified.

The system was recently upgraded from a table based system to web enabled. The system is externally hosted and maintained.

A screen shot of the AssetFinda system is included in Figure 4-4 below:

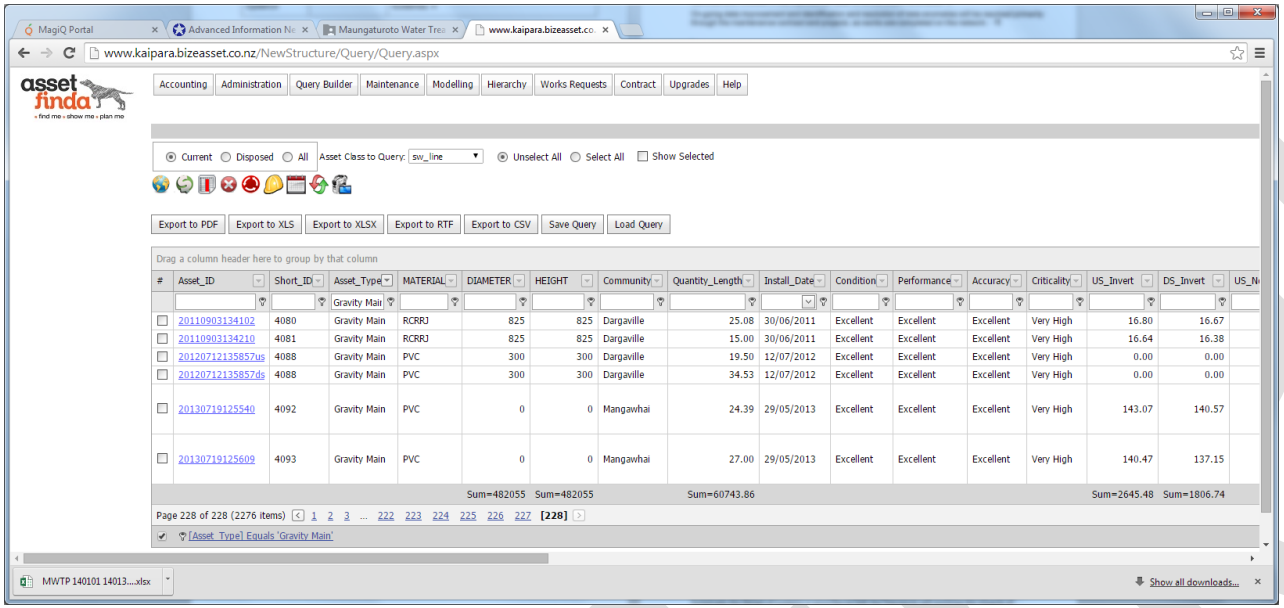


Figure 4-4: AssetFinda Screenshot

The system has the ability to:

- Undertake asset valuations and depreciation calculations for the stormwater, wastewater and water supply assets, however, this functionality has yet to be implemented on Councils data.
- Record various maintenance activities against the asset; however this capability has yet to be fully defined and implemented.

There is a need for this system to be further enabled and the supporting processes implemented to ensure appropriate maintenance activity data and condition and performance data collected from the field, can be uploaded in the system and used for monitoring the decline in asset serviceability and determination of timing for asset renewal.

An improvement item has been identified to enable the AssetFinda system to be modified for the recording of this information.

4.3 Potential Significant Negative Effects

The stormwater management activity is an essential service that is provided to our communities and the environment. Discharges from the urban stormwater network can impact cultural, social, environmental and economic well-being. In addition to managing the quantity of stormwater it is recognised that the activity also includes the quality of discharges to and from the network on the receiving environment. Both aspects of urban stormwater discharge have the potential to have significant negative effects on the environment and these should be mitigated as best as is practicably possible.

Guidance on the design and construction of new stormwater networks for urban and rural areas is provided in Chapter 6: Stormwater Drainage; Engineering Standards 2011, published by Council. Holistically the design of systems in accordance with the Standards will minimise the impacts of stormwater discharges on the receiving environment; however, it is acknowledged that differences in design standards between old and new systems can result in a disparity between Levels of Service provided throughout the network.

The negative impacts identified by Council and mitigation measures in place are provided in Table 4-2 below:

Table 4-2: Potential Significant Negative Effects

Identified Significant Negative Effect	Cultural	Social	Economic	Environmental	Mitigation
Level of Service vs. Feasibility The construction and maintenance costs of infrastructure upgrades to meet a set level of service is beyond the means of the Community to afford.		✓	✓		The provision of a set level of urban stormwater management should be assessed on a case by case basis. This will be managed through consultation with communities to determine the most practicable way forward, without negatively impacting on public health and the environment or creating risk to persons or property. Council is committed to improving the natural environment, but acknowledges that this will take time to make significant improvements due to the low population of the District and the type of land use within. Council will work closely with NRC to ensure that conditions of resource consents are fair and justifiable from a risk and sustainability view point.
Contamination of Urban Watercourses Urban stormwater runoff has the potential to adversely impact the receiving environment stakeholders and users. Typically runoff from urban areas has elevated temperature, heavy metals and organic/inorganic compounds. It is acknowledged that in built up areas the presence of zinc, from roofing materials, is a particular concern.	✓	✓	✓	✓	Chapter 6 of the Council's Engineering Standards (2011) provides minimum standards that developers and individuals are required to meet with regard to the stormwater infrastructure. It includes guidance on both quantity and quality control to reduce the impact of development on the receiving environment. For existing developments, Council assess the effectiveness of the existing stormwater management through the following methods: • Individual site management and monitoring for identified high risk industrial and commercial sites. • Interaction with and education of the public to make people aware of potential impacts. • Ongoing monitoring of watercourses, in conjunction with NRC, to establish contaminant profiling allowing for targeted treatment schemes where required.

Identified Significant Negative Effect	Cultural	Social	Economic	Environmental	Mitigation
Contamination of Rural Watercourses Rural stormwater runoff is likely to have a different contaminant profile than that from the urban areas. Depending on land use rural runoff potentially has elevated levels of nitrogen and phosphates than urban stormwater, due to fertiliser usage and animal husbandry.	✓	✓	✓	✓	Chapter 6 of the Council's Engineering Standards (2011) provides general guidance for the management of rural stormwater runoff. The section primarily relates to quantity control of runoff, although there is a recommendation that appropriate water quality treatment options be considered in conjunction with attenuation.
Flooding Direct Impact Urban catchments create a greater amount of impervious coverage (such as roads, roofs and paved areas) than would be seen in the natural environment. Runoff is generated quicker from paved areas and can result in overland flow paths and localised flooding, which can damage property and increase the risk to life.		✓	✓	✓	Within urban areas the Council's Engineering Standards consider that attenuation of discharges up to the 100-year event should be no more than the pre-development condition. This allows for protection of the receiving environment from potential erosion and flooding. The attenuation of runoff allows for flooding to be controlled locally, within the specific device. It should be acknowledged here that effects of Climate Change on the District's weather patterns can result in a reduced level of service being provided by the older parts of the stormwater network. Although these systems will be upgraded over time, priority will be given to areas where flooding as a result of capacity issues impacts upon property or life.

Identified Significant Negative Effect	Cultural	Social	Economic	Environmental	Mitigation
Stormwater Infiltration A recent local study of the stormwater network in Dargaville identified stormwater 'leaking' into the wastewater system and this is believed to be a common problem throughout the District. Increased loading on the wastewater system has the negative effect of overloading wastewater treatment facilities, which in turn can result in increased discharges to the receiving environment. Not only does this reduce the efficiency of the treatment facility, it can also increase pathogens and other contaminant levels within the receiving environment.	✓	✓		✓	Localised studies have been carried out in Dargaville to identify the problem and target mitigation works required. The problem has been identified as originating from both the public and private stormwater systems. Although mitigation can be carried out on the public system works on the private system may need to be considered through engagement with the community and education programmes.

4.4 Risk Management (including Health and Safety)

Council's Risk Management Policy and Framework has been updated and the latest version dated December 2012 is approved and supported by the Commissioners and the Executive Team.

Risk Management is undertaken to identify specific business risks associated with the ownership and management of stormwater assets and to determine the direct and indirect costs associated with these risks.

Council is familiar with the risks associated with each stormwater scheme, however it has not previously formalised a risk management strategy. Council propose to develop such a strategy during the 2012/2013 financial year to systematically identify, assess and manage asset risks. The risk management strategy should hold a pivotal role in the prioritisation of asset funding.

A Council-wide approach to risk management would be valuable to allow comparison of risk across different asset types. This would allow risks that impact on the stormwater network to be compared against those impacting Water Supply and Roading assets for example. It would then be possible to balance all of Council's risks in a way that optimises expenditure and minimises Council's total risk exposure.

Council uses risk registers and action plans to monitor and control specific key risks. An example of the risk register template is included as 0.

Table 4-3 identifies Council's high and extreme risks, together with potential impact, current controls and an action plan to mitigate, minimise or manage the risk.

Table 4-3: Summary of Extreme and High Risk for Council

LOS Failure Indicator	Asset Group	Asset Sub-Group	Caused By	Risk Severity	Controls	
					Existing	To Develop
Flooding, slips, accidents and injuries	Open Drain Network	Public open drains	Liability from third party accident in open drains	H	The piping of open drains is considered on a case by case basis	
Unavailability of urban roads, flooding	Piped Network	Inlets and outlets	Vandalism	H	Routine and reactive inspections	
	Flood Alleviation Infrastructure	Stopbanks	Extensive damage (earthquake or other natural hazard)	H	Response planning	
		Flood detention systems	Extensive damage (earthquake or other natural hazard)	H	Response planning	
	Managerial and governance risks	Corporate Risk	Inadequate Corporate Risk Policy	H	Council Corporate Risk Policy developed 2012.	
Inefficient management of assets, significant asset or service failure occurs with no management plan	Asset design and construction risks	Asset records	Asset records not up to date	H	Asset records from physical works projects and maintenance activities are updated into AssetFinda.	To include all asset changes in asset register

4.5 Potential Alternative Methods of Service Delivery

KDC is trying to explore options of shared services with the neighbouring districts and this could potentially reduce costs for both Kaipara District Council and Kaipara ratepayers by lowering operational and maintenance costs through consolidation of contractor staff between the two or three Council's and could also assist in providing a broader cross section of skilled in house resources to support the organisation going forward.

4.6 Health and Safety

Council has a Health and Safety (2007) policy aimed at providing and maintaining a safe and healthy working environment to Council employees, contractors and members of the public. With respect to asset management activities it is particularly important to protect staff, contractors and the public from hazards associated with stormwater assets.

5 Continuous Improvement

The Asset Management Plans have been developed as a tool to help Council manage their assets, deliver the levels of service and identify the expenditure and funding requirements of the activity. Continuous improvements are necessary to ensure Council continues to achieve the appropriate (and desired) level of activity management practice; delivering services in the most sustainable way while meeting the community's needs.

Council has demonstrated its commitment to asset management improvement over the last few years and wish to meet core requirements as defined by the Office of the Auditor-General for the Stormwater AMP.

5.1 Improvement Plan

The Stormwater Improvement Plan is presented in Appendix B. Each improvement has been categorised by Asset Management Area (LOS, Data, Operations etc.), a priority level given with forecasted completion date. Responsibility has been assigned for each improvement, along with a proposed budget allowance (Capex or Opex).

Timing for completion of the activities may vary depending on Council priorities. This may result in re-prioritisation of activities from year to year.
The key improvements to be achieved during the next 3 years to facilitate achievement of core AM and delivery of the Stormwater business are:

- Complete and adopt the Stormwater Management Plans.
- Undertake a formal condition assessment of critical Stormwater Assets (in alignment with Water Supply and Wastewater Services) to feed into the Renewals programme.
- Clarify ownership of assets across the District (roading vs. urban), including responsibilities of townships that are not serviced.
- Complete the data cleansing project to reduce the number of unknown asset attributes or wrongly identified asset attributes (roading vs. urban).
- Review of data management procedures including development of system for recording maintenance and costs at asset component level in the asset register.

Appendix A Detailed Financial Tables

Financial Summary Spreadsheets - Stormwater

TOTAL ALL SCHEMES Summary										
Year Ending June	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Year Number	1	2	3	4	5	6	7	8	9	10
TOTAL EXPENDITURE	**1,103,133**	**515,258**	**765,258**	**569,258**	**804,258**	**829,258**	**879,258**	**929,258**	**1,029,258**	**1,104,258**
Operations	**191,844**	**172,646**	**172,646**	**172,646**	**172,646**	**172,646**	**172,646**	**172,646**	**172,646**	**172,646**
Control and Operations	71,646	71,646	71,646	71,646	71,646	71,646	71,646	71,646	71,646	71,646
AMP Improvements	120,198	101,000	101,000	101,000	101,000	101,000	101,000	101,000	101,000	101,000
Valuation of Assets										
Maintenance	**224,789**	**235,112**	**235,112**	**235,112**	**235,112**	**235,112**	**235,112**	**235,112**	**235,112**	**235,112**
Maintenance - Floodgates	26,651	26,651	26,651	26,651	26,651	26,651	26,651	26,651	26,651	26,651
Maintenance - Open Drains	45,755	54,898	54,898	54,898	54,898	54,898	54,898	54,898	54,898	54,898
Maintenance - Detention Ponds	18,349	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Maintenance - Reticulation	104,534	104,063	104,063	104,063	104,063	104,063	104,063	104,063	104,063	104,063
Maintenance - Unrated areas	29,500	29,500	29,500	29,500	29,500	29,500	29,500	29,500	29,500	29,500
Total Opex	416,633	407,758	407,758	407,758	407,758	407,758	407,758	407,758	407,758	407,758
CAPX Renewal	**345,000**	**60,000**	**320,000**	**110,000**	**345,000**	**370,000**	**420,000**	**470,000**	**570,000**	**645,000**
All Asset Groups	295,000	60,000	320,000	110,000	345,000	370,000	420,000	470,000	570,000	645,000
AMP Improvements	-	-	-	-	-	-	-	-	-	-
Other Renewals	50,000	-	-	-	-	-	-	-	-	-
CAPX LOS	**259,312**	**10,000**	**-**	**1,500**	**1,500**	**1,500**	**1,500**	**1,500**	**1,500**	**1,500**
Baylys	-	-	-	-	-	-	-	-	-	-
Dargaville	-	-	-	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Kaiwaka	-	-	-	-	-	-	-	-	-	-
Te Kopuru	-	-	-	-	-	-	-	-	-	-
Mangawhai	259,312	10,000	-	-	-	-	-	-	-	-
CAPX Growth	**82,188**	**37,500**	**37,500**	**50,000**	**50,000**	**50,000**	**50,000**	**50,000**	**50,000**	**50,000**
Additional Capacity for Growth - Council Contribution	37,500	37,500	37,500	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Carry Forward	44,688	-	-	-	-	-	-	-	-	-
Total Capex	686,500	107,500	357,500	161,500	396,500	421,500	471,500	521,500	621,500	696,500

Baylys Beach Summary										
Year Ending June	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Year Number	1	2	3	4	5	6	7	8	9	10
TOTAL EXPENDITURE	**41,503**	**31,731**	**41,731**	**31,731**	**41,731**	**41,731**	**41,731**	**41,731**	**41,731**	**41,731**
Operations	**14,665**	**14,665**	**14,665**	**14,665**	**14,665**	**14,665**	**14,665**	**14,665**	**14,665**	**14,665**
Control and Operations	3,165	3,165	3,165	3,165	3,165	3,165	3,165	3,165	3,165	3,165
Database Management	*2,665*	*2,665*	*2,665*	*2,665*	*2,665*	*2,665*	*2,665*	*2,665*	*2,665*	*2,665*
Engineering Cost	*500*	*500*	*500*	*500*	*500*	*500*	*500*	*500*	*500*	*500*
NRC Resource Consent	-	-	-	-	-	-	-	-		
Contribution To River Cleaning	-	-	-	-	-	-	-	-		
Contribution To Land Drainage	-	-	-	-	-	-	-	-		
AMP Improvements - Opex	11,500	11,500	11,500	11,500	11,500	11,500	11,500	11,500	11,500	11,500
Maintenance	**6,838**	**7,066**	**7,066**	**7,066**	**7,066**	**7,066**	**7,066**	**7,066**	**7,066**	**7,066**
Maintenance - Floodgates										
Maintenance - Open Drains	1,066	1,066	1,066	1,066	1,066	1,066	1,066	1,066	1,066	1,066
Maintenance - Detention Ponds										
Maintenance - Reticulation	5,772	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Total Opex	21,503	21,731	21,731	21,731	21,731	21,731	21,731	21,731	21,731	21,731
CAPX Renewal	**20,000**	**10,000**	**20,000**	**10,000**	**20,000**	**20,000**	**20,000**	**20,000**	**20,000**	**20,000**
All Asset Groups	20,000	10,000	20,000	10,000	20,000	20,000	20,000	20,000	20,000	20,000
AMP Improvements	-	-	-	-	-	-	-	-		
Other Renewals	-	-	-	-	-	-	-	-		
CAPX LOS	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Compliance	-	-	-	-	-	-	-	-		
	-	-	-	-	-	-	-	-		
CAPX Growth	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Additional Capacity for Growth - Council Contribution	-	-	-	-	-	-	-	-		
Total Capex	20,000	10,000	20,000	10,000	20,000	20,000	20,000	20,000	20,000	20,000

Dargaville Summary										
Year Ending June	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Year Number	1	2	3	4	5	6	7	8	9	10
TOTAL EXPENDITURE	**525,030**	**280,975**	**480,975**	**294,975**	**494,975**	**494,975**	**544,975**	**594,975**	**669,975**	**719,975**
Operations	**91,528**	**88,330**	**88,330**	**88,330**	**88,330**	**88,330**	**88,330**	**88,330**	**88,330**	**88,330**
Control and Operations	40,330	40,330	40,330	40,330	40,330	40,330	40,330	40,330	40,330	40,330
Database Management	*20,000*	*20,000*	*20,000*	*20,000*	*20,000*	*20,000*	*20,000*	*20,000*	*20,000*	*20,000*
Engineering Costs	*15,000*	*15,000*	*15,000*	*15,000*	*15,000*	*15,000*	*15,000*	*15,000*	*15,000*	*15,000*
NRC Resource Consent	-	-	-	-	-	-	-	-	-	-
Contribution To River Cleaning (Incl in 3013)										
Contribution To Land Drainage	-	-	-	-	-	-	-	-	-	-
2029 Land Rates KDC	*5,330*	*5,330*	*5,330*	*5,330*	*5,330*	*5,330*	*5,330*	*5,330*	*5,330*	*5,330*
AMP Improvements - Opex	51,198	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000
Maintenance	**133,502**	**142,645**	**142,645**	**142,645**	**142,645**	**142,645**	**142,645**	**142,645**	**142,645**	**142,645**
Maintenance - Floodgates	26,651	26,651	26,651	26,651	26,651	26,651	26,651	26,651	26,651	26,651
Maintenance - Open Drains	32,557	41,700	41,700	41,700	41,700	41,700	41,700	41,700	41,700	41,700
Maintenance - Detention Ponds	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Maintenance - Reticulation	69,294	69,294	69,294	69,294	69,294	69,294	69,294	69,294	69,294	69,294
Total Opex	225,030	230,975	230,975	230,975	230,975	230,975	230,975	230,975	230,975	230,975
CAPX Renewal	**300,000**	**50,000**	**250,000**	**50,000**	**250,000**	**250,000**	**300,000**	**350,000**	**425,000**	**475,000**
All Asset Groups	250,000	50,000	250,000	50,000	250,000	250,000	300,000	350,000	425,000	475,000
AMP Improvements	-	-	-	-	-	-	-	-		
Carry forward	**50,000**									
CAPX LOS	**-**	**-**	**-**	**1,500**	**1,500**	**1,500**	**1,500**	**1,500**	**1,500**	**1,500**
Compliance				1,500	1,500	1,500	1,500	1,500	1,500	1,500
	-	-	-	-	-	-	-	-	-	-
CAPX Growth	**-**	**-**	**-**	**12,500**	**12,500**	**12,500**	**12,500**	**12,500**	**12,500**	**12,500**
Additional capacity for growth - Council Contribution				12,500	12,500	12,500	12,500	12,500	12,500	12,500
Total Capex	300,000	50,000	250,000	64,000	264,000	264,000	314,000	364,000	439,000	489,000

Kaiwaka Summary										
Year Ending June	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Year Number	1	2	3	4	5	6	7	8	9	10
TOTAL EXPENDITURE	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**
Operations	**17,665**	**17,665**	**17,665**	**17,665**	**17,665**	**17,665**	**17,665**	**17,665**	**17,665**	**17,665**
Control and Operations	2,665	2,665	2,665	2,665	2,665	2,665	2,665	2,665	2,665	2,665
Database Management	*2,665*	*2,665*	*2,665*	*2,665*	*2,665*	*2,665*	*2,665*	*2,665*	*2,665*	*2,665*
Engineering Costs										
NRC Resource Consent	-	-	-	-	-	-	-	-		
Contribution To River Cleaning	-	-	-	-	-	-	-	-		
Contribution To Land Drainage	-	-	-	-	-	-	-	-		
AMP Improvements - Opex	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
Maintenance	**7,335**	**7,335**	**7,335**	**7,335**	**7,335**	**7,335**	**7,335**	**7,335**	**7,335**	**7,335**
Maintenance - Floodgates	-	-	-	-	-	-	-	-		
Maintenance - Open Drains	1,066	1,066	1,066	1,066	1,066	1,066	1,066	1,066	1,066	1,066
Maintenance - Detention Ponds	-	-	-	-	-	-	-	-		
Maintenance - Reticulation	6,269	6,269	6,269	6,269	6,269	6,269	6,269	6,269	6,269	6,269
Total Opex	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000
CAPX Renewal	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
All Asset Groups	-	-	-	-	-	-	-	-	-	-
AMP Improvements		-	-	-	-	-	-	-	-	-
Other Renewals	-	-	-	-	-	-	-	-	-	-
CAPX LOS	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Compliance	-	-	-	-	-	-	-	-	-	-
Renewals	-	-	-	-	-	-	-	-	-	-
CAPX Growth	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Additional Capacity for Growth - Council Contribution	-	-	-	-	-	-	-	-	-	-
Total Capex	-	-	-	-	-	-	-	-	-	-

Te Kopuru Summary										
Year Ending June	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Year Number	1	2	3	4	5	6	7	8	9	10
TOTAL EXPENDITURE	**14,100**	**13,731**	**13,731**	**13,731**	**13,731**	**13,731**	**13,731**	**13,731**	**13,731**	**13,731**
Operations	**10,165**	**10,165**	**10,165**	**10,165**	**10,165**	**10,165**	**10,165**	**10,165**	**10,165**	**10,165**
Control and Operations	2,665	2,665	2,665	2,665	2,665	2,665	2,665	2,665	2,665	2,665
Database Management	*2,665*	*2,665*	*2,665*	*2,665*	*2,665*	*2,665*	*2,665*	*2,665*	*2,665*	*2,665*
Engineering Costs	-	-	-	-	-	-	-	-	-	-
NRC Resource Consent	-	-	-	-	-	-	-	-	-	-
Contribution To River Cleaning	-	-	-	-	-	-	-	-	-	-
Contribution To Land Drainage (incl in 3013)										
AMP Improvements - Opex	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500
Maintenance	**3,935**	**3,566**	**3,566**	**3,566**	**3,566**	**3,566**	**3,566**	**3,566**	**3,566**	**3,566**
Maintenance - Floodgates	-	-	-	-	-	-	-	-	-	-
Maintenance - Open Drains	1,066	1,066	1,066	1,066	1,066	1,066	1,066	1,066	1,066	1,066
Maintenance - Detention Ponds	-	-	-	-	-	-	-	-	-	-
Maintenance - Reticulation	2,869	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Total Opex	14,100	13,731	13,731	13,731	13,731	13,731	13,731	13,731	13,731	13,731
CAPX Renewal	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
All Asset Groups	-	-	-	-	-	-	-	-	-	-
AMP Improvements	-	-	-	-	-	-	-	-	-	-
Other Renewals	-	-	-	-	-	-	-	-	-	-
CAPX LOS	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Compliance	-	-	-	-	-	-	-	-	-	-
Renewals	-	-	-	-	-	-	-	-	-	-
CAPX Growth	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Additional Capacity for Growth - Council Contribution	-	-	-	-	-	-	-	-	-	-
Total Capex	-	-	-	-	-	-	-	-	-	-

Mangawhai Summary										
Year Ending June	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Year Number	1	2	3	4	5	6	7	8	9	10
TOTAL EXPENDITURE	**468,000**	**134,321**	**174,321**	**174,321**	**199,321**	**224,321**	**224,321**	**224,321**	**249,321**	**274,321**
Operations	**57,821**	**41,821**	**41,821**	**41,821**	**41,821**	**41,821**	**41,821**	**41,821**	**41,821**	**41,821**
Control and Operations	22,821	22,821	22,821	22,821	22,821	22,821	22,821	22,821	22,821	22,821
Database Management	*5,330*	*5,330*	*5,330*	*5,330*	*5,330*	*5,330*	*5,330*	*5,330*	*5,330*	*5,330*
Engineering Costs	*1,500*	*1,500*	*1,500*	*1,500*	*1,500*	*1,500*	*1,500*	*1,500*	*1,500*	*1,500*
NRC Resource Consent	*15,991*	*15,991*	*15,991*	*15,991*	*15,991*	*15,991*	*15,991*	*15,991*	*15,991*	*15,991*
Contribution To River Cleaning	-	-	-	-	-	-	-	-	-	-
Contribution To Land Drainage	-	-	-	-	-	-	-	-	-	-
AMP Improvements - Opex	35,000	19,000	19,000	19,000	19,000	19,000	19,000	19,000	19,000	19,000
Maintenance	**43,679**	**45,000**	**45,000**	**45,000**	**45,000**	**45,000**	**45,000**	**45,000**	**45,000**	**45,000**
Maintenance - Floodgates	-	-	-	-	-	-	-	-		
Maintenance - Open Drains	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Maintenance - Detention Ponds	13,349	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
Maintenance - Reticulation	20,330	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Total Opex	101,500	86,821	86,821	86,821	86,821	86,821	86,821	86,821	86,821	86,821
CAPX Renewal	**25,000**	**-**	**50,000**	**50,000**	**75,000**	**100,000**	**100,000**	**100,000**	**125,000**	**150,000**
All Asset Groups	25,000		50,000	50,000	75,000	100,000	100,000	100,000	125,000	150,000
AMP Improvements	-	-	-	-	-	-	-	-	-	-
Other Renewals										
CAPX LOS	**259,312**	**10,000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Compliance	-	10,000	-	-	-	-	-	-	-	-
Carry Forward	224,312	-	-	-	-	-	-	-	-	-
Estuary Drive Pond	35,000	-	-	-	-	-	-	-		
CAPX Growth	**82,188**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**
Additional Capacity for Growth - Council Contribution	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500
Carry Forward	44,688									
Total Capex	366,500	47,500	87,500	87,500	112,500	137,500	137,500	137,500	162,500	187,500

Areas currently not Rated Summary										
Year Ending June	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Year Number	1	2	3	4	5	6	7	8	9	10
TOTAL EXPENDITURE	**29,500**	**29,500**	**29,500**	**29,500**	**29,500**	**29,500**	**29,500**	**29,500**	**29,500**	**29,500**
Maintenence										
Kellys Bay	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
Glinkes Gully	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
Aratapu Village	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
Sunny Nook	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
Omamari	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00
Ruaw ai tow n area	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00
Tinopai	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00
Matakoe	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00
Pahi	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00
Whakapirau	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00
Paparoa	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00
Maungatoroto	6,000.00	6,000.00	6,000.00	6,000.00	6,000.00	6,000.00	6,000.00	6,000.00	6,000.00	6,000.00

Appendix B Improvement Plan

Asset Management Improvement Plan

Executive Summary

Continuous improvements are necessary as Kaipara District Council continues to achieve the appropriate (and desired) level of activity management practice; delivering services in the most sustainable way which meeting the community's needs.

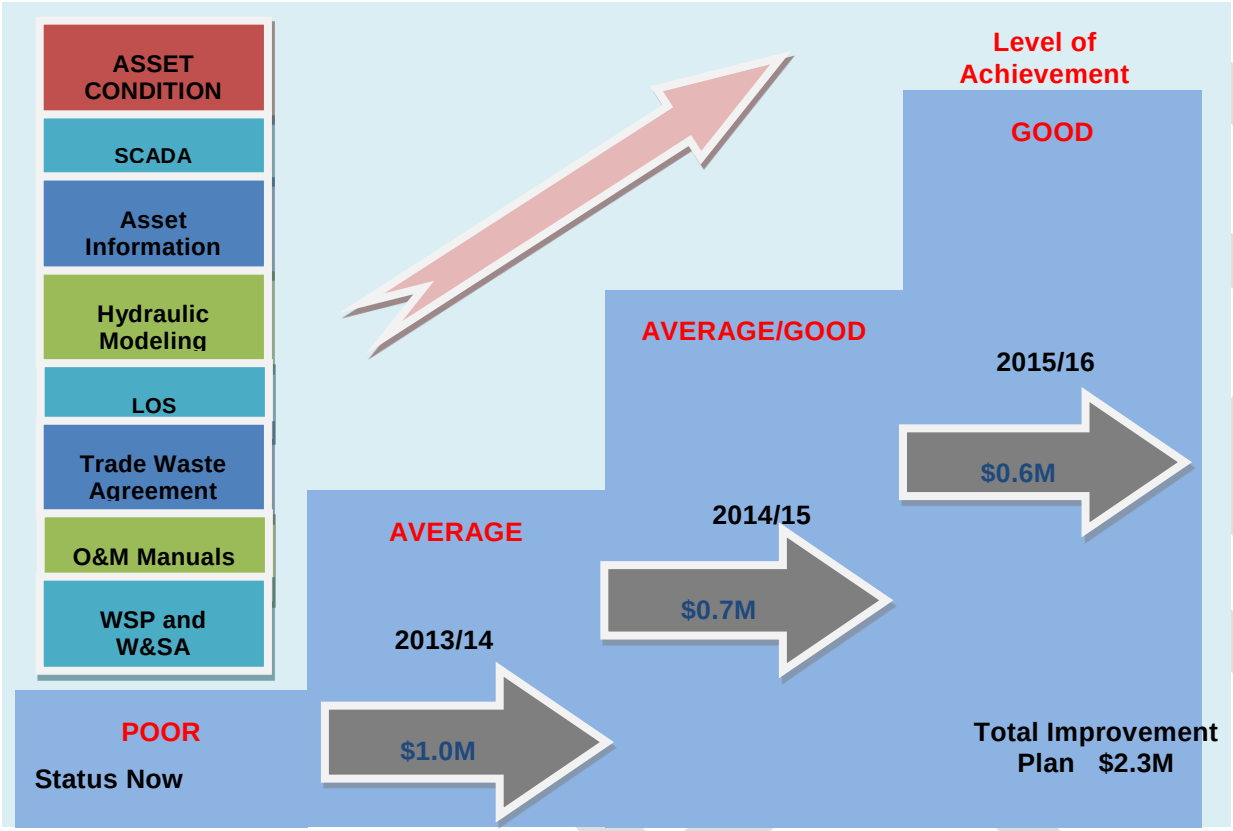
The Improvement Plan has been developed, identifying the highest priority activities to undertake in next 1-3 years to improve level of activity management practice in three waters as follows:

- Condition Assessment
- SCADA System
- Asset Information System (AIMS)
- Hydraulic Modeling
- Level of Service (LOS)
- Trade Waste Agreements
- O&M Manual
- Water Safety Plan (WSP)
- Water and Sanitary Assessment (W&SA)

This Improvement Plan was compared with the available funding in the budget to identify any significant funding gaps. Funding gaps were identified in Water Supply and Wastewater in 2013/2014; however they are not significant and also some excess funding is available in subsequent years. As the cost estimates were only an approximation – ie subject to fluctuation – no efforts were made to reach an exact match of the project cost against the available funding. Most probably the costing would go up and therefore it is good to have a contingency sum in the budget.

A firm commitment is needed to deliver this program as it would elevate the present "Poor" status of the above activities to a "Good" status in three years' time as demonstrated in the diagram below.

Improvement Plan of Three Waters



Asset Group	Estimated Project Cost ($)	Program		
		2013/2014	2014/2015	2015/2016
Water Supply				
Condition Assessment of water supply	312,000	123,000	59,000	70,000
Establishment of Telemetry/SCADA System in water supply systems	190,000	90,000	70,000	30,000
Establishment of Asset Information System for water supply	150,000	50,000	50,000	50,000
Hydraulic Modelling Water Supply	110,000	70,000	35,000	35,000
Review LOS of water supply	30,000	5,000	25,000	
O&M Manuals	20,000	20,000		
Water Safety Plan	30,000	30,000		
Update Water and Sanitary Assessment	30,000	0	0	30,000
Total for Water	**872,000**	**388,000**	**239,000**	**215,000**
Wastewater				
Condition Assessment of wastewater	231,000	79,000	73,000	80,000
Establishment of Telemetry/SCADA System in wastewater systems	155,000	80,000	50,000	25,000
Establishment of Asset Information System for wastewater	175,000	75,000	50,000	50,000
Hydraulic Modelling Wastewater	110,000	70,000	35,000	35,000
Review LOS of wastewater	20,000	10,000	10,000	0
Trade Waste Agreements	20,000	20,000		
O&M Manual	20,000	20,000		
Update Water and Sanitary Assessment	30,000	0	0	30,000

Total for Wastewater	**761,000**	**354,000**	**218,000**	**220,000**
Stormwater				
Condition Assessment of Stormwater	**122,800**	75,100	51,100	0
Establishment of Asset Information System for stormwater	177,000	100,000	50,000	22,000
Review LOS of stormwater including Stormwater Management Plans	270,000	115,000	90,000	65,000
Stormwater Catchment/Flood Models	60,000		30,000	30,000
Total for SW	**629,800**	**290,100**	**221,100**	**117,000**
GRAND TOTAL	**2,262,800**	**1,032,100**	**678,100**	**552,000**

Budget/Funding Summary for Improvement Plan

Asset Group	Total Funding ($)	Program		
		2013/2014	*2014/2015*	*2015/2016*
Total for Water	**870,500**	355,000	248,000	267,500
Total for Wastewater	**836,267**	344,375	248,796	243,096
Total for SW	**715,000**	320,000	272,500	122,500
GRAND TOTAL	**2,421,767**	**1,019,375**	**769,296**	**633,096**

Funding Gap (-)/Excess

Asset Group		Program		
		2013/2014	*2014/2015*	*2015/2016*
Water Supply		-33,000	9,000	52,500
Wastewater		-9,625	30,796	23,096
Stormwater		29,900	51,400	5,500

Appendix C Risk Register

LOW	
MODERATE	
SIGNIFICANT	
HIGH	

SW

1. Insignificant	A. Rare	1. High
2. Minor	B. Unlikely	2. Moderate
3. Severe	C. Possible	3. Low
4. Major	D. Moderate	
5. Catastrophic	E. Likely	
	F. Almost Certain	

ASSET DESCRIPTION	Category/Name	Length/Count	Consequence of Failure	Likelihood of Failure	Risk
DARGAVILLE STORMWATER					
Stopbanks/Flood Walls Total 6,625m					
Asset Condition Unknown	**Type**	**Length**			
Silver Fern/Ponds>Awakino River outlet	Bank	**434m**	Major	Possible	High
Awakino outlet>Ponds>Gun club	Bank	**270m**	Major	Possible	High
Gun club/Ponds>Finlayson Park F/gate	Bank	**585m**	Major	Possible	High
Finlayson Park>NW Bridge	Bank	**568m**	Minor	Possible	Significant
NW Bridge>Lawrie F/gate	Bank	**406m**	Minor	Possible	Significant
Lawrie F/gate>TahaAwa Gardens	Bank	**310m**	Minor	Possible	Significant
Taha Awa Gardens>NWBC	Bank	**277m**	Minor	Possible	Significant
NWBC small marina>Slipway	W/Wall	**82m**	Severe	Possible	Significant
NWBC Weigh Stn>Hokianga Road Wharf	Bank	**287m**	Severe	Unlikley	MODERATE
Hokianga Road wharf>18 Victoria St Hall	Bank	**287m**	Severe	Possible	Significant
18 Victoria st Hall>Caltex	W/Wall	**82m**	Severe	Possible	Significant
Caltex>Kaihu River bridge	Bank	**67m**	Severe	Possible	Significant
Kaihu River bridge>1 Beach Road Taylor Hall	Bank	**12m**	Severe	Possible	Significant
I Beach Road Taylor Hall>Taylor Hall	W/Wall	**18m**	Severe	Possible	Significant
1Beach Road Taylor Hall>3 Beach Road	Bank	**32m**	Severe	Possible	Significant
3 Beach Road>15 Beach Road Aztec	W/Wall	**46m**	Severe	Possible	Significant
15 Beach Road Aztec>25 Beach Road Gillespie	Bank	**90m**	Severe	Moderate	Significant
25 Beach Road Gillespie>21 Beach Road Juretich	W/Wall	**24m**	Minor	Moderate	Significant

31 Beach Road Juretich> 23 Beach Road Juretich	Bank	**25m**	Minor	Moderate	Significant
23Beach Road>37-39 Beach Road Sweeny>Day St	W/Wall	**135m**	Minor	Possible	Significant
Day St Roydon>Silby>Reid>Wilson>Firth	W/Wall	**240m**	Minor	Possible	Significant
Day St Firth>Mckay>Edward St	Bank	**340m**	Minor	Possible	Significant
Kaihu Bridge> Sand yard Private concrete	Wall	**114m**	Minor	Possible	Significant
River Road Sand yard>Murdoch St	Bank	**136m**	Severe	Possible	Significant
River Road Murdoch St>Basset St	W/Wall	**220m**	Severe	Possible	Significant
River Road Bassett St>Liverpool St	W/Wall	**175m**	Severe	Possible	Significant
River Road Liverpool St>End River Road	W/Wall	**350m**	Severe	Possible	Significant
Kaihu bridge>Memorial park Logan st F/g	Bank	**156m**	Severe	Possible	Significant
Memorial Park>Memorial park centre F/g	Bank	**337m**	Minor	Possible	Significant
M/ park centre F/g>Rugby Club outlet	Bank	**318m**	Minor	Possible	Significant
Dargaville Marae Station Road	Bank	**290m**	Severe	Possible	Significant
Flood Gates	**No**	**Dia**	**Consequence**	**Likelihood**	**Risk**
Taha Awa Gardens Countdown	1	**2.0m**	Major	Possible	High
Taha Awa Gardens Countdown	2	**600**	Major	Possible	High
Boating Club Small Marina	3	**600**	Severe	Possible	Significant
NWBC Large Marina (Frost Mooring)		**375**	Severe	Possible	Significant
Kapia St outlet Beside large boat Marina	5	**375**	Severe	Possible	Significant
Parenga St Car park Opposite Accountants	6	**450**	Severe	Possible	Significant
Hokianga Road Wharf	7	**900**	Severe	Possible	Significant
Hokianga Road Wharf	8	**450**	Severe	Possible	Significant
Edward St outlet old	9	**600**	Severe	Possible	Significant
Edward St outlet New	9	**600**	Severe	Possible	Significant
Victoria St Opposite Central	10	**300**	Severe	Possible	Significant
Victoria St Opposite Dargaville Club	11	**300**	Severe	Possible	Significant
Victoria St Opposite Debruin	12	**300**	Severe	Possible	Significant
Victoria St Manhole Ball type	12	**225 ?**	Severe	Possible	Significant
Victoria St Manhole Ball type	13	**225 ?**	Severe	Possible	Significant

Victoria St Manhole Ball type	14	**225 ?**	Severe	Possible	Significant
Victoria St Manhole Ball type	15	**225 ?**	Severe	Possible	Significant
Victoria St Manhole Ball type	16	**225 ?**	Severe	Possible	Significant
Victoria St opp Caltex	17 ?	**375**	Severe	Possible	Significant
Brians Gym (Laurie thinks F/gate here)	17 ?		Severe	Possible	Significant
Farm Lands River Road	18	**300**	Severe	Possible	Significant
Bryant River Road		**300**	Minor	Possible	Significant
River Road Dairy		**150**	Minor	Possible	Significant
Kings Court Manhole Ball type	19	**450**	Minor	Possible	Significant
Campbell Tce Manhole Ball type	20	**600 dia**	Minor	Possible	Significant
55 River Road Manhole	21	**225 dia**	Minor	Possible	Significant
Murdoch St Nth	22	**600**	Severe	Possible	Significant
River Road PO Box	23	**300**	Severe	Possible	Significant
River Road Comm Manhole	24	**300**	Severe	Possible	Significant
River Road Commercial	25	**300**	Severe	Possible	Significant
River Road opposite Commercial	26	**300**	Severe	Possible	Significant
83 River Road	27	**450**	Severe	Possible	Significant
River Road off Bassett St	28	**300**	Severe	Possible	Significant
Old Dairy Company	29	**600**	Severe	Possible	Significant
River Road Dairy Co Office	30	**300 dia**	Severe	Possible	Significant
River Road Dairy Co Office	31	**300**	Severe	Possible	Significant
River Road Liverpool St	32	**375**	Minor	Possible	Significant
113 River Road	33	**330 dia**	Minor	Possible	Significant
115 River Road	34	**300**	Minor	Possible	Significant
River Road Bund wall	35	**300**	Minor	Possible	Significant
131 River Road	36	**600**	Minor	Possible	Significant
139 River Road	37	**300**	Minor	Possible	Significant
River Road park	38	**600**	Minor	Possible	Significant
Memorial Park/Rugby club	40	**600**	Minor	Possible	Significant
Memorial Park centre	41	**600**	Minor	Possible	Significant

Memorial Park Logan St	42	**750**	Severe	Possible	Significant
Logan St/Kaihu river bridge	43	**450**	Severe	Possible	Significant
Beach Road/Kaihu river bridge No 44	44	**450?**	Severe	Possible	Significant
Aztec man hole	45	**300**	Severe	Possible	Significant
Beach Road/Gillespie No 47	47	**900**	Severe	Possible	Significant
Beach Road/Day st/Franecivich No 48	48	**900**	Minor	Possible	Significant
Beach Road Flood wall outlets Sweeny		**300**	Minor	Possible	Significant
Beach Road Flood wall Juretich,Nyboer/Aztec		**300**	Minor	Possible	Significant
Beach Road Flood wall outlet Doug Grant		**300**	Minor	Possible	Significant
Beach Road Flood wall outlet Grant Taylor yd		**300**	Minor	Possible	Significant
Beach Road Flood wall outlet Taylor building		**300**	Minor	Possible	Significant
Beach Road Peter McKenzie property	49	**?**	Minor	Possible	Significant
Beach Road Internal F/gate Yates property	50	**?**	Minor	Unlikley	**MODERATE**
Beach Road Morgan>Yates>Kaihu	51	**?**	Severe	Possible	Significant
Station Road Nesbit	52	**?**	Minor	Possible	Significant
Victoria st outlet Lawrie	53	**?**	Minor	Possible	Significant
Little Theatre	54	**?**	Minor	Possible	Significant
Finlayson park /Delta outlet	55	**?**	Minor	Possible	Significant
West of Gun club	56	**?**	Major	Possible	High
Oxidation pond	57	**?**	Major	Possible	High
Flett property	58	**?**	Major	Possible	High
Duck creek	59	**?**	Severe	Possible	Significant
Station Road TeHohunga	60	**150**	Severe	Possible	Significant
Station Road Houses 500 stn Road		**150**	Minor	Possible	Significant
Oxidation pond North side Awakino river	61	**?**	Severe	Possible	Significant
Flett property 2 @ 100 east of 58	62	**?**	Minor	Possible	Significant
River Road Man hole Flood gate	63	**300**	Severe	Possible	Significant
River Road reserve Man hole Ball type	64	**225**	Minor	Possible	Significant
River Road/Kings court Man hole Ball type	65	**225**	Minor	Possible	Significant
Beach Road flood wall outlets	67	**300**	Minor	Possible	Significant

Off Day st Roydon yard	68	**300**	Minor	Possible	Significant
Off Day st Western Blasters	69	**300**	Minor	Possible	Significant
Off Day st Kevin Reid	70	**300**	Minor	Possible	Significant
Off Day st Wilson	71	**300**	Minor	Possible	Significant
Sunny Nook		**?**	Minor	Possible	Significant
Inlet/outlet/Grates	**No**		**Consequence**	**Likelihood**	**Risk**
Gordon st>Gladstone st>TahaAwa Inlet	15a		Severe	Possible	Significant
Onslow st>Open drain Lawrie	16a		Minor	Possible	Significant
Onslow st>Open drain Lawrie Inlet	16b		Severe	Possible	Significant
Warehouse F/gate>car park	17b		Minor	Possible	Significant
Pheonix place Detention dam	23a		Minor	Possible	Significant
Clyde st catchment Selby inlet	26a		Severe	Possible	Significant
Pheonix place outlet>Huia Cres inlet	26b		Severe	Possible	Significant
Montgomery outlet Carter	26c		Minor	Possible	Significant
Bel Bird Cres outlet Smith	28		Minor	Possible	Significant
Kaka place outlet House	29		Minor	Possible	Significant
Medow park outlet Munn	30a		Minor	Possible	Significant
Medow park outley Rakich	30b		Minor	Possible	Significant
1st,2nd,3rd Ave outlets	31a		Minor	Possible	Significant
Selwyn park School field outlet	31b		Minor	Possible	Significant
Reticulation					
Pipe line length 32,190m					
Victoria st Flood/Tidal			Severe	Possible	**MODERATE**
Pareng/Kapia/Totara Flood/Tidal			Severe	Possible	**MODERATE**
Victoria/Edward/Normanby Flood/Tidal			Severe	Possible	**MODERATE**
Victoria/Normanby/Gladstone Flood/Tidal			Major	Moderate	High
Pipes under buildings Woolworths			Major	Moderate	High
Warehouse/Countdown Flood/Tidal			Severe	Possible	Significant

Beach Road/Pukeko/Day st Flood / tidal			Severe	Possible	**MODERATE**
Memorial park Flood/Tidal			Minor	Possible	**MODERATE**
River Road >Logan st>Kaihu bridge			Severe	Possible	**MODERATE**
River Road >Logan st>Murdoch >Sale yards			Severe	Possible	**MODERATE**
River Road > Dairy Factory > Liverpool st			Severe	Possible	**MODERATE**
Detention Ponds					
Pheonix Place	1		Minor	Possible	Low
Open Drains	**No**	**Length**	**Consquence**	**Likelihood**	**Risk**
Colville Road Curac>Sedgidin	1	**225m**	Minor	Possible	Significant
Colville Road Sedgidin SH12>Drain No3	2	**125m**	Minor	Possible	Significant
Sedgidin Road>SH12	3	**718m**	Minor	Possible	Significant
Okahu creek SH12 Tier/Curac	4	**277m**	Minor	Possible	Significant
Okahu creek SH12 Tiller/Stott	5	**260m**	Minor	Possible	Significant
Beach Road>Morgan property Kaihu river	6	**608m**	Minor	Possible	Significant
Beach Road F/gate 51>Stop bank drain	7	**365m**	Minor	Possible	Significant
Darg Rugby Club>Kaihu river F/gate 40	8	**155m**	Minor	Possible	Significant
Memorial park No8>F/gate 41	9	**275m**	Minor	Possible	Significant
Memorial parK>Logan st>F/gate 42	10	**120m**	Minor	Possible	Significant
Memorial park > Logan st	11	**20m**	Minor	Possible	Significant
Beach Road F/gate>Edward st	12	**175m**	Severe	Possible	Significant
Edward st>Rail crossing>Day st sections	12	**180m**	Severe	Possible	Significant
Station Road rail side>Edward st	13	**400m**	Severe	Possible	Significant
Day st>Pukeko>Edward st Timber yard	14	**315m**	Severe	Possible	Significant
Tirarau st>Gordon>Gladstone inlet	15	**141m**	Severe	Possible	Significant
Onslow/Selwyn park school>Lawrie	16	**610m**	Minor	Possible	Significant
Warehouse>F/gate 53>Onslow>F/gate 53	17	**1191m**	Minor	Possible	Significant
NW Bridge SH12>F/gate 54 Finlayson park	18	**660m**	Minor	Possible	Significant

Northland Boating>Kumara pack house	19	**425m**	Minor	Possible	Significant
Kumara pack house Drain 19>F/gate 54	20	**555m**	Minor	Possible	Significant
F/gate 54>F/gate 55>F/gate 56>Gun Club	21	**560m**	Minor	Possible	Significant
Drain 21>Meat works	22	**430m**	Minor	Possible	Significant
Pheonix place from 29>Detention pond	23	**42m**	Severe	Possible	Significant
Colville/Basset Road cornner>Logan st	24	**445m**	Minor	Possible	Significant
116 Station Road>Kaihu river F/gate outlet	25	**210m**	Minor	Possible	Significant
Pheonix Detention>High School>Huia Cres	26	**284m**	Severe	Possible	Significant
Harrison yard>Lok>Station Road	27	**272m**	Severe	Possible	Significant
Gate 56>Gun club>Sewage pond>Awakino	79		Severe	Possible	Significant
Gate 61 to Silver Fern	78		Minor	Possible	Significant
BAYLYS BEACH STORMWATER					
Asset Condition 2/7 Good condition					
Reticulation		**3847m**	Minor	Possible	**MODERATE**
Manholes	61		Minor	Possible	**MODERATE**
Open Drains		**10m**	Minor	Possible	**MODERATE**
TE KOPURU STORMWATER			**Consquence**	**Likelihood**	**Risk**
Asset Condition 2 Good condition					
Flood gate (One house involved)	1		Severe	Possible	Significant
Flood gate Risk of failure Debris/Age			Severe	Possible	Significant
Reticulation		**27,781m**	Minor	Possible	Significant
Manholes	357		Minor	Possible	Significant
Open Drains		**2486m**	Minor	Possible	Significant
Western Boundary drain			Severe	Possible	Significant

KAIWAKA STORMWATER					
Asset condition 2 Good condition					
Reticulation Pipe line length 320m		320	Severe	Possible	Significant
Man Holes Total 9	9		Severe	Possible	Significant
Open Drains Total length 262m		262	Minor	Possible	Significant
Inlets / Outlets Total 5		5	Minor	Possible	Significant
MANGAWHAI STORMWATER					
Asset Condition 2 Good condition					
Reticulation pipe line		27,781m	Minor	Possible	Significant
Open drains		1,400m	Minor	Possible	Significant
Manholes	357		Minor	Possible	Significant
Inlets /Outlets Coastal Outlet	31		Minor	Possible	Significant
Detention ponds	4		Minor	Possible	Significant
Soak pits	72		Minor	Possible	Significant
RUAWAI STORMWATER					
Open Drain Fryberg Road drain to Marina F/gate			Major	Moderate	High

Appendix D Resource Consent Register

Kaipara District Council Resource Consent Register – Stormwater

Consent Number	Type Code	Details	Expiry Date
784301	CST	Council: Rock groynes, Mangawhai Harbour	28/02/2023
906301	LUC	Council: Flood protection Works	30/04/2035
935401	CST	Council: Works in the CMA	30/06/2034
952601	CTD	Council: Discharge of Stormwater, Wintle Road, Mangawhai Heads	30/09/2036
986001	LUC	Council: Stopbank construction - Stage 3 – Kaihu River	30/04/2035
1332901	CST	Council: Use and occupy space in Crown owned CMA	30/06/2035
1853901	CST	Council: Floodgate and floodway maintenance in Kaipara District	31/05/2027
2036201	LUC	Council: Relocate floodgate	30/06/2013
2122001	DIL	Council: Stormwater works	30/09/2043
2284101	LUC	Council: Floodgated culvert installation	30/06/2013
2436801	LUC	Council: Stormwater discharge structure	30/09/2012
19960211101		Council: Stormwater diversion and discharge – Mangawhai	
19960464301		Council: Stormwater diversion and discharge – Mangawhai	

CST – Coastal Permit
CTD – Coastal Discharge
LUC – Land Use
DIL – Discharge to Land

Appendix E Historical Levels of Service

Core Value: Quality							
Key Community Outcome: **Sustainable economy:** Kaipara District has a diversified and sustainable economy that supports the well-being of its communities and residents.							
Level of Service	**Performance Measure**	**Past performance**	**Current Year Target**	**Future Year Targets**			
		2008/2009	**2009/2010**	**2010/2011**	**2011/2012**	**2012/2013**	**2014/2020**
The stormwater systems are designed and maintained to minimise surface flooding so that no storm events of less than 10% AEP in urban areas.	Urban roads are not closed for more than two hours due to flooding.	New	New	90%	90%	95%	100%
Stormwater networks are operated and maintained to minimise the effects of flooding on communities.	Develop and deliver a programme to remove steep sided drains in 20 years in Mangawhai, Dargaville, Baylys and Te Kopuru.	New	Complete assessments	100% success	100% success	100% success	100% success
	Results of a customer survey to be that the percentage of respondents who are satisfied or very satisfied	81%	75%	76%	77%	77%	78%

	with the Levels of Service (measured annually).							**Levels of Service 2010 AMP – Quality**
Stormwater flooding incidences are responded to promptly.	Percentage of stormwater blocked drain incidents attended on site and made safe within 4 hours.	New	New	75%	75%	75%	75%	
	Percentage of stormwater service for clearing blocked drains achieved within 2 hours	New	New	90%	90%	90%	90%	**Levels of Service 2010 AMP – Safety**

Core Value: Safety							
Key Community Outcome: **Safety and a good quality of life**: Kaipara District is a safe place to live and raise a family, where people enjoy a good quality of life.							
Level of Service	**Performance Measure**	**Past performance**	**Current Year Target**	**Future Year Targets**			
		2008/2009	**2009/2010**	**2010/2011**	**2011/2012**	**2012/2013**	**2014/2020**
Flood protection for the community.	Stormwater reticulation in new developments is fully compliant with Council's Engineering Standards for design storm events.	New	New	100%	100%	100%	100%

Appendix F List of Acronyms and Abbreviations

List of Acronyms

The following key acronyms and abbreviations are used in this document:

Term	Definition
AC	Asbestos concrete (pipe type)
AEP	Annual Exceedance Probability (e.g. 10% is once in 10 years)
AM	Asset Management
AMP	Asset Management Plan
AMS	Asset Management Systems
CAPEX	Capital expenditure
CCTV	Closed Circuit Television
CDEM	Civil Defence Emergency Management
CMA	Costal Marine Area
CON	Concrete (pipe type)
CORST	Corrugated steel (pipe type)
Council	Kaipara District Council
CPP	Competitive Pricing Procedures
DP	District Plan
EW	Earthenware (pipe type)
Fibro	Fibrolite (pipe type)
Galv	Galvanised (pipe type)
GEW	Glazed earthenware (pipe type)
GIS	Geographical Information System
IPCC	Intergovernmental Panel on Climate Change
IIMM	International Infrastructure Management Manual
KITE	Kaipara Information Technology Environment
LGA	Local Government Act 2002
LID	Low impact design
LIM	Land Information Memoranda
LOS	Level of Service

Term	Definition
LTP	Long Term Plan
NCS	Napier Computer System
NOVAF	Novaflex (trade name for a pipe type)
NRC	Northland Regional Council
OPEX	Operational expenditure
PIM	Project Information Memoranda
PVC	Polyvinylchloride (pipe type)
RCRRJ	Reinforced concrete rubber ring joint (pipe type)
RMA	Resource Management Act 1991
SMP	Stormwater Management Plans
UPVC	Un-plasticised polyvinylchloride (pipe type)
URP	Usual Resident Population
WSSA	Water and Sanitary Services Assessment