KAIPARA DISTRICT

Kaipara te Oranganui • Two Oceans Two Harbours

KAIPARA DISTRICT COUNCIL

Supplementary items to the following meeting:

Meeting	Kaipara District Council
Date	Wednesday 28 February 2018
Time	9.00am
Venue	Northern Wairoa War Memorial Hall (Dargaville Town Hall), 37 Hokianga Road, Dargaville

Open Agenda: Supplementary Items

Volume 2

Linda Osborne
Administration Manager

Membership

Chair:	Mayor Jason Smith
Members:	Deputy Mayor Peter Wethey
	Councillor Anna Curnow
	Councillor Victoria del la Varis-Woodcock
	Councillor Julie Geange
	Councillor Libby Jones
	Councillor Karen Joyce-Paki
	Councillor Jonathan Larsen
	Councillor Andrew Wade

KAIPARA DISTRICT COUNCIL

Kaipara District Council

Asset Management Plan 2018

Northern Area Land Drainage

January 2018

Status: Draft

KAIPARA DISTRICT

QUALITY STATEMENT

PROJECT MANAGER		PROJECT TECHNICAL LEAD
Matthew Smith		Matthew Smith
PREPARED BY		
Matthew Smith	…….....	……/……/……
CHECKED BY		
	…….....	……/……/……
REVIEWED BY		
	…….....	……/……/……
APPROVED FOR ISSUE BY		
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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	05 July 2017	First Draft	MS			
B						
C						
D						
E						
F						
G						
H						

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1 Executive summary

1.1 Introduction

The goals of the Northern Area Land Drainage (NALD) network are to achieve the following in a cost-effective manner:

- Protect land from tidal waters;
- Provide drainage of the soils to optimise agricultural production;
- Control surface water during flooding; and
- Divert run-off from inland hills.

As per the LGA 2002:

1. The purpose of local government is –
    a. To enable democratic local decision making and action by, and on behalf of, communities; and
    b. To meet the current and future needs of communities for good-quality local infrastructure, local public services and performance of regulatory functions in a way that is most cost-effective for households and businesses.
2. In this Act, **good-quality**, in relation to local infrastructure, local public services, and performance of regulatory functions, means infrastructure, services, and performance that are –
    a. Efficient; and
    b. Effective; and
    c. Appropriate to present and anticipated future circumstances

In order to do this a number of drains, floodgates and stopbanks have been constructed in the past and integrated with naturally formed channels to achieve these goals. These assets are overseen by small; drainage committees comprised of representatives of the area. Sometimes this is a single individual. The local representatives are assisted by Council staff and a Land Drainage Co-ordinator.

1.2 The key risks

A number of high risks have been associated with the land drainage networks. These include, but are not limited to:

- Stopbanks being overtopped at their current height due to climate change and predicted sea level rise;
- Sea level rise results in land drainage assets inability to drain sufficiently at low tide;
- Changes in regulations inhibit Council's ability to manage and control undesirable vegetation;
- Lack of timely maintenance causing floodgate failures and localised flooding; and
- Stopbanks being overtopped due to lack of knowledge around assets and their condition.

1.3 Key issues

Key issues requiring attention for northern area land drainage are:

- Knowledge of the network's capacity to adequately drain significant storm events is limited to observed performance during historical rainfall events. Historical evidence indicates that the network continues to provide the capacity for which it was designed;
- An assessment of the likely future demands on the drainage network's capacity has also identified potential changes as a result of global warming having the potential to result in moderate to significant impacts on the drainage network and its ability to achieve its stated goals and levels of service (LOS);
- While there is a reasonable understanding of the hazards that exist relating to land drainage this has not been assessed in relation to criticality and this limits Council's ability to manage risk;
- Management of the land drainage systems is primarily focused on managing the flow of water under 'normal' and 'storm' conditions to maintain land productivity and prevent flooding. It is expected that management of water quality, and its associated impact on the receiving environments, will become increasingly important in the future;
- There are numerous small land drainage schemes within the Northern Area. This reflects the process of their creation over the years. There may be opportunities to amalgamate schemes or revise boundaries to generate efficiencies;
- Allocation of asset ownership and responsibility for maintenance, renewal and upgrading between the landowners, drainage area committees and Council's land drainage activity is not entirely clear or consistent across the schemes;
- The desired LOS to be achieved by the schemes is not well-defined and largely reflects acceptance of historical performance;
- The current condition, valuation and life expectancy of assets is not well understood and this adversely impacts on the ability to undertake future planning for capital works; and
- Asset information is incomplete within Council's asset information system. This includes the recording of maintenance activity as it is undertaken.

1.4 Continuous improvement

Council has developed an Asset Management Improvement Plan (AMIP) to address the risks and issues described above. 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.

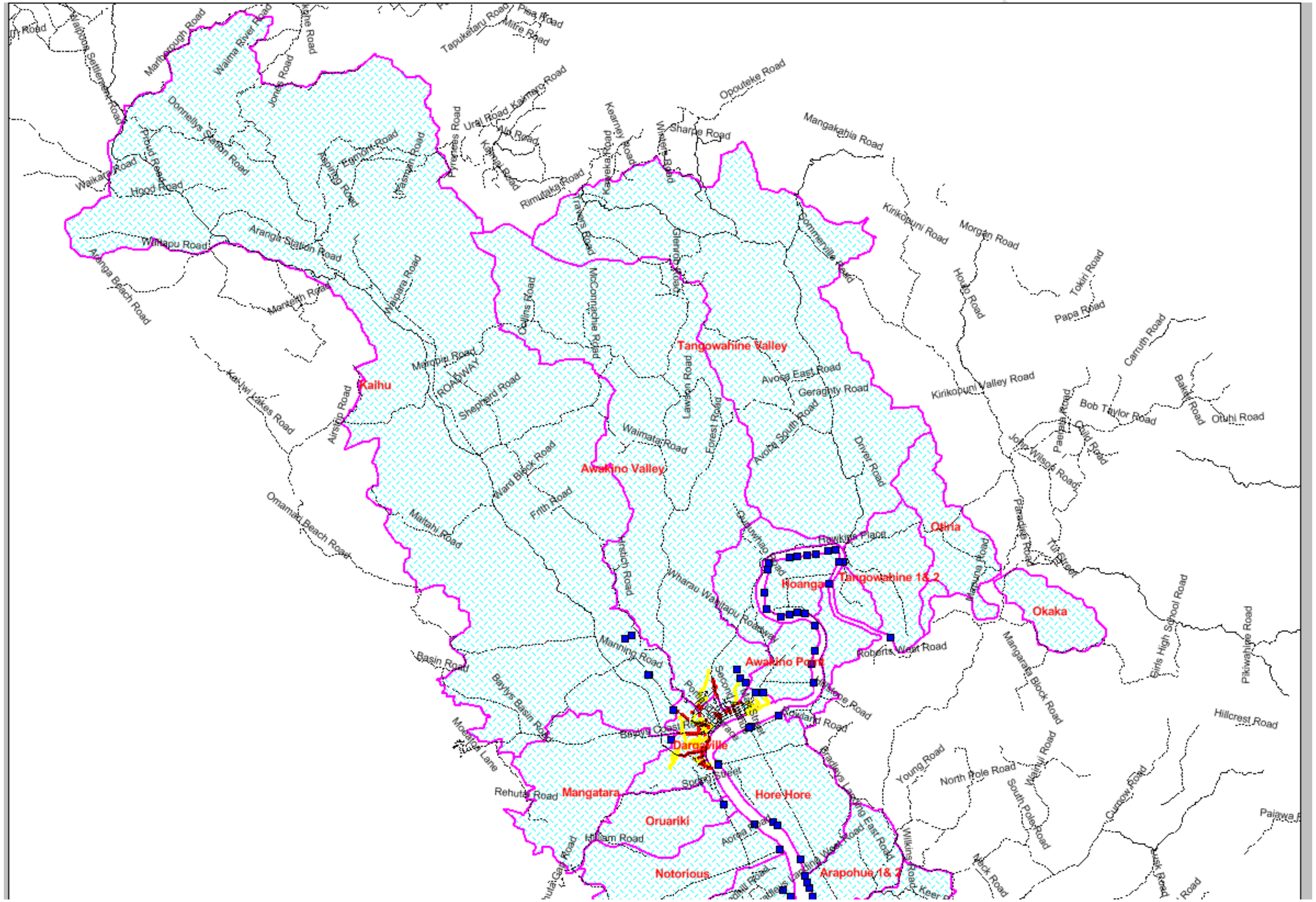
Table 1-1: Improvement Programme 2018/2028

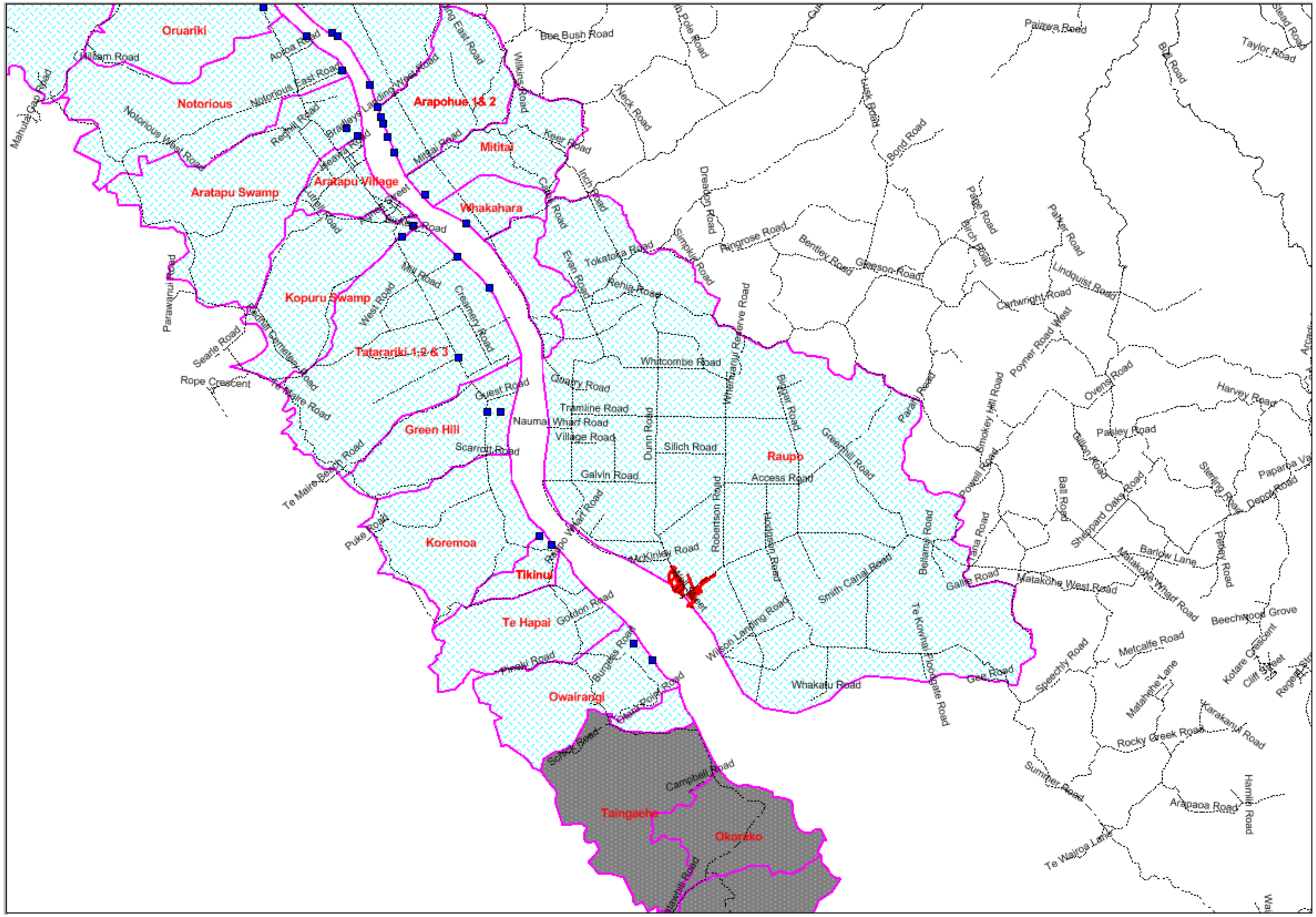
Improvement Programme 2018/2028	
Year 1 **Planned improvement / change 2018/2019**	• Populate a central database and geospatial framework for the recording of asset attributes and condition assessment information; • Provide a central management system for consents, compliance and monitoring; • Commence a hydraulic assessment of the Northern Area Land Drainage (NALD) schemes to be able to better prepare these schemes for climate change and sea level rise; and • Commence condition assessments of floodgates.
Year 2 **Planned improvement / change 2019/2020**	• Continue assessments of NALD schemes assets; • Update creation dates for floodgates in valuation system and review expected lives of these assets; • Review valuation of floodgates and drains compared to Raupo land drainage scheme in preparation for AMP 2021; • Continue assessments of existing drainage system to prepare for climate change and sea level rise; • Refine application of Criticality Framework to land drainage and review resulting risk assessment; • Commence consultation process with stakeholders to better define the expected land drainage LOS, clarify ownership of assets and maintenance/renewal responsibilities and clarify how long term funding of the schemes should be managed. This process will include assessment of current level of satisfaction with current arrangements; and • Assess existing drainage area and identify where, if possible, any can be reduced or amalgamated.
Year 3 **Planned improvement / change 2020/2021**	• Continue assessments of existing drainage system to prepare for climate change and sea level rise; • Commence assessment of the potential impacts of increasing the focus on water quality issues as this is impacted by land drainage activities; • Generate indicative renewal programme from the system including updated condition assessments, asset valuations, projected remaining lives and allocation of responsibility for renewals; • Commence consultation process to progress amalgamations or boundary changes of schemes where this has been identified as potentially beneficial; and • Generate updated AMP for 2021.

Improvement Programme 2018/2028	
Years 4-10 **Planned improvement / change 2021/2028**	• The proposed programme in years 1-3 will yield a lot of information on asset condition, reviewed NALD boundaries, reviewed LOS and insight into how climate change will impact on the system; • The nature and extent of these changes are difficult to predict at this time however could conceivably require a significant rethink about how land drainage is managed in these areas; • The programme from years 4-10 will largely reflect the changes that are identified in years 1-3 and their progressive implementation.

1.5 Assets, valuation and budget summaries

Figure 1-1: Overview of locations



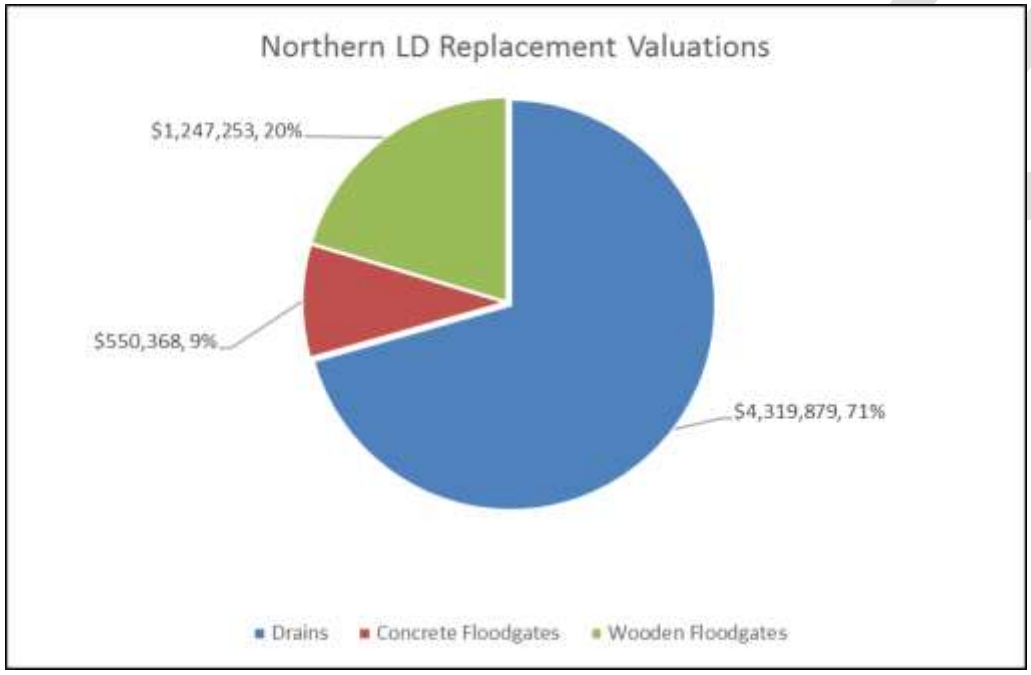

Oruariki
Notorious
Arapohue 1& 2
Mititai
Aratapu Swamp
Aratapu Village
Whakahara
Kopuru Swamp
Tatarariki 1,2 & 3
Green Hill
Raupo
Koremoa
Tikinui
Te Hapai
Owairangi
Taingaehe
Okorako
Bee Bush Road
Paiawa Road
Taylor Road
Neck Road
Bond Road
Dreadon Road
Ringrose Road
Bentley Road
Gleeson Road
Parker Road
Lindquist Road
Cartwright Road
Tokatoka Road
Rehia Road
Whitcombe Road
Quarry Road
Tramline Road
Naumai Wharf Road
Village Road
Dunn Road
Silich Road
Galvin Road
Access Road
Robertson Road
McKinley Road
Smith Canal Road
Wilson Landing Road
Whakatu Road
Gee Road
Ovens Road
Harvey Road
Pakley Road
Sheppard Oaks Road
Barlow Lane
Metcalfe Road
Beechwood Grove
Rocky Creek Road
Arapaoa Road
Hamlin Road
Te Wairoa Lane
Karakanui Road
Matakohe West Road
Speechly Road
Sumner Road
Notorious West Road
Redhill Road
Mititai Road
Mill Road
West Road
Creamery Road
Guest Road
Scarrott Road
Searle Road
Rope Crescent
Te Maire Road
Te Maire Beach Road
Puke Road
Gordon Road
Campbell Road
Parawanui Road
Keet Road
Inch Road
Evan Road
Whakapirau Road
Pabey Road
Dillon Road
Ball Road
Smokey Hill Road
Powell Road
Poyner Road West
Galle Road
Bellamy Road
Greenhill Road
Jordan Road
Te Kowhai Floodgate Road
Metahehe Lane

1.5.1 Summary of NALD asset lives, extent and valuations (2016)

Table 1-2: Overview of assets

Useful Lives and Values for LD Assets	Useful Life (years)	Minimum Remaining Useful Life (years)	Unit Rate (Average)	Number	Total 2016 Replacement Valuation	Comment
Building	100	5		Nil		
Drains	Non depreciable	Non depreciable	$37	118,073	$4,319,879	Same rate for all
Earth stop bank	Non depreciable	Non depreciable		Nil		
Floodgates wooden	50	5	$23,097	54	$1,247,253	Same rate for all
Floodgates concrete	80	5	$32,374	17	$550,368	Varies from $12k to $65k
Pumps	20	10		Nil		
Pumping structure	80	5		Nil		
Rip rap	100	5		Nil		
			Total		**$6,117,500**	

Figure 1-2: Overview of assets



1.6 Financial and Lifecycle 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 1-3 and 1-4 below.

Figure 1-3: Operating cost forecast

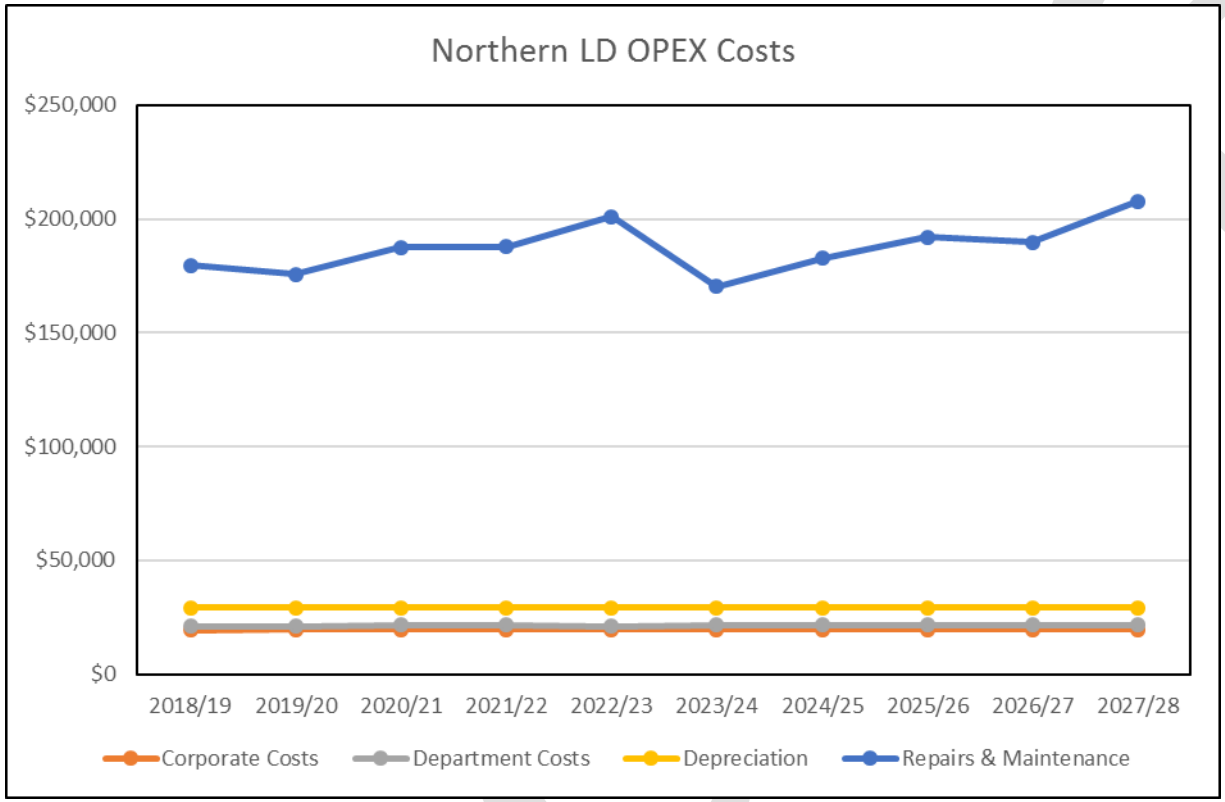
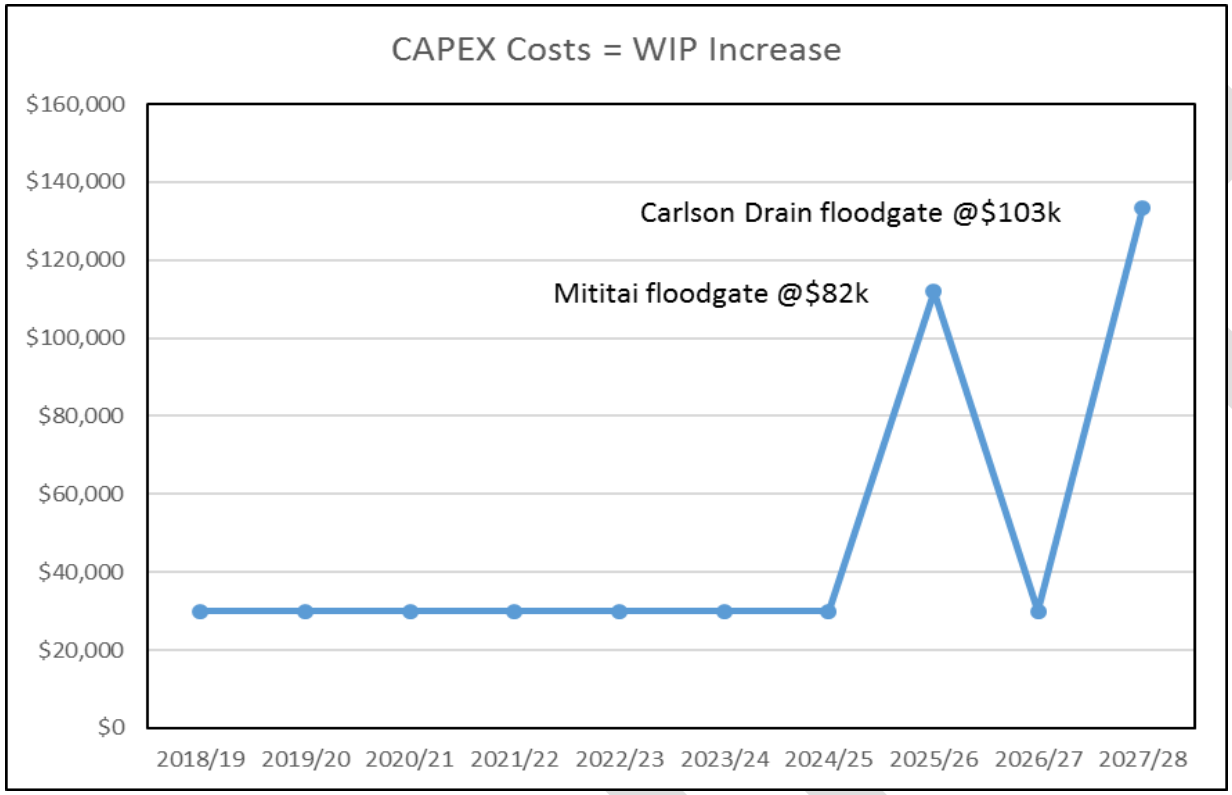


Figure 1-4: Capital works cost forecast



2 Strategic context

2.1 Purpose

The NALD networks represent a major investment by the various communities and is of vital importance to the quality of life of the respective district's residents and the sustainable management of both tidal and floodwaters. The community expectation that this investment in land drainage assets is secure and managed in a way which maximises return in terms of outputs and costs as reflected in the overall objective of AM, which is:

To meet the required level of service in the most cost-effective way through the creation, operation, maintenance, renewal and disposal of assets to provide for existing and future customers'.

The specific purpose of this AMP is to:

- Demonstrate responsible stewardship of land drainage assets;
- Manage risk of premature asset failure;
- Identify medium to long term financial requirements; and
- Identify long term issues and impacts and possible solutions for the land drainage assets.

The Local Government Amendment Act 2002 places an emphasis on prudent asset management. The Act requires local authorities to:

- Prepare and adopt, every three years, a (10 years plus) Council Long Term Plan (LTP) (was called the Long Term Council Community Plan LTCCP), which describes the local authorities activities, community outcomes and provides integrated decision-making and long term focus;
- In determining their LTP, consider all relevant information and assess the cost/benefit of options;
- Provide an opportunity for the public to participate in decision-making;
- Manage assets prudently in the interests of the district and its inhabitants; and
- Clearly identify significant forecasting assumptions and risks.

This AMP will provide the basis for identifying changes in service potential and determining long term strategies for NALD assets.

2.2 Service description and scope

The scope and approximate value of the assets covered by this AMP are shown in Table 2-1.

Table 2-1: Overview of assets

Land drainage northern area	Quantity	Sum of replacement value	Calculated average unit rate
Drains	118073	$ 4,319,879	$ 37
Floodgates concrete	17	$ 550,368	$ 32,375
Floodgates wooden	54	$ 1,247,253	$ 23,097
	total	**$ 6,117,500**	

This AMP covers a period of three years commencing 01 July 2018. All expenditure is based on unit costs as at 30 June 2016.

Council's LTP identifies Council's purpose in relation to land drainage as "To minimise the risks and impacts of flooding attributed to inadequate land drainage" and "To enhance the sustainability of agriculture through cost-effective maintenance and enhancement of drainage networks".

In order to achieve this purpose Council and the Northern Land Drainage Committees, through professional and physical works contracts, undertake the following:

- Asset management;
- Floodgate maintenance;
- Drain spraying and machine cleaning;
- Network operations and maintenance;
- Capital and refurbishment programme; and
- Consent monitoring.

2.3 Key issues

The key issues Council is currently managing as part of the land drainage activity are summarised below.

- Knowledge of the networks' capacity to adequately drain significant storm events is limited to observed performance during historical rainfall events. Historical evidence indicates that the network continues to provide the capacity for which it was designed;

- An assessment of the likely future demands on the drainage networks' capacity has also identified potential changes as a result of global warming having the potential to result in moderate to significant impacts on the drainage network and its ability to achieve its stated goals and levels of service;
- While there is a reasonable understanding of the hazards that exist relating to land drainage this has not been assessed in relation to criticality and this limits Council's ability to manage risk;
- Management of the land drainage systems is primarily focused on managing the flow of water under 'normal' and 'storm' conditions to maintain land productivity and prevent flooding. It is expected that management of water quality, and its associated impact on the receiving environments will become increasingly important in the future;
- There are numerous small land drainage schemes within the Northern Areas. This reflects the process of their creation over the years. There may be opportunities to amalgamate schemes or revise boundaries to generate efficiencies;
- Allocation of asset ownership and responsibility for maintenance, renewal and upgrading between the landowners, drainage district committees and Council's land drainage activity is not entirely clear or consistent across the schemes;
- The desired LOS to be achieved by the schemes is not well-defined and largely reflects acceptance of historical performance;
- The current condition, valuation and life expectancy of assets is not well understood and this adversely impacts on the ability to undertake future planning for capital works; and
- Asset information is incomplete within Council's asset information system. This includes the recording of maintenance activity as it is undertaken.

2.4 Relationship to community outcomes, Council policies and strategies

2.4.1 Broad planning context

The Local Government Act (LGA) provides an overall planning framework that Council is obliged to comply with. In broad terms this requires Council to engage with its community and stakeholders to determine what Council is to focus on achieving for the district. This is then translated to the types of activity Council will be involved in, the resources and assets it will need to provide for those activities and how this will be funded.

2.4.2 Long Term Plan (LTP)

This is developed, consulted and adopted every three years and covers the following three financial years in detail and provides indicative direction for the following seven years (10 years total). The next LTP will become operative on 01 July 2018. This process starts at a high level and works down to individual activities and the associated budgets and required rates and charges.

Council has adopted a new Vision Statement that includes specific reference to managing (maintaining and improving) its infrastructure.

The LTP 2018/2021 is still being generated. It is not expected that the role of land drainage will significantly change from the LTP 2015/2025 as repeated below.

Figure 2-1: Vision Statement

The Values: Ko nga uara

Our purpose is to make a positive difference for Kaipara. We aspire to work with:

Integrity

- ✓ We will do what we say we will
- ✓ We will act with good intent
- ✓ We will do the right thing in the right way

Team Work

- ✓ We will work together
- ✓ We will support each other

Delivering Value

- ✓ We will seek to understand needs and deliver to them
- ✓ We will apply our skills and knowledge for the benefit of others

Table 2-2: NALD services and community outcomes

NALD services contribute to the following Community Outcomes	How this service contributes
Safety and good quality of life	Minimise flooding of property through efficient land drainage practices. Ensure drainage paths and floodgates that are registered remain clear and unobstructed as designed. Ensure that land drainage systems do not present a safety hazard.
Sustainable economy	Minimise flood damage to properties by ensuring land drainage systems have adequate capacity.
Special character and healthy environment	Control flooding and flow of stormwater into the receiving environment, whilst protecting local interests.

This overall vision for the district provides a broad initial direction for the development of drainage priorities and how those assets may be managed. This information, along with community consultation and discussion with other interested parties contribute to the development of the community outcomes identified in the LTP. These outcomes have a direct influence on the management of the various water supply schemes.

The community outcomes that the drainage activity contributes to most are largely expected to be unchanged from the LTP 2014/2015 i.e.

What We Want To See

- *To ensure that stormwater flooding and discharge to the environment is contained and managed to minimise impacts on people, property and the environment.*

Why We Do It

- *To protect people, dwellings, private property and public areas from flooding by removing flood water;*
- *To discharge stormwater and collect contaminants in a manner that protects the environment and public health; and*
- *Council's approach to Land Drainage is to minimise the impact on arable farm land by reducing adverse effects from stormwater runoff on the environment.*

The drainage network is subjected to high intensity rainfall events.

The Level of Service

- *Drains will have the capacity to enable floodwater to recede within three tidal cycles, design Average Recurrence Interval (ARI) for rural areas is 10%;*
- *Stopbanks are 2.6m above Mean Sea Level leaving 0.5m above extreme high tide for the land drainage areas;*
- *All flood protection activities outside of the Raupo district are administered by informal community committees supported, where practical, by Council's Land Drainage Co-ordinator, in accordance with each Committee's request for assistance. Maintenance on privately owned stopbanks is undertaken by the landowner; and*
- *NRC is responsible for catchment management.*

2.4.3 Infrastructure Strategy

As part of the LTP, Council is required to produce a Long Term Financial Strategy and an Infrastructure Strategy for its major asset using activities. These documents are required to look out not less than 30 years to identify the issues and challenges that Council will face during that period, how Council would likely respond to them, what this will cost and where the funding will come from. This recognises the long lived nature of the infrastructure assets that Council utilised to provide services, the potential for technology and expectations to change considerably and the potential for expenditure to be quite 'lumpy' as assets enter their renewal cycles.

2.5 Stakeholders and consultation

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

Table 2-3: Stakeholders

External stakeholders	Interest
Kaipara district community	• Northern area land drainage district ratepayers; • Public safety; • Public health; • Protection of private property; • Environmental protection; and • Water quality of local harbours and ephemeral waterways for commercial and recreational activities.
Government agencies (e.g. Department of Health, Ministry for the Environment, Audit NZ)	• Adherence to government policies and framework; • Ensuring Council is transparent and accountable; • Public safety; and • Environmental health and protection.
Local Iwi	• Protection of historical relationship of Maori and their culture and traditions with their ancestral lands, water, sites, wahi tapu and other taonga.
Civil Defence and Emergency Management	• Understanding land drainage control and measures to ensure public safety, and to better understand flood issues within the local area.
Northland Regional Council	• Adherence to NRC policies and plans e.g. NRC – Regional Plan; • Environmental impacts and protection; • Protection and increase of water quality and water quality standards; and • Planning for climate change and sea level rise.
Maintenance contractor	• Maintain existing services; • Understand Council's LOS and their targets and requirements; and • Understand the local network and the Council's direction for the AMP period.

External stakeholders	Interest
Visitors to the district	• Public safety; • Environmental protection; • Minimal flooding and flood protection of tourist areas within the surrounding district; and • Quality of ephemeral waterways and harbours for recreational activities.

Internal Stakeholders	Interest
Local Board/Committee members	• Representing the interests of the land drainage areas; • Protecting drainage ratepayers' interests and ensuring the transparency of Councils' actions and projects; • Maintaining and managing the LOS to the community and ensuring that necessary works are completed on time and in the right order; • Planning future works; and • Maintaining water quality.
Mayor and Councillors	• Representing the publics interests and those of the greater district; • Protecting the ratepayers' interests and ensuring the transparency of Council's actions and projects; • Planning of future works; • Maintaining water quality; • Allowing for future growth and the provision of services; and • Maintaining and increasing LOS to the communities.
Finance Manager	• Understanding the financial implications of the AMP period and how this will affect rates and ratepayers of the district; • Ensuring the completeness of asset data and how this affects current valuations and council's investment confidence ratings; • Ensuring that budgets are valid and able to be adhered to; and • Protection of public interest in regard to spending on public assets.

Internal Stakeholders	Interest
Information Services Manager	• Ensuring that all information is recorded correctly; • Keeping track of assets and asset data; • Vested interest in completeness of asset data and value; and • Increasing the reliability of Council's asset registers
Records and Information Manager	• Ensuring Council's transparency on identified works; and • Retaining and cataloguing Council information for auditable purposes.
Northland Transportation Alliance (NTA)	• Protection of road assets from stormwater; • Planning flow of stormwater away from road assets; • Protection of road users; and • Identifying growth, renewal and LOS projects where stormwater and road asset projects coincide.

2.6 Community engagement

Council consults with the local land drainage committee members in the first instance who represent the greater community, if required Council will engage the public to gain an understanding of customer expectations and preferences. This enables Council to provide a LOS that better meets the community needs. Council's knowledge of customer expectations and preferences is based on:

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

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

As an example the following key survey results came from the 2016 satisfaction survey regarding the stormwater service:

- 81% of residents that are provided with a piped stormwater system, responded with being very/fairly satisfied with the stormwater service (82% in 2014); and
- 18% were not very satisfied (19% in 2012).

Currently the LOS for the NALD network is set by the landowners themselves. There is no current satisfaction survey information that is specific to the land drainage areas. The various scheme participants are believed to be generally comfortable with the service they are receiving and any issues come direct to the Council officer in charge. While this is not a robust and scientific process it has worked well for many years. As the effectiveness of the schemes directly impact on the protected properties in relation to access, property damage, stock safety and economic impacts the participants take a very real, and personal interest, in how the schemes perform. As Kaipara is largely a rural district the property owners have a very direct line of contact with their local councillors and it is clear that issues would quickly surface as they arise.

2.7 Potential significant negative effects

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

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

Table 2-4: 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 LOS of service is beyond the means of the community to afford.		✓	✓		The determination of an appropriate LOS for a land drainage scheme should be assessed on a case-by-case basis. This will be managed through consultation with the drainage committee and the community 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, however 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 viewpoint.
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 the presence of farm animals.	✓	✓	✓	✓	Chapter 6 of 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.

Identified significant negative effect	Cultural	Social	Economic	Environmental	Mitigation
Flooding Direct Impact Land drainage districts usually incorporate a large catchment area which has the capacity to generate large amounts of stormwater runoff and flows, this needs to be managed in a way that meets the required LOS and also protects the receiving environment.		✓	✓	✓	Within urban areas 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. Though the drainage areas are different form urban areas the methodologies are similar and they utilise different approaches to reaching the same goals. In this instance the bulk of floodwaters are managed through large open drains and canals which mainly self-clean with each tide. The effects of climate change on the district's weather patterns may result in a reduced LOS being provided by the drainage 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, this will start in the first instance with better recording of the current state of assets and the provision of a catchment management plan.

3 Level of Service (LOS)

3.1 Overview

Levels of Service (LOS) are performance related attributes that Council expects its assets to deliver to stakeholders. A key objective of an AMP is to match the LOS provided by the land drainage activity with agreed expectations of customers and their willingness to pay for that LOS. It is important to note that the LOS for the NALD schemes are essentially set by each committee as they accept differing LOS as they think appropriate. A large portion of the maintenance is completed by the landowners with KDC completing large scale works at irregular intervals as and when required upon consultation with affected stakeholders. If this was to change and KDC was to enforce a more consistent LOS, and a higher level of maintenance, then there will be a greater requirement for resources and funding to oversee, monitor and maintain the drainage areas.

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

The 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 LOS 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 Council wishes to achieve;
- **Best Practices and Standards** - specify the design and construction requirements to meet the LOS and needs of stakeholders; and
- **Willingness / ability to pay** – while statutory obligations, where defined, must be met, a key driver of the LOS definition is the cost of delivering a particular LOS and whether the community thinks this is justified.

The LOS that Council has adopted for this AMP reflect historical levels and may need to be modified depending on the outcomes of the LTP 2018/2028 consultation process. The adopted LTP performance measures are reported through the annual reporting process.

The AMIP includes an action for Council to continuously review its land drainage LOS to identify if there is further opportunity for improved efficiencies and/or best practice that can be incorporated into the service framework.

3.2 Legislative framework and linkages

The Land Drainage Northern Area AMP is related to national and local legislation, regulatory and policy documents as listed 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.

Table 3-1: 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 3-2: Relevant regulatory requirements

National policies, regulation, standards and strategies
The Government's Sustainable Development Action Plan
Code of Practice for Urban Subdivision
NAMS Manuals and Guidelines
Office of the Auditor-General's publications
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 • QV Cost Builder (Rawlinsons NZ Construction Handbook)

Table 3-3: Relevant Council planning and policy documents

Local Policies, Regulations, Standards and Strategies
Council District Plan
Council Long Term Plan
Land Drainage Asset Management Plan (previous versions)
Northland Regional Plan

Local Policies, Regulations, Standards and Strategies
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 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. These standards are also relevant for land drainage in respect to the stormwater design information and is supported by local knowledge and site specific designs. 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 current 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 Procurement Strategy and Policy Documents March 2012

Table 3-4: Relevant Council Bylaws

Council Bylaws
Land Drainage Bylaw

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

Particular elements of the above schedule that are relevant to the generation of the AMP are listed below. For consistency with the stormwater AMP many of the elements are expressed in terms of 'stormwater'. There is no material difference between stormwater and land drainage discharges.

Local Government Act 2002:

As per the LGA 2002:

3. The purpose of local government is –
    a. To enable democratic local decision making and action by, and on behalf of, communities; and
    b. To meet the current and future needs of communities for good-quality local infrastructure, local public services and performance of regulatory functions in a way that is most cost-effective for households and businesses.
4. In this Act, **good-quality**, in relation to local infrastructure, local public services, and performance of regulatory functions, means infrastructure, services, and performance that are –
    a. Efficient; and
    b. Effective; and
    c. Appropriate to present and anticipated future circumstances

This Act requires local authorities to:

- Prepare a range of policies, including Significance, Funding and Financial policies;
- Prepare an LTP at least every three years, which must identify:
    - Activities and assets;
    - How the AM 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; and
    - 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 (s121) that encompasses:

- the systems for supply of water and disposal of waste and stormwater (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)); and
- 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. 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 is 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

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 and Engagement 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 LOS options with the community and other relevant stakeholders.

Health and Safety at Work Act 2015:

The Act introduces a new term, “Person Conducting a Business or Undertaking” (PCBU), which captures employers, self-employed, principals to contracts, manufacturers, designers, etcetera who have the primary health and safety duties. Workers also have duties under the Act. Workers include employees and contractors, the PCBU must ensure that its duties are carried out as per subpart 2 – Duties of PCBUs of the Act.

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 as-builts 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 RMA 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 RMA. 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; and
- 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; and
- 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 Council's strategic planning function. This AMP supports and justifies the financial forecasts and the objectives laid out in the LTP. It also provides a guide for the preparation of each Annual Plan and other forward work programmes.

3.3 Industry standards and guidelines

The Department of Internal Affairs (DIA) has generated a range of mandatory measures that must be reported on for the various water services. The KDC LOS measures align with these requirements. This requirement is intended to provide for more transparent and consistent reporting across the country. The measures are also incorporated into the WaterNZ National Performance Review process. A summary of the DIA requirements follows:

Figure 3-1: Extract from DIA Rules

Flood Protection Non-Financial Performance Measures Rules 2013
Performance measure one (maintenance of works): The major flood protection and control works that are maintained, repaired and renewed to the key standards defined in the local authority's relevant planning documents (such as its activity management plan, Asset Management Plan, annual works programme or Long Term Plan).

3.4 Proposed LOS – customer and technically focused

Table 3-5: LOS targets

Measuring Performance – Note that these measures are intended to be somewhat subjective and variable across the various NALD schemes					
What the community can expect from Council	**How Council measures this**	**LTP Year 1 Target 2018/2019**	**LTP Year 2 Target 2019/2020**	**LTP Year 3 Target 2020/2021**	**LTP Years 4-10 Target 2021/2028**
Drains will have the capacity to enable floodwater to recede within three tidal cycles, design ARI for rural areas is 10%. Stopbanks are 2.6m above Mean Sea Level leaving 0.5m above extreme high tide for the northern land drainage area.	The number of schemes maintained to their full service potential.	100% of schemes maintained to ensure that they provide protection to the agreed standard and the scheme assets are maintained as established in the adopted AMPs.	100% of schemes maintained to ensure that they provide protection to the agreed standard and the scheme assets are maintained as established in the adopted AMPs.	100% of schemes maintained to ensure that they provide protection to the agreed standard and the scheme assets are maintained as established in the adopted AMPs.	100% of schemes maintained to ensure that they provide protection to the agreed standard and the scheme assets are maintained as established in the adopted AMPs.
All flood protection activities outside of the Raupo district are administered by informal community committees supported where practical, by Council's Land Drainage Co-ordinator, according to each committee's request for assistance. Maintenance on privately owned stopbanks is undertaken by the landowner.	Non-performance of drainage network due to poor monitoring or maintenance causing an inability to contain a 1:5 year flood as measured by public feedback i.e. service requests that result in additional cleaning to drains needed.	< 5 service requests per year.	< 5 service requests per year.	< 5 service requests per year.	< 5 service requests per year.

Measuring Performance – Note that these measures are intended to be somewhat subjective and variable across the various NALD schemes					
What the community can expect from Council	**How Council measures this**	**LTP Year 1 Target 2018/2019**	**LTP Year 2 Target 2019/2020**	**LTP Year 3 Target 2020/2021**	**LTP Years 4-10 Target 2021/2028**
	Council inspection of drainage network to ensure that a 1:5 year flood is contained by the network.	Twice yearly inspections.	Twice yearly inspections.	Twice yearly inspections.	Twice yearly inspections.

Figure 3-2: Summary of LOS Achievement from Annual Report 2016/2017

Levels of service statement	Performance measures	Status	Comments
Reliability Monitor drainage of rivers and streams. Ensure minimal flood risk and coastal erosion to the community.	The number of schemes maintained to their full service potential.		Achieved
	Council inspection of drainage network to ensure that a 1:5 year flood is contained by the network.		Not achieved Lack of resourcing meant that in some schemes inspection only occurred once this financial year
	Targeted maintenance of the stopbank system in the Raupo Drainage District to prevent tidal flows from inundating private property during high tide and/or when the river is in flood.		Achieved

3.5 Strategies for achieving service levels

To achieve the desired LOS specific improvements and management processes will be implemented.

3.5.1 System adequacy

This largely reflects the capacity of the system to capture and convey the flows arising from extreme weather events without damage occurring to habitable floors or arable land and also to achieve effective drainage of the land under normal circumstances. This is not well-defined across the district and it is intended to undertake a number of high level studies to determine the overall characteristics of the land drainage schemes and their susceptibility to storms and the potential impacts of climate change. This will identify capacity shortfalls, works that should be undertaken and also minimum floor levels that should be adopted for any new construction inside the land drainage boundaries.

There are two primary elements to the discharge of land drainage and floodwater and KDC has limited capability to influence either at this time:

- Water Quality – Floodwater discharges collect and convey whatever contaminants are on the ground surface into the receiving waterways. This includes gross contaminants such as rubbish, drink-bottles etcetera, biological contaminants such as e-coli, chemical contaminants such as zinc, fertilisers, etcetera and particle contaminants such as clay.

  There is a range of technologies available to reduce these contaminants including chemical treatment, physical filters and settling ponds together with natural processes that focus on reducing flow velocities, maintaining ground cover and encouraging natural filtration by directing flow through planted areas. These tend to work best with less intense storms when volumes and flow rates are lower.

  KDC has limited resourcing in this area with the main direction coming from the land drainage committees themselves. The main focus is currently on removing flood waters as soon as possible and not relying on retention/detention structures within the existing flow paths. There are currently no detention ponds within the drainage districts and there is no requirement or focus on implementing these at this date.

  While KDC supports a greater focus on water quality it can only be implemented where practicable and is not always possible in every situation. The members and stakeholders of the land drainage schemes understand and promote water quality but temper this with the requirement to allow floodwaters unfettered access to the discharge points to maintain the current levels of service to the greater community.
- Flow Rates – A discharge consent could specify flow rates for a particular return period storm however KDC has very limited capacity to influence this.

3.5.2 Response times

There are three key steps to achieving the target service levels for this consideration:

- Defining appropriate measures and targets – This is often defined by the following acronym and requires all elements to be in place to be successful. This applies to all targets defined by a LOS process.

- Alignment with maintenance contracts and staff performance objectives – Response time targets are a key deliverable in maintenance contracts and there needs to be a direct alignment between the targets identified in any LOS process and the targets identified in the maintenance of the land drainage district. Similarly, if customer response forms a defined part of the role of a staff member this should be reflected in the performance objectives of this person.
- Contractor and organisational performance –The contractor must have effective measurement and reporting processes in place that allows accurate and timely reporting of actual performance against the contract specification for response times. For performance to be managed effectively requires regular reporting of performance and follow-up of any under-performance with a view to bringing it into compliance. This may be through bonuses and penalties built into the contract or the exercise of enforcing the contract. The latter might ultimately lead to the cancellation of the contract if the required performance is consistently not being achieved. Similarly, the performance of staff members in relation to response times also needs to be tracked if these measures are to be reported on be a focus for achievement.

3.5.3 Customer satisfaction

This is a much more difficult measure to influence as it reflects the customers overall perception of the quality of the land drainage service that they receive or experience. This will be heavily influenced by whether or not they have had a recent or historical personal experience (and the outcome of that), the unpredictable frequency and magnitude of storm events that have occurred in the survey period and overall satisfaction with the conduct of Council (via personal experience, experience of others and media coverage) and their understanding of how the land drainage system works, and its associated limitations. Feedback (both positive and negative) is most valuable when it identifies the specific reason for that view.

The management of the land drainage districts requires a high level of interaction between the local famers and committees and Council. If this is not working to the satisfaction of the local communities this will become evident quickly through complaints to Mayor and Councillors and Council management. Some moderation of this may be required to distinguish between the complaints of a particular aggrieved person and the overall perceptions of affected parties within that scheme, and their willingness to address the specific complaints.

4 Drivers of change

4.1 Overview

This section of the AMP analyses factors affecting demand including population growth and social 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; and
- Council is able to respond to customer needs.

4.2 Growth and demand change

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 land drainage 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 land drainage infrastructure is a difficult undertaking. This AMP has largely been based on historical data and growth predictions provided by Statistics New Zealand in order to identify potential future demand on the land drainage infrastructure. While this may not specifically affect the NALD, growth across the district, how it impacts on asset investment and the likely changes to the current LOS are directly relatable. The largest portion of this undertaking will be to formulate an appropriate response to climate change and sea level rise.

The impact of growth is currently managed in multiple ways:

- **Regulatory control**

Integrating the land drainage management objectives in all new projects from initial planning and design stages. This is the basic approach of Council's Engineering Standards 2011.

- **District Plan (DP)**

The DP is the legal framework that is used for land use planning.

- **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 NALD will need to follow a similar approach where possible to enable KDC and the committees to better understand the drivers and effects climate change will have and how this impact the current system. This will allow for better planning and implementation of flood protection methodologies.

- **Education**

Education is an important tool for providing property owners with an understanding of their role and responsibility for managing their private 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 and work 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 and may be added to the AMIP. Education promotes environmental awareness of the effects of activities such as intensive land applications, where contaminants may enter the drainage system, and thus the receiving environment.

The components of demand management are shown in Table 4-1.

Table 4-1: Examples of LD demand management strategies

Demand component	Land drainage examples
Operation: Looks at LOS provided by the infrastructure and the application of Best Practice Options for sustainable long term management.	Maintaining the existing land drainage network through the application of efficient operations and maintenance will ensure that the current LOS is met whilst also identifying and highlighting any issues across the district. The better the network is maintained the more efficient it is. Integration of any National and International standards for land drainage design into Engineering Standards documents.
Design: Progressive updating of standards allow for better land drainage design and management, Low Impact Design (LID) and treatment at source.	Application of LID as per existing standards and improving technology allow for better stormwater management, reduced peak runoff and better water quality. Integration of improved technology and increased awareness of changes to stormwater management can

Demand component	Land drainage examples
	be achieved through attendance at conferences and allowing consultants to raise any improvements they feel will better suit environmental needs. This will ensure that the best solution to meet the required land drainage LOS will be constructed whilst also maintaining focus on environmental improvements and water quality.
Incentives: Encourage the application of LID throughout the community, soakage, rain gardens and other source treatment options.	Community education and interaction to promote the use of flow calming, detention/attenuation ponds and other source treatment options. This will enable the mitigation of damage from peak flows and to allow for water quality treatment prior to the discharge to the receiving environments.
Community Education/Interaction: Develop partnerships with the communities in the district.	Production of Engineering Standards to aid development in the selection of the Best Practicable Option for land drainage management. Working with schools and engaging the community at an earlier level to promote water health.
Connection Denial: Regulation of connections to the public system to promote long term stability.	Where development occurs within the urban areas of the land drainage districts, 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. This will help mitigate any large flows directly impacting on the current land drainage network.

4.3 Population growth

4.3.1 Overall growth scenario

Statistics New Zealand issued revised population *projections* on 22 February 2017, using an estimated resident population at 2013 as the new base.

The LTP 2014/2015 assumptions used the high growth scenario with population projections of:

- 20,000 in 2016 - already exceeded by the 2013 base of 20,500;
- 21,400 in 2026 - a figure now expected to be exceeded three years earlier in 2023 by even the updated low growth scenario of 22,600; and
- 22,000 in 2031 - a figure now expected to be exceeded three years earlier in 2028 by even the updated low growth scenario of 22,800.

In moving to the latest 2017 projections data, a decision needs to be taken on whether to continue to use the high growth scenario or to use lower growth options. The annual average population increases under the three scenarios are:

- High - population increase of 8,300 over 30 years = 276 persons per annum;
- Medium - population increase of 4700 over 30 years = 157 persons per annum; and
- Low - population increase of 1,200 over 30 years = 40 persons per annum.

Even the recently updated Statistics New Zealand *high* growth scenario of 276 persons per annum is below the average of 315 persons per annum seen from 2006 to 2016. If one assumes some moderation of the 2006/2016 highs due to the cyclic nature of economic development and growth, then use of the updated *high* growth scenario is reasonable. This is supported by the increasing influence of Auckland over time, particularly in the southern part of the district, which should see sustained population growth over time.

The assumption is that population growth will be in line with Statistics New Zealand's 2013 base high series projections which will see population increases of:

- 2,900 (12.5%) from 23,100 to 26,000 between 2018 and 2028; and
- 2,000 (7.7%) from 26,000 to 28,000 between 2028 and 2038.

The Statistics New Zealand projections show the population growth rate slowing in all regions, cities, districts of New Zealand, including Kaipara district, between 2018 and 2038 because:

- all areas will be home to more people aged 65 years and over by 2038; and
- deaths will increase relative to births in almost all areas as the population ages.

4.3.2 Population growth distribution

It is expected that most population growth will continue to occur in the southern part of the district.

The table below shows shares of district growth over various time periods. With reference to the LTP 2018/2028 timeframe, it shows:

- Dargaville taking 10.7% of district population growth, growing by 310 persons to reach a population of 5,330 by 2028;
- a 76.2% share of district population growth (2,210 persons) occurring in the southern half of the district with rural Rehia-Oneriri growing by 900 people (31.0%) and the combined Mangawhai CAU's growing by 1,160 people to reach a population close to 5,000 (40%) taking the bulk of that growth;

- relatively low shares of growth in the smaller urban CAU's of Ruawai (0.3%), Kaiwaka (2.8%) and Maungaturoto (2.1%) totalling just 150 persons although there will be considerable growth in the rural area around them; and
- continued low shares of district growth (14.5%) in the north and northwest, totalling 420 persons.

4.3.3 Population fluctuations

A significant proportion of unoccupied dwellings in the district become occupied during holiday periods. At the time of the 2013 Census an average 26% of dwellings (2,764 of 10,681) were unoccupied. Rates of unoccupied dwellings in Te Kopuru (10.6%), Maungaru (6.5%), Dargaville (7.2%), Maungaturoto (10.0%), Ruawai (11.4%), and Kaiwaka (13.3%) are lower and likely reflect normal rates of vacant dwellings at any given time of the year. By contrast, Kaipara Coastal (27.3%), Rehia-Oneriri (24.8%) and Mangawhai (52.7%) have significantly higher vacancy rates and are likely to see population fluctuations as vacant homes are occupied in holiday periods.

In an effort to estimate the scale of population fluctuation:

Assume occupancy of up to 100% of dwellings in Kaipara Coastal, Rehia-Oneriri and Mangawhai during holiday periods:

- for normally unoccupied dwellings in these areas, assume occupancy of 0.5 persons per dwelling above the 2013 average occupancy in Kaipara Coastal, Rehia-Oneriri and Mangawhai during holiday periods to take account of families with children and guests, which are likely to result in higher average occupancy than normally occupied dwellings; and
- assume no change in dwelling occupancy in Maungaru, Dargaville, Te Kopuru, Ruawai, Maungaturoto and Kaiwaka during holiday periods.

Using the 2013 base data, the usually resident district population of 20,600:

- could have risen during holiday peak times by over 7,000 persons (7,111) to 27,600, an increase of 35%; and
- just under half of that increase was in Mangawhai, gaining 3,400 persons at peak, an increase of 131%.

If the same percentage increases are applied to the 2018 and 2028 population assumptions:

- the resident district population of 23,100 persons in 2018 could increase by 8,013 persons during peak holiday periods to over 31,000;
- the resident district population of 26,000 persons in 2028 could increase by over 9,000 persons during peak holiday periods to over 35,000;
- as Mangawhai grows from a usual resident population of around 3,700 in 2018 to around 4,890 in 2028 its population could fluctuate up to 8,610 in 2018 (an increase of 5,000 at peak) and 11,287 in 2028 (an increase of 7,200 at peak).

4.3.4 Dwelling growth

The 2015 assumption is that dwelling growth rates will be more or less consistent with rating unit growth projections. As well as using the rating data as a source and for comparison it is useful to take the SNZ generated population growth assumptions and assess:

- The number of dwellings required to accommodate the usual resident population; and
- Apply an additional unoccupied dwelling component for holiday homes and vacant dwelling stock using 2013 Census occupancy rates.

The assumption is for steady to strong dwelling growth in LTP decade 2018/2028 moderating in the 2028/2038 decade as population growth rates begin to slow with an aging population. Projections indicate:

- Nearly 2,000 (1,912) additional dwellings will be built in the district over the LTP 2018/2028 period; and
- Another 1,400 built between 2028 and 2038.

The largest amounts of dwelling growth will be in:

- Mangawhai CAUs with over 1,000 dwellings delivered in the LTP 2018/2028 period and another 900 dwellings by 2028;
- Rehia-Oneriri CAU, covering much of the southern part of the district, is expected to see ongoing strong growth (450 dwellings in LTP decade 2018/2028 and over 300 more dwellings out to 2028); and
- Dargaville is expected to gain 130 dwellings over the LTP period and 70 more homes built in the following decade to meet a modest growth in population.

4.3.5 Most likely scenario

The following table shows the projected scenario for population change across the larger Kaipara communities. These projections are from Statistics New Zealand using population data from the 2013 Census as a base. Statistics New Zealand provides low, medium and high series projections; KDC has chosen to use high level projections.

Table 4-2: Annual rating unit growth forecasts 2017

Projected population of territorial authority areas														
2013(base)–2043 update														
Territorial authority area [1]	Projection [2]	Population at 30 June							Population change 2013–43	Population change 2018–28	Population change 2028–38	Percentage share of District growth 2013-43	Percentage share of District growth 2018-28	Percentage share of District growth 2028-38
		2013 [3]	2018	2023	2028	2033	2038	2043	Number 2013-43					
Kaipara district	High	20,500	23,100	24,600	26,000	27,100	28,000	28,800	8,300	2900	2000			
High growth projections by CAU														
504400 Te Kopuru		510	540	560	580	590	610	620	110	40	30	1.3%	1.4%	1.5%
504501 Kaipara Coastal		3190	3370	3470	3560	3610	3610	3570	380	190	50	4.6%	6.6%	2.5%
504502 Maungaru		1820	1950	2050	2140	2220	2280	2310	490	190	140	5.9%	6.6%	7.0%
504600 Dargaville		4610	5020	5180	5330	5440	5500	5530	920	310	170	11.1%	10.7%	8.5%
504700 Maungaturoto		810	920	950	980	1000	1010	1030	220	60	30	2.7%	2.1%	1.5%
504800 Ruawai		470	490	490	500	510	530	540	70	10	30	0.8%	0.3%	1.5%
504900 Kaiwaka		640	700	740	780	830	860	900	260	80	80	3.1%	2.8%	4.0%
505010 Rehia-Oneriri		5840	6510	6980	7410	7770	8060	8310	2,470	900	650	29.8%	31.0%	32.5%
505021 Mangawhai		1430	2060	2400	2710	2990	3240	3460	2,030	650	530	24.5%	22.4%	26.5%
505022 Mangawhai Heads		1170	1670	1930	2180	2400	2580	2750	1,580	510	400	19.0%	17.6%	20.0%
615302 Inlet-Mangawhai Harbour		0	0	0	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
Mangawhai combined CAUs	2,415	2,600	3,730	4,330	4,890	5,390	5,820	6,210	3,610	1,160	930	43.5%	40.0%	46.5%

There are currently no identified growth driven capital projects for Land Drainage over the next three years. Where infrastructure is installed, this will likely be installed by landowners.

4.4 National Policy Statement on Urban Development Capacity 2016

This policy statement requires all councils to provide for growth to occur in their areas such that a lack of 'development infrastructure' (which includes water services) is not an impediment to that growth.

There are no communities in Kaipara larger than 30,000 population experiencing high rates of growth and so compliance only with requirements PA1-4 is required. Broadly these can be summarised:

- for expected growth in the period from now to three years, the land and development infrastructure has to be feasible, zoned and serviced (or able to be serviced if it is developer responsibility);
- for medium term growth (3-10 years) the land does not need to be serviced but plans to service must be included in the LTP; and
- for long term growth (10-30 years) the land does not need to be serviced but provision to do so needs to be included in the Infrastructure Strategy.

In practical terms, it is difficult for Council to predict when a land drainage district might wish to make changes to the way the scheme is configured, its performance or its coverage.

The approach adopted by Council is therefore to engage with the land drainage communities and seek a co-ordinated approach that will provide for the development on a 'just in time' basis and with confidence that any works required are financially feasible for both the developer and Council.

4.5 Increase in land drainage services

With the proposed changes to the climate and sea level there is already growing concern regarding the current levels of service of the NALD and how this will be affected. It has already been proposed that a catchment wide hydraulic assessment will need to be conducted for the Raupo land drainage district to identify the changes in rainfall and expected runoff, and how this will be affected by sea level rise and what the repercussions to the current land drainage district may be. This is not yet proposed for the northern area land drainage but it is a tool that may need to be utilised as and when applicable to identify possibly affected areas within the existing schemes and how this will be able to be managed. This will also raise the question as to whether it will be appropriate for Council to maintain the current protection levels or to 'retreat' to higher ground or to adopt a lower LOS.

Another potential driver of change is conversion of the current faming land use to a different form and/or intensification of the current use. This will primarily be driven by the overall economics of farming and the costs and benefits of changing the status quo. There is no discernible change occurring at this time and the potential impacts for the future cannot be determined. This remains a subject to be canvassed with the landowners from time to time.

4.6 Technological change

Historically the methodology for dealing with floodwaters was to collect it in large open drains and canals and discharge this through floodgates as soon as possible to remove this from the workable land. It is also noted that the current drainage districts are situated in such a way that the time of concentration allows for large volumes of floodwaters to be conveyed through the floodgates between tides before larger flows from the rear of the catchment make it to these points. This allows

for the stakeholders' properties to remain mainly free of floodwaters whilst the floodwaters flow in a controlled manner into the receiving environment. Discharges are mainly made direct to the receiving environment with little capture of the potential contaminants that they may contain, or consideration of 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 floodwater. This typically involves implementing solutions that mimic the natural environment prior to development, and managing the impacts on the receiving environments.

Such advancements in floodwater 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. Council also 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 identify emerging trends and their impact on the utility infrastructure assets.

Although as stated above there have been advances in stormwater management, and how this can be implemented in either a limited capacity or on a larger scale, the terminology and engineering behind these practical solutions is also applicable to land drainage. While there will still be a greater reliance on large canals and waterways to remove the peak flows, riparian planting, detention ponds and other source treatment options will still remain options when trying to manage water quality.

This can be achieved through Council staff attending conferences, seminars and presentations along with seeking advice from professional advisors. Consultation with the public and affected stakeholders will help Council implement better systems and more practical solutions into the current land drainage networks to help provide a better service to the community and cleaner water to the receiving environment.

4.7 Legislative change

Legislative change can significantly affect the Council's ability to meet minimum LOS, and may require improvements to infrastructure assets. Changes in environmental standards, and the RMA 1991, may affect stormwater discharge requirements.

In addition, changes in legislation can influence the ease with 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 RMA. 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.

The NRC is in the process of finalising the plans and policy surrounding proposed seal level rise and climate change. Once this has been formally adopted KDC will prepare and adopt any changes required to its standards and District Plan to meet the new requirements.

4.8 Environmental considerations

4.8.1 Focus on water quality

Environmental considerations are an ever-changing issue. As such, there is a requirement for Council to provide the best service it can with the most up-to-date information.

Public perception of the impact of stormwater on the natural environment has altered noticeably over the last decade and has turned towards treating stormwater at the source and maintaining the quality of the harbours and waterways. The quality of stormwater runoff therefore has a significant impact on the quality of the receiving environment, being streams and rivers.

Council, the NRC and communities are dedicated to protecting receiving environments, to protect it for future generations and to improve on the existing state. 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 current Engineering Standards and community education); and
- 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 land drainage management devices; and
- greater application of LID in the overall land drainage management on a catchment basis.

Figure 4-1: NRC commentary on recreational water standards

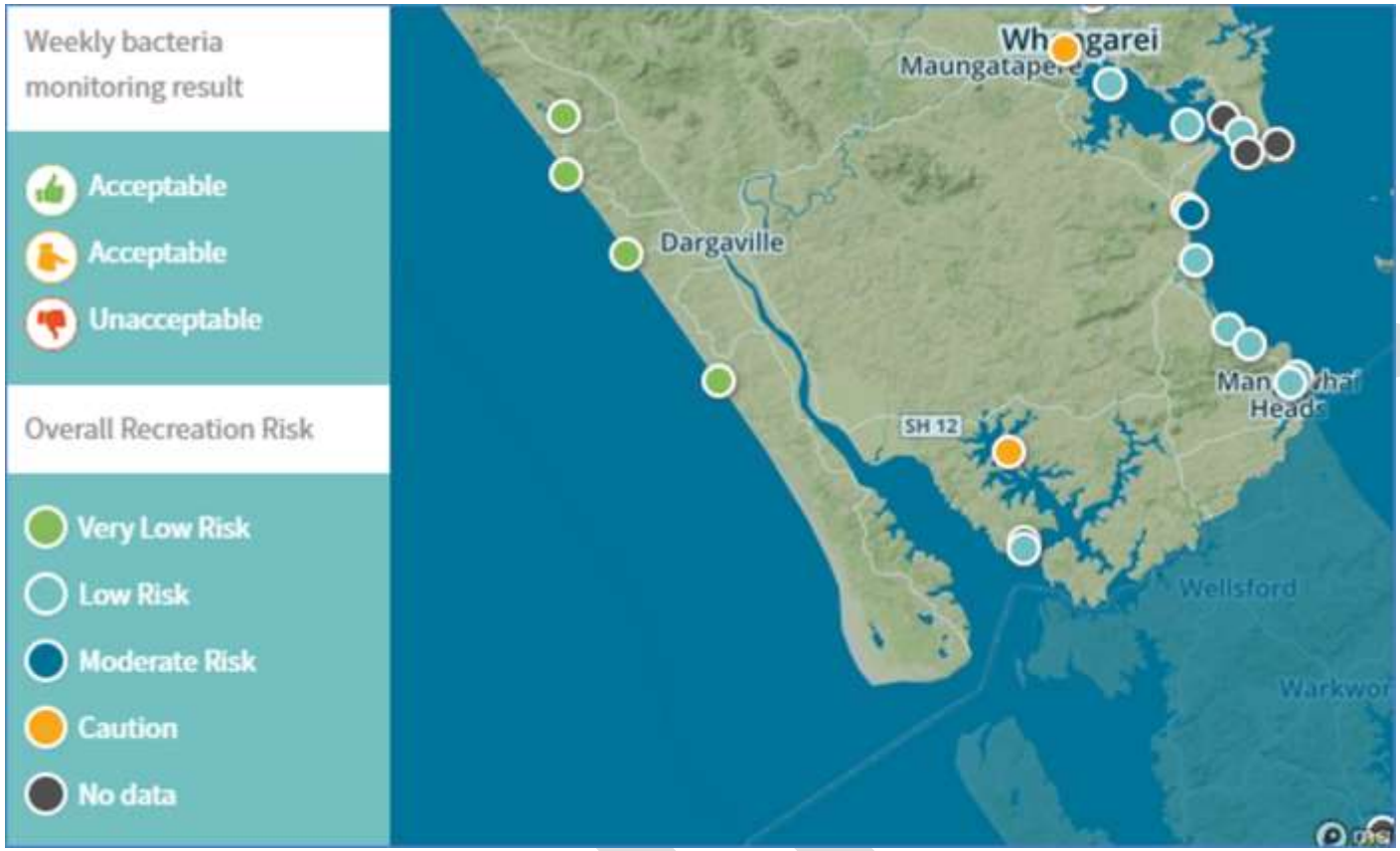
Okay to swim at most popular swim spots; NRC

The vast majority of Northland's most popular coastal swimming spots – and most of their freshwater equivalents – are suitable for swimming all or most of the time, regional council data shows.

Council Environmental Monitoring Manager Jean-Charles Perquin says hundreds of water samples were collected from 44 popular coastal and 13 freshwater summer swimming sites between late November last year and late February.

The annual water testing looks for bacteria used to gauge the risks of contracting gastrointestinal and other infections while using popular beaches, rivers and lakes for swimming, water sports and other forms of recreation.

Mr Perquin says 99.1 percent (606 out of 611) samples at coastal sites and 89.4% (161 out of 180) samples at freshwater sites over summer met national 'guideline values', meaning they were considered suitable for swimming.



4.8.2 Climate change

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

[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

Some of the potential impacts of climate change on 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 LOS capacity, due to increased overall rainfall and raised groundwater tables;
- increased coastal flooding through higher tide and surge levels;
- increased flooding due to higher tides and rainfall breaching existing stopbanks;
- increased flooding due to higher low tide levels retaining stormwater and inundating an existing system by removing the ability for it to drain completely;
- potential overwhelming of existing treatment devices leading to increased contaminant loadings in the receiving environment; and
- 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) maintains rainfall monitoring through an automatic station in Dargaville.

Although the definitive effects of climate change are not known at this time 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 MfE 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.

The following table is an extract from the MfE publication and highlights the potential effects of climate change on stormwater networks.

Table 4-3: Effects of climate change on land drainage

Resource	Key climate influences	Impacts of climate change
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.

Resource	Key climate influences	Impacts of climate change
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, this will have an as yet unquantifiable effect on existing land drainage and flood protection systems. Coastal erosion is likely to be accelerated in areas where it is already occurring. Erosion may become a problem over time in coastal areas that are presently either stable or are advancing. Rise in sea level at low tide will directly impact the drainage networks capacity to drain floodwaters.

With climate change and predicted sea level rise KDC will need to alter its focus and the considerations around flood levels, stormwater discharge and consented discharge limits to match the requirements from NRC, the change in public expectations and the altering natural environment.

Council manages the impact of urban growth and development on the stormwater infrastructure and receiving environment through the application of Stormwater Catchment Management Plans (SWCMPs) and planning provisions set out in the District Plan. As such a similar approach can be taken with the land drainage schemes to accurately capture and identify the effects of climate change and sea level rise on the existing land drainage network and propose methods of remediation.

The functions of an SWCMP include:

- Assess stormwater management of the wider catchment and not just the development site;
- Integrate with District Plans 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) including the potential impacts of climate change; and
- Identify mitigation options for the stormwater network.

The outputs from the SWCMPs can be used to define capital works programmes and inform future planning to meet the changes in environmental considerations and help focus on the LOS that will be required.

4.9 Summary of drivers of change

The following table provides a summary of how the above issues will impact on the management of NALD assets.

Table 4-4: Summary of issues impacting on LD

Issues	Impact on stormwater assets
Population growth	Increased urbanisation, and a greater tourist population, will mean that the land drainage protection will need to include these drivers in their future capability. This may require a focus is protecting the road assets and also providing for other amenities such as cycle trails.
Technical change	The changes in the technical approach to stormwater management, including regulatory and statutory requirements will impact on the future design of land drainage assets. It is unlikely that retrospective design will be required, however, the renewing or provision of any 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 land drainage network.
Customer expectations	Council's current Engineering Standards include the LOS for stormwater management and some of these requirements will become more applicable to land drainage. Customer expectations will necessarily be a blend of the expectations of the wider community and the specific expectations of the stakeholders involved in the various land drainage schemes.
Environmental considerations	It is likely that environmental considerations to protect the natural environment will become more important and regulated. This will also arise from technology changes and customer expectations. With increasing focus on water quality more wetlands and other water treatment options are being asked for as a design consideration.
Climate change	The potential impacts of climate change on the land drainage design to the year 2090, is provided for within the current 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 New Zealand central government when this data is released.

5 The Assets: extent and valuation data

5.1 Asset description

Council has been involved with land drainage from the day its predecessor was formed in 1876. Over the years there have been 37 drainage schemes formed so that subsidised works could be carried out to either maintain or construct drainage works. The subsidies were from Government departments at the time that controlled the river control subsidies works.

At one stage the drainage schemes were disbanded and the entire district was rated to cover the costs for the individual drainage schemes. Individual schemes were later re-established and form the system we have today where the drainage schemes are rated on the contributing catchment.

There are now 28 land drainage schemes lying outside the larger Raupo land drainage scheme with their own gates, stopbanks and maintenance requirements.

The land drainage schemes below are managed by KDC in conjunction with local stakeholders. There are also several drainage schemes without any hard infrastructure. For example, Tangowahine Valley and Manganui River are rivers that are maintained by KDC in conjunction with local stakeholders, spraying and cleaning of the banks as required,

The disbanded drainage schemes outlined below are the ones known to KDC that were not reinstated in the 1980s when the rest of the schemes were re-established, Tangaehae and Waimamaku were disbanded recently at the stakeholders' request but with remaining funds going towards a discharge consent around the areas where the existing privately managed drains and canals are located.

The oldest record found on drainage schemes is as follows:

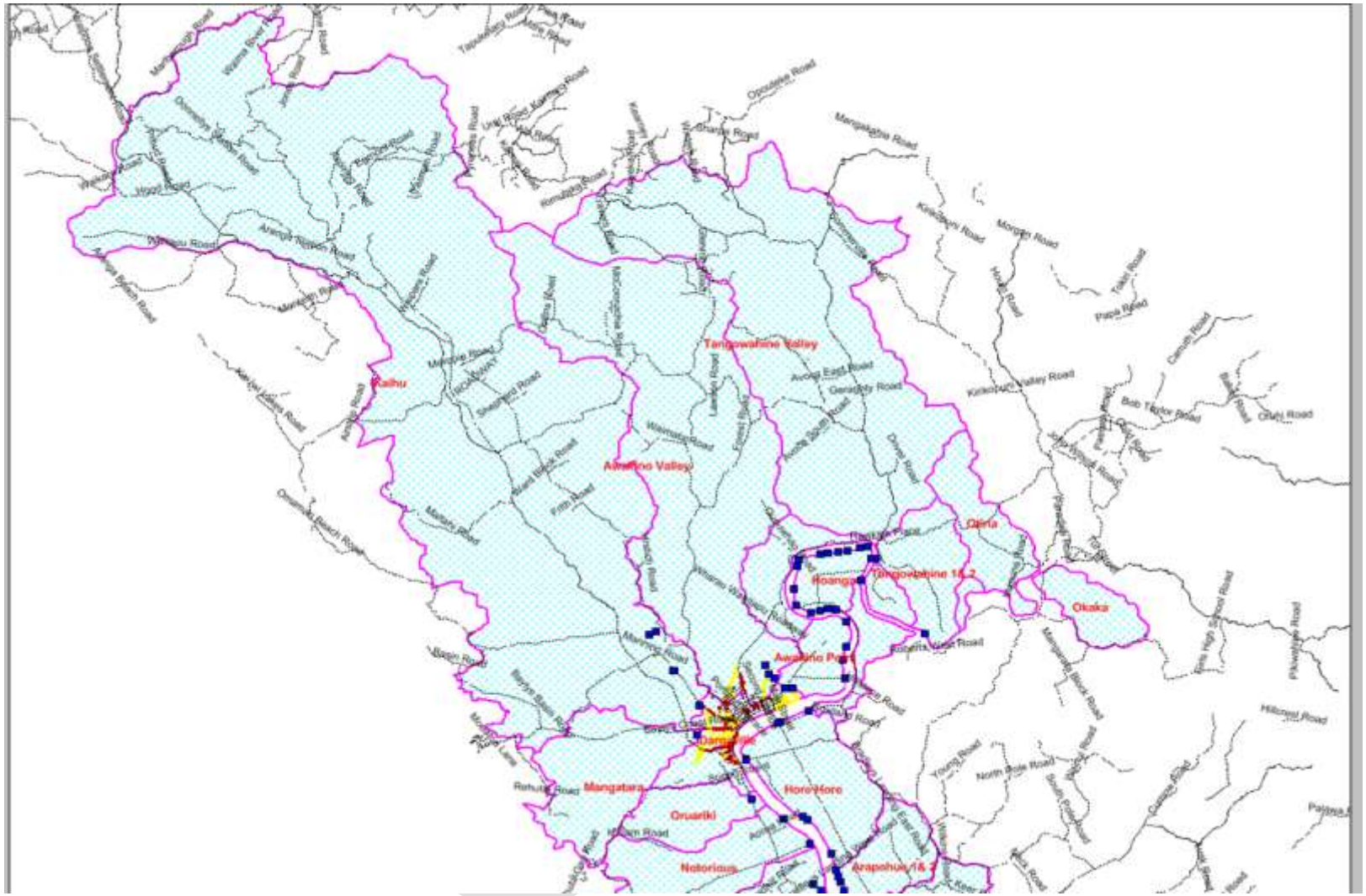
"21 April 1897

7 Tatarariki Drains and Cleaning

Chairman proposed seconded by Councillor Bassett that in reply to letters written by Alex Andrew and John Thompsons asking to have Cobbald's outlet cleaned out they both be informed that the Council do not acknowledge any liability in the matter and suggest that they combine with other sectors interested in getting their drains cleaned out when the Council will be prepared to assist with a small subsidy and the Clerk write to the Manager of the Kauri Timber Coy at Te Kopuru pointing out that some assistance should be given to clean the Kopuru Creek owing to the company having logs and dam in the creek.

CARRIED"

Figure 5-1:——————————————— Location of land drainage schemes



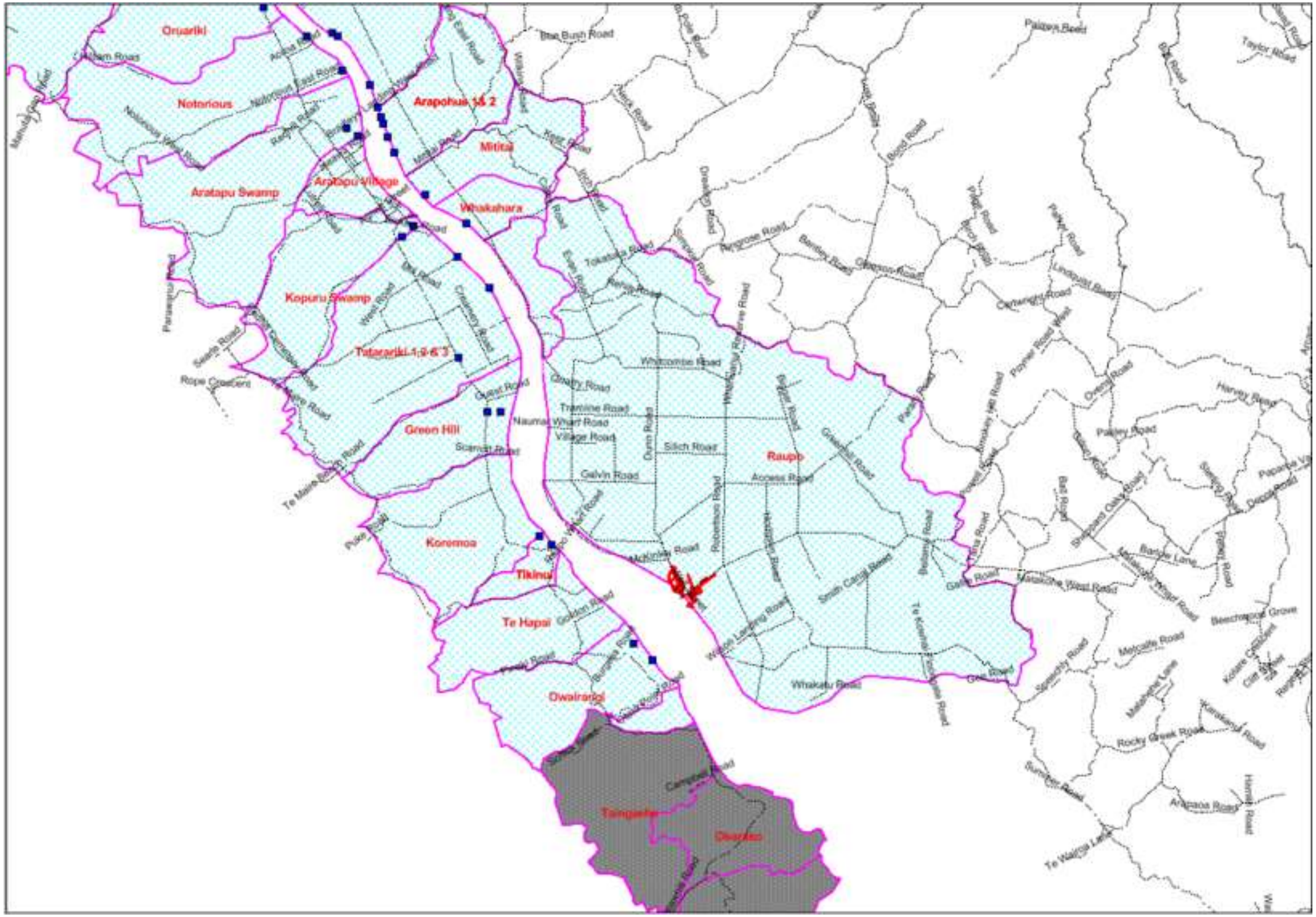

Oruariki
Notorious
Arapohue 1& 2
Mititai
Aratapu Swamp
Aratapu Village
Whakahara
Kopuru Swamp
Tatarariki 1,2 & 3
Green Hill
Koremoa
Tikinui
Te Hapai
Owairangi
Raupo
Blue Bush Road
Whitcombe Road
Tramline Road
Village Road
Silich Road
Galvin Road
Access Road
Dunn Road
McKinley Road
Smith Canal Road
Whakatu Road
Metcalfe Road
Rocky Creek Road
Rope Crescent

Table 5-1: Current status of northern area LD districts

Drainage scheme	District number	Floodgates	Length of drains (m)
Active land drainage districts			
Aoroa	J10	2 (wooden ?x?)	2,032
Arapohue Nº.1	J11	1 (wooden 1.3 x 0.9)	2,050
Arapohue Nº.2	J12	2 (wooden 1.2 x 1.5)	1,731
Aratapu Swamp	J13	2 (wooden 1.5 x 1.2) 1 (concrete ?x?)	5,957
Aratapu Nº.2 (Village)	J14	3 (wooden ?x?)	4,469
Awakino Point	J16	5 (wooden ?x?) 1 (concrete ?x?)	6,466
Awakino	J15	2 (wooden ?x?) 1 (concrete ?x?)	9,895
Greenhill	J17	1 (wooden ?x?)	1,071
Hoanga	J18	12 (wooden ?x?) 5 (concrete ?x?)	11,634
Horehore	J19	9 (wooden ?x?)	18,464
Kaihu Valley	J21	3 (wooden ?x?) 1 (concrete ?x?)	10,135
Kopuru Swamp	J22	1 (wooden ?x?) 1 (concrete ?X?)	4,309
Mangatara	J25	1 (concrete ?x?)	2,490
Mititai	J26	1 (wooden 1.2 x 1.5)	522
Notorious	J27	1 (concrete ?x?)	6,330
Oruariki	J28	3 (wooden ?x?)	5,093
Owairangi	J32	1 (wooden ?x?)	1,608

Drainage scheme	District number	Floodgates	Length of drains (m)
		1 (concrete ?x?)	
Tangowahine Nº.1 (Extn)	J36	1 (wooden ?x?) 1 (concrete ?x?)	2,905
Tangowahine Nº.2 (Extn	J37	1 (concrete ?x?)	4,000
Tatarariki	J39	2 (wooden ?x?)	5,463
Tatarariki 2	J40	1 (concrete 1.6 x 1.6)	840
Tatarariki 3	J41	1 (wooden ?x?)	2,642
Tikinui	J43	2 (wooden ?x?)	1,634
Whakahara	J46	1 (concrete 1.6 x 1.6)	2,731
District-wide Land Drainage			
Land drainage districts with nil assets			
Kaihu River	Nil	TBC	TBC
Koremoa	J23	Nil	3,602
Manganui River	Nil	Nil	Nil
Otiria		25.3.53	
Tangowahine Valley	Nil	Nil	Nil
Disbanded land drainage districts			
Tangaehae	N/A	N/A	N/A
Waimamaku	N/A	N/A	N/A
Okaka	N/A	N/A	N/A
Pukehuia	N/A	N/A	N/A
Okara	N/A	N/A	N/A
Upper Tangowahine Valley	N/A	N/A	N/A
Rahukuri	N/A	N/A	N/A
Kawakawa	N/A	N/A	N/A

Drainage scheme	District number	Floodgates	Length of drains (m)
Te Hapai	N/A	N/A	N/A
Sunnynook	N/A	N/A	N/A
Tauraroa River	N/A	N/A	N/A
Kirikopuni	N/A	N/A	N/A

The northern area land drainage network assets are summarised below.

Table 5-2: Overview of assets

Asset	Quantity	Purpose
Stopbanks	Unknown	Prevent tidal flows from inundating private property during high tides and/or when the river is in flood.
Floodgates	17 concrete 54 wooden	Prevent tidal flows from entering during high tide and to enable the draining of canals and drains at low tide.
Canals	118.073 km	Canals are collector drains that collect water from a number of smaller drains. These are identified as being 2.5m-10m in width at the top of the drain.
Drains		Drains collect water from individual or multiple properties less than 2.5m in width at the top.

5.2 Stopbanks

The original stopbanks were typically formed by mounding excavated tidal mud to form continuous banks from headland to headland.

Most stopbanks are topped up by regular drain cleaning. As a result the heights of the banks are variable and are likely to be higher than currently required for flood protection. Over time many of the stopbanks have been built up to a height of 2.6 to 2.7m above mean sea level.

However, there is currently little documentation available to confirm their current make up or their alignment with any expected standard height.

The previous AMP suggests that the design standard for foreshore banks should be a crest level of 3.5m above mean seal level, which would include a freeboard of 0.5m above extreme tide levels. With predicted sea level rise and climate change this value may need to change and when a decision is made on this a programme of works will need to be developed and projects identified.

Stopbanks are not considered to require renewal at any particular time and are not depreciated. They do however require suitable maintenance to retain their form and functionality.

5.3 Floodgates

The NALD network includes 54 wooden floodgates and 17 concrete floodgates of varying description, size and configurations.

This AMP considers a floodgate to incorporate the inlet and outlet wingwalls, the pipes or barrels of the floodgate, the actual gate itself, and any chains, winch and gantry associated with the lifting of the gate. In the case of several of the larger floodgates, riprap material in the floodgate outlet is also considered to be a part of the floodgate.

Floodgates range from small diameter concrete pipes with small concrete wing walls and wooden gate, to large diameter, multi barrel steel channels, with extensive wooden wing walls and multiple steel gates. The most recent upgrades to the floodgate network within Raupo is seeing large pre-cast and poured in-situ concrete structures with large wingwalls and well protected channels. This also uses wooden piles and timber to form greater wingwalls areas if required (see Figure 5.2 for examples of difference in floodgate types).

The age of each individual floodgate is not known and to date a formal structural condition assessment has not been undertaken. However the condition of floodgates is regularly physically inspected.

Due to their construction and the materials used, it is generally accepted that most, if not all, gates will leak during high tide. The resulting inflow of water is not significant, even at larger gates, and has not warranted remedial works. The use of rubber seals is been investigated together with alternative design and construction methods that may facilitate better seals between gates and barrels.

For renewal purposes, a floodgate is considered as having two components, the structure and the gate and these might be replaced individually.

Figure 5-2: Various floodgate types

Table 5-3: Floodgate locations, type and valuation

Land Drainage District	Asset Type	Installation Year	Quantity	Comments from 2016 Valuation	Useful Life	Remaining Useful Life @ 2016	2016 Unit Rate	Replacement Value	Annual Depreciation
Aratapu Swamp	Floodgates concrete	2007	1	50% share of total $50k cost	80	71	$ 33,595	$ 33,595	$ 420
Awakino Valley	Floodgates concrete	2011	1	Nichols floodgate	80	75	$ 15,852	$ 15,852	$ 198
Awakino Point	Floodgates concrete	2009	1	Phillips floodgate Number1	80	73	$ 31,412	$ 31,412	$ 393
Hoanga	Floodgates concrete	2008	1	Fagan / Wistrand #1	80	72	$ 15,453	$ 15,453	$ 193
Hoanga	Floodgates concrete	2008	1	Fagan / Wistrand #2	80	72	$ 15,453	$ 15,453	$ 193
Hoanga	Floodgates concrete	2009	1	Wistrand	80	73	$ 12,307	$ 12,307	$ 154
Hoanga	Floodgates concrete	2010	1	Gillabrand (Lowest Value)	80	74	$ 12,092	$ 12,092	$ 151
Hoanga	Floodgates concrete	2012	1	Main outlet no1	80	76	$ 13,755	$ 13,755	$ 172
Kaihu Valley	Floodgates concrete	2010	1	Replace fg 6 Byant	80	74	$ 17,812	$ 17,812	$ 223
Kopuru Swamp	Floodgates concrete	2009	1	Install new fg1 Bickers Rd	80	73	$ 75,383	$ 75,383	$ 942
Mangatara	Floodgates concrete	1999	1	New fg 1	80	63	$ 58,813	$ 58,813	$ 735
Notorious	Floodgates concrete	2006	1	FG 1 wing wall repair cost (Highest Value)	80	70	$ 64,812	$ 64,812	$ 810
Owairangi	Floodgates concrete	2010	1	Replace fg1 concrete box culvert	80	74	$ 31,906	$ 31,906	$ 399
Tangowahine 1	Floodgates concrete	2005	1	Replace fg 1	80	69	$ 50,271	$ 50,271	$ 628
Tangowahine 2	Floodgates concrete	2006	1	Replace fg 1	80	70	$ 47,623	$ 47,623	$ 595
Tatarariki 2	Floodgates concrete	2006	1	Replace, assume ave cost	80	70	$ 26,914	$ 26,914	$ 336
Whakahara	Floodgates concrete	2006	1	Replace, assume ave cost	80	70	$ 26,914	$ 26,914	$ 336
						Average	**$ 32,375**	**$ 550,368**	**Total**

Land Drainage District	Asset Type	Installation Year	Quantity	Comments	Useful Life	Remaining Useful Life @2016	2016 Unit Rate	Replacement Value	Annual Depreciation
Aoroa	Floodgates wooden	1975	2		50	9	$23,097	$46,195	$924
Arapohue 1	Floodgates wooden	1975	1		50	9	$23,097	$23,097	$462
Arapohue 2	Floodgates wooden	1975	2		50	9	$23,097	$46,195	$924
Aratapu Swamp	Floodgates wooden	1975	2		50	9	$23,097	$46,195	$924
Aratapu Village	Floodgates wooden	1975	3		50	9	$23,097	$69,292	$1,386
Awakino Valley	Floodgates wooden	1975	2		50	9	$23,097	$46,195	$924
Awakino Point	Floodgates wooden	1975	5		50	9	$23,097	$115,486	$2,310
Green Hill	Floodgates wooden	1975	1		50	9	$23,097	$23,097	$462
Hoanga	Floodgates wooden	1975	12		50	9	$23,097	$277,167	$5,543
HoreHore	Floodgates wooden	1975	9		50	9	$23,097	$207,876	$4,158
Kaihu Valley	Floodgates wooden	1975	3		50	9	$23,097	$69,292	$1,386
Kopuru Swamp	Floodgates wooden	1975	1		50	9	$23,097	$23,097	$462
Mititai	Floodgates wooden	1975	1		50	9	$23,097	$23,097	$462
Oruariki	Floodgates wooden	1975	3		50	9	$23,097	$69,292	$1,386
Owairangi	Floodgates wooden	1975	1		50	9	$23,097	$23,097	$462
Tangowahine 1	Floodgates wooden	1975	1		50	9	$23,097	$23,097	$462
Tatarariki 1	Floodgates wooden	1975	2		50	9	$23,097	$46,195	$924
Tatarariki 3	Floodgates wooden	1975	1		50	9	$23,097	$23,097	$462
Tikinui	Floodgates wooden	1975	2		50	9	$23,097	$46,195	$924
								$1,247,253	**Total**

Comparison of the unit rates used for valuation of the NALD schemes floodgates versus the Raupo land drainage scheme reveals a significant difference as indicated in the following table.

Table 5-4: Comparison of NALD schemes and Raupo asset valuations

Northern Districts 2016 Valuation			
Area	Count of assets	Sum of Replacement Value	Calculated unit rate
Drains	118,073	$4,319,879	$37
Floodgates concrete	17	$550,368	$32,375
Floodgates wooden	54	$1,247,253	$23,097
	Total	$6,117,500	

Raupo District 2016 Valuation			
Area	Count of assets	Sum of Replacement Value	Calculated average unit rate
Building	4	$281,326	$70,331
Drains	130,000	$4,346,256	$33
Earth stop bank	1	$2,697,952	$2,697,952
Floodgates concrete	4	$462,980	$115,745
Floodgates wooden	49	$5,590,802	$114,098
Pumping structure	1	$175,209	$175,209
Pumps	1	$174,120	$174,120
Rip rap	12,000	$523,715	$44
	Total	$14,252,361	

The Raupo rates for both concrete and wooden floodgates are more than three times the rates for the NALD scheme gates. A detailed comparison has not been done of the gates in the two schemes or the source of the valuation data. These rates flow directly through into the scheme valuations, depreciation calculation and renewal forecasts and there needs to be confidence in these numbers. This will be addressed as an AMIP project over the next three years (aligned with next valuation).

5.4 Drains and canals

The original drainage network dates back to the late 1800s when early settlers undertook to drain the land fronting the river. Eventually the drains were extended back to the hills, this was also supported by grants from central government under the Land Drainage Act 1908.

Initially drains were constructed to specific dimensions however, due to ongoing erosion and periodic drain maintenance, a gradual increase in drain width has occurred over time and their dimensions vary along their length. To categorise them by dimensions would require frequent and time-consuming measurement that would generate little benefit. Drain clearing is a balance between maintaining an effective flow cross-section with the loss of usable land, and volume of excavated material, that result from widening the drain.

Instead all drains and canals will be categorised by their criticality in relation to the area drained or volume of runoff carried. Therefore, canals and major drains with a larger number of drains feeding into them are considered to be more critical than those draining several paddocks. This is an improvement item that will need to have focus brought to it in the next LTP period.

Figure 5-3: Drain types

Table 5-5: NALD scheme, extent and valuation

Northern Drains	Length	Replacement Cost @ $37/m	Depreciated Replacement Cost
Aoroa	2,032	$74,344	$74,344
Arapohue 1	2,050	$75,002	$75,002
Arapohue 2	1,731	$63,331	$63,331
Aratapu Swamp	5,957	$217,946	$217,946
Aratapu Village	4,469	$163,505	$163,505
Awakino Valley	9,895	$362,024	$362,024
Awakino Point	6,466	$236,568	$236,568
Green Hill	1,071	$39,184	$39,184
Hoanga	11,634	$425,647	$425,647
HoreHore	18,464	$675,533	$675,533
Kaihu Valley	10,135	$370,804	$370,804
Kopuru Swamp	4,309	$157,651	$157,651
Koremoa	3,602	$131,785	$131,785
Mangatara	2,490	$91,100	$91,100
Mititai	522	$19,098	$19,098
Notorious	6,330	$231,593	$231,593
Oruariki	5,093	$186,335	$186,335
Owairangi	1,608	$58,831	$58,831
Tangowahine 1	2,905	$106,284	$106,284
Tangowahine 2	4,000	$146,346	$146,346
Tatarariki 1	5,463	$199,872	$199,872
Tatarariki 2	840	$30,733	$30,733
Tatarariki 3	2,642	$96,662	$96,662
Tikinui	1,634	$59,782	$59,782
Whakahara	2,731	$99,918	$99,918
TOTAL	**118,073**	**$4,319,879**	**$4,319,879**

5.5 Total asset valuations for each northern area land drainage scheme

The following table provides the combined valuation of floodgates and drains for the various active schemes. The following table sorted by Replacement Value provides an indication of the hierarchy of the schemes. The largest scheme (HoreHore at $883,000) has over 20 times the replacement value of the smallest (Mititai at $42,000).

Northern Totals	Replacement Cost	Depreciated Replacement Cost	Total Depreciation to Date	Annual Depreciation
Aoroa (J10)	$120,538	$82,659	$37,880	$924
Arapohue 1 (J11)	$98,100	$79,160	$18,940	$462
Arapohue 2 (J12)	$109,526	$71,646	$37,880	$924
Aratapu Swamp (J13)	$297,736	$256,077	$41,659	$1,344
Aratapu Village (J14)	$232,797	$175,978	$56,819	$1,386
Awakino Valley (J15)	$424,070	$385,200	$38,870	$1,122
Awakino Point (J16)	$383,467	$286,020	$97,447	$2,702
Green Hill (J17)	$62,281	$43,342	$18,940	$462
Hoanga (J18)	$771,874	$538,834	$233,039	$6,407
HoreHore (J19)	$883,409	$712,951	$170,458	$4,158
Kaihu Valley (J21)	$457,908	$399,753	$58,155	$1,608
Kopuru Swamp (J22)	$256,132	$230,596	$25,536	$1,404
Koremoa (J23)	$131,785	$131,785	$0	$0
Mangatara (J25)	$149,913	$137,416	$12,498	$735
Mititai (J26)	$42,195	$23,256	$18,940	$462
Notorious (J27)	$296,405	$288,304	$8,102	$810
Oruariki (J28)	$255,627	$198,808	$56,819	$1,386
Owairangi (J32)	$113,835	$92,502	$21,333	$861
Tangowahine 1 (J36)	$179,652	$153,800	$25,852	$1,090
Tangowahine 2 (J37)	$193,969	$188,016	$5,953	$595
Tatarariki 1 (J39)	$246,067	$208,187	$37,880	$924
Tatarariki 2 (J40)	$57,647	$54,282	$3,364	$336
Tatarariki 3 (J41)	$119,759	$100,819	$18,940	$462
Tikinui (J43)	$105,977	$68,097	$37,880	$924
Whakahara (J46)	$126,832	$123,467	$3,364	$336
TOTAL	**$6,117,500**	**$5,030,954**	**$1,086,546**	**$31,825**

Table 5-6: Total scheme valuations

Northern LD Schemes Sorted by Total Replacement Cost

Northern Totals	Replacement Cost	Depreciated Replacement Cost	Total Depreciation to Date	Annual Depreciation
HoreHore (J19)	$883,409	$712,951	$170,458	$4,158
Hoanga (J18)	$771,874	$538,834	$233,039	$6,407
Kaihu Valley (J21)	$457,908	$399,753	$58,155	$1,608
Awakino Valley (J15)	$424,070	$385,200	$38,870	$1,122
Awakino Point (J16)	$383,467	$286,020	$97,447	$2,702
Aratapu Swamp (J13)	$297,736	$256,077	$41,659	$1,344
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Kopuru Swamp (J22)	$256,132	$230,596	$25,536	$1,404
Oruariki (J28)	$255,627	$198,808	$56,819	$1,386
Tatarariki 1 (J39)	$246,067	$208,187	$37,880	$924
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Tangowahine 1 (J36)	$179,652	$153,800	$25,852	$1,090
Mangatara (J25)	$149,913	$137,416	$12,498	$735
Koremoa (J23)	$131,785	$131,785	$0	$0
Whakahara (J46)	$126,832	$123,467	$3,364	$336
Aoroa (J10)	$120,538	$82,659	$37,880	$924
Tatarariki 3 (J41)	$119,759	$100,819	$18,940	$462
Owairangi (J32)	$113,835	$92,502	$21,333	$861
Arapohue 2 (J12)	$109,526	$71,646	$37,880	$924
Tikinui (J43)	$105,977	$68,097	$37,880	$924
Arapohue 1 (J11)	$98,100	$79,160	$18,940	$462
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Tatarariki 2 (J40)	$57,647	$54,282	$3,364	$336
Mititai (J26)	$42,195	$23,256	$18,940	$462
TOTAL	**$6,117,500**	**$5,030,954**	**$1,086,546**	**$31,825**

5.6 Culverts

Culverts are installed to facilitate access to private property (i.e. under driveways) and to enable access for maintenance and also part of the drainage network. Council currently has no records as the quantity, size and age of these assets and they are not included in the valuation.

5.7 Critical assets

Critical assets have been defined as being assets with a high consequence of failure. 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 been undertaken over the last three year period and an initial assessment of the saltwater floodgates in the Raupo land drainage has been undertaken by Opus, based on the recorded age of existing assets. This has not yet been extended to the northern area.

The criticality framework, and the resulting risk rankings (Criticality combined with Likelihood of Failure) will need to be applied to all land drainage assets in the next LTP period.

Historical evidence and local knowledge has identified the land drainage related assets in the following table which could be considered to be “critical”, in that failure of these assets could compromise the land drainage network.

The land drainage assets in the northern area schemes are considered to have a relatively low criticality compared to the assets protecting Dargaville and Ruawai. This is based on the understanding that failure of the stopbanks or floodgates could allow flooding of the protected land but this would not generate significant or widespread impacts. Houses are relatively few and far between and generally on elevated foundations. Stock can be moved and while crops would adversely affected this is not a long term issue. It is also relevant that the storm event is likely to be relatively short and most of the affected area would drain during the next low tide. This would also allow access for repair equipment. While there are losses and inconvenience associated with this scenario the cost of designing and implementing measures that would avoid these outcomes is considered to be prohibitive and outside the expectation of the stakeholders involved.

Further understanding and definition of mitigation measures is required.

Table 5-7: Criticality of LD assets

Asset group	Assessment of Criticality	Criticality
Culverts under roads	Under State Highways are responsibility of NZTA. Under local roads are responsibility of KDC Transportation. Within urban areas generally have alternative routes and low likelihood of entire road being compromised.	N/A
Open drains	There are many open drains throughout the various communities and the Risk Register in the Stormwater AMP lists consequences of failure between Minor and Severe. Failure would typically take	Low - Open drains in private property

Asset group	Assessment of Criticality	Criticality
	the form of blockage by silt/foliage and/or erosion of banks threatening buildings. Generally regarded as low criticality and owners will advise Council if drains through private property require maintenance. Inspection regime in place to identify maintenance requirements but more for aesthetics than concern about capacity.	
Stopbanks on Northern Wairoa River (Dargaville and Ruawai) – **not** NALD schemes	Stopbanks (earth embankment, timber and concrete) are the primary protection to prevent Dargaville and Ruawai from flooding under extreme river events. There are no flood pumps on the inland side if a breach or back-up of runoff occurs. The river can be up to 1m above Dargaville CBD and Ruawai street levels.	High (Extreme)
Floodgates	Floodgates are required to prevent flow from river in high river level events. Impact likely to be less catastrophic than failure of stopbank however if combined with heavy rain could generate localised flooding of lower Dargaville and Ruawai. Gates are gates or floating ball type and have been known to fail. Failure is unlikely to be one or two at a time and location would be relatively obvious. However, there is risk that gate cannot be accessed or repaired before significant damage arises. These are already subject to regular inspections and High Criticality would justify this.	High (Major)
Land drainage schemes	Other land drainage schemes (28) are mostly under control of local Management Committees who are quite hands-on in relation to willingness to commit expenditure versus level of protection required. Funding is by targeted rates collected and administered by KDC. Much of stopbank maintenance is undertaken by the landowner concerned. Generally the land protected is farmland only. Risk exposure would be economic losses to crops and stock with presumably limited potential for flooding of isolated low-lying farmhouses, farming equipment/milking sheds and buildings. It is presumed that stock could be moved to higher ground or that extent of flooding (depth and flow rate) would not generate significant stock losses. The schemes generally do not affect State Highways.	Low

Asset group	Assessment of Criticality	Criticality
	Note that Ruawai stopbanks are part of stopbank section.	
Access to assets	Access to stormwater and land drainage assets can be impacted by localised flooding associated with high intensity rainfall and by wider spread flooding associated with high river levels and/or slow run-off from land drainage schemes. Depending on the circumstances this can conceivably last for several days. Access to particular assets is not considered to be an issue relative to inability to access the area because of road flooding. Impacts are difficult to predict but this is not considered to be a pressing concern for this activity.	Low

5.8 Asset values

5.8.1 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 2016. The valuation process is summarised in the report *Water Supply, Stormwater and Land Drainage Asset Revaluation 30 June 2016*.

Asset valuations, annual depreciation and useful working life assumptions are included in the asset information detailed above.

5.8.2 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.

6 Lifecycle strategy and management

6.1 Introduction

This section identifies Council's strategy and programme for managing, maintaining and renewing assets within the northern area land drainage district. The programmes described within this section have been developed to achieve the LOS identified in section 3 of this AMP.

This section presents the Lifecycle Management Plan for land drainage assets and includes:

- Operations and maintenance strategies;
- Renewal and development strategies; and
- Work programmes and associated financial forecasts.

6.2 Design parameters

Design parameters for all new land drainage assets are not well-defined. Documentation on the history of land drainage in the NALD schemes identifies design capacities for drains and canals, however does not specify standards of construction for any assets.

As a result, the installation of new culverts has varied, with undersized and oversized culverts being installed.

KDC needs to review what knowledge it has regarding design standards and document a definitive standard for the design and construction of land drainage assets and communicate this to the respective drainage schemes for review and consultation.

Future standards could either be included in Council's existing engineering design standards or separately in a specific land drainage standard for design and construction.

6.3 Work categories

The lifecycle management strategies are divided into the following five work categories:

6.3.1 Asset operations

The active process of utilising an asset which will consume resources such as manpower, energy, chemicals and materials.

6.3.2 Asset maintenance

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

- **Unplanned Maintenance:** Work carried out in response to reported problems or defects (e.g. repair burst water main).
- **Preventative maintenance:** Work additional to schedules inspections and maintenance identified during inspections as essential to continued operation.
- **Planned Maintenance:** Work carried out to a predetermined schedule (e.g. pump station inspection, mains scouring) or programmed as a result of identified needs.

6.3.3 Asset renewal

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

6.3.4 Asset development

Covers tactics for the creation of new assets or works which upgrade or improve an existing asset beyond its existing capacity or performance in response to changes in supply needs or customer expectations.

6.3.5 Asset disposal

Disposal is any of the activities associated with the disposal of a decommissioned asset. Assets may become surplus to requirements for any of the following reasons:

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

Currently the budget for the drainage schemes only identifies all asset renewal expenditure as part of the operational cost structure but separately identified as WIP (Work In Progress). This is split out in the following discussions.

The NALD schemes are unique within KDC as they are rated as per an agreement with the local stakeholders and capital investment is planned as and when required. If the funds to complete the work are not available at the time the landowners can agree to fund the works. With agreement by both parties this is sometimes loan funded through KDC and the repayments are then paid back by the landowners through a set rate.

6.4 General standards and specifications used

6.4.1 (a) Operations, maintenance, renewals and development standards

Council contractors are required to comply with the following standards and legislation when maintaining, operating, renewing and developing the water supply network:

- Local Government Act 2002;
- This AMP;
- Resource consents and Resource Management Act 1991;
- Processes and procedures not defined in this document;
- Health and Safety in Employment Act 1992;
- Building Act 1991;
- Pesticides Act 1979 and regulations 1983;
- Poisons Act 1969 and Regulations;
- Health Act 1993;
- Approved safety plan; and
- Good engineering practice.

6.4.2 (b) Disposal standards

In all cases asset disposal processes must comply with Council's legal obligations under the Local Government Act 2002, which covers:

- Public notification procedures required prior to sale;
- Restrictions on the minimum value recovered; and
- Use of revenue received from asset disposal.

6.5 Lifecycle management strategies – operations and maintenance

6.5.1 Land Drainage Maintenance Plan

The following table shows Council maintenance strategies to ensure that the defined LOS are provided. The table shows the key service criteria affected and mode and impact of failure if the action is not carried out.

Table 6-1: Maintenance activities

Asset / failure mode	Action	Key service criteria	Impact
General maintenance			
All Assets –	Maintain assets in a manner that minimises the long term overall total cost while ensuring efficient day-to-day management.	Cost/Affordability	Low/Medium – increased costs and risk of failure.
Unplanned maintenance			
All Assets – Disaster i.e. cyclone and/or major flooding, stopbank collapse, floodgate collapse.	Maintain a suitable level of preparedness for prompt and effective response to flooding, stopbank or floodgate collapse or pump failure by ensuring the availability of suitably trained and equipped staff and service delivery contractors. Specifically: local engineers and property owners.	Flood Prevention	Medium – flooding of private property.
Planned inspections			
All Assets –	Undertake scheduled inspections as justified by the consequences of failure on LOS, costs or safety.	All	Low – Slow to react to minor flooding caused by premature asset failure.
Planned – preventative maintenance			
As with planned inspections.	Undertake programme of planned asset maintenance to minimise the risk of critical asset failure (e.g. pump overhaul) or where justified economically (e.g. race track re-levelling).	All	As with planned inspections.

Council-approved contractors are utilised for all functions of land drainage maintenance. These contractors are usually approved by the affected stakeholders. The activities include, but are not limited to: weed spraying and machine cleaning of drains. A certified engineering company provides maintenance services for the floodgates and a suitable contractor undertakes drain and channel maintenance for KDC.

Planned maintenance work includes an inspection of all structures and stopbanks. This is usually carried out by the stakeholders who forward any issues through to the KDC representative who will then meet them onsite and assessed the issue. A remediation methodology is agreed on by the parties and this is then put into a forward works plan.

A major issue associated with the maintenance of floodgates is the impact of the current NRC's Water and Soils Plan (NRC Regional Policy 2017 is currently in draft format) on the ability to perform maintenance activities on certain floodgate outlets within marine zone 1 without the need for resource consent. This will impact on the administrative cost of maintaining the network especially if consents are required for individual floodgates (as opposed to a blanket consent).

A number of drains have experienced slumping of the banks which result in the gradual widening of the drains, the loss of pasture and occasionally the loss of a fence line. This has resulted in the widening of the larger drains over time and is of ongoing concern to landowners. Options to halt this process include the timber lining of drains (full depth or partial depth), however the impact on lifecycle costs have not yet been assessed.

When flooding occurs a number of ponding areas develop, the size of which are dependent upon the rainfall intensity and duration. To date Council has not formally recognised these areas. The mapping of these flood areas should be undertaken in the near future.

The current maintenance and inspection strategies are highlighted in the following tables.

The nature and frequency of the work is consistent with the maintenance strategies above and the age, condition, performance and criticality profiles of the assets.

Table 6-2: Planned inspections

Planned inspections	Frequency
Drains	
Summer spraying	Monthly – October to May
Machine weed racking	Monthly
Winter inspections	Weekly
Floodgates	
Inspect and clear gravel, silt and vegetation accumulation	Weekly

Planned inspections	Frequency
Grates	
Grate cleaning and removal of debris	Monthly
Stopbanks	
Inspect for erosion/slumping and seepage	Monthly in summer Fortnightly in winter

Maintenance work on the various schemes varies in accordance with local experience and the wishes of the local stakeholders. Some schemes have a regular programme and associated budget. Other schemes have an ongoing maintenance programme supplemented by periodic more significant works. The following table illustrates the differences and the impact this has on the maintenance budgets.

Table 6-3: Baseline and periodic cleaning

Annual and Periodic Expenditure on Repairs and Maintenance (Main Operating Budget)		Base Annual	Periodic	Period (Yrs)
2432048 - R&M Grounds Drains:LD Aoroa	*Usual cleaning $1,400/annum large clean $1,600 every 6 years*	*$ 1,400*	*$ 1,600*	*6*
1562048 - R&M Grounds Drains:LD Arapo 1	Usual maintenance is $1066 to allow for OD repayments, machine clean in year 6 when OD paid off and reserves gathered again.	$ 1,066		
2232048 - R&M Grounds Drains:LD Arapo 2	*Usual cleaning $1,500/annum large clean $4,500 every 4 years*	*$ 1,500*	*$ 4,500*	*4*
2162048 - R&M Grounds Drains:LD Arata S	*Usual cleaning $12,000/annum large clean $20,000 every 5 years*	*$ 12,000*	*$ 20,000*	*5*
1682048 - R&M Grounds Drains:LD Aratapu	Usual maintenance is roughly $1500/annum, building reserves to enable the replacement of the floodgates	$ 1,500		
1872048 - R&M Grounds Drains:LD Awakino		$ 25,000		
2122048 - R&M Grounds Drains:LD Awaki P	$6200, every first year for machine cleaning, $3,000 every second year for drain spraying, building reserves for eventual replacement of floodgate 15.	Alternating $6,200 and $3,000		
1092048 - R&M Grounds Drains:LD Distr		$ 7,462		
2012048 - R&M Grounds Drains:LD Greenhi	$1,199 each year for drain spraying within the district and allowance for $3,700 for a machine clean once every 5 years.	$ 1,999		
1282048 - R&M Grounds Drains:LD Hoang 1	*Usual cleaning $10,661/annum large clean $16,000 every 3 years*	$ 10,661	$ 16,000	3
1242048 - R&M Grounds Drains:LD Horehor	*Usual cleaning $14,000/annum large clean $20,000 every 3 years*	*$ 14,000*	*$ 20,000*	*3*
1912048 - R&M Grounds Drains:LD Kaihu R		$ 5,748		
1952048 - R&M Grounds Drains:LD Kaihu V		$ 20,255		
2582048 - R&M Grounds Drains:LD Kopuru		$ 1,000		
1332048 - R&M Grounds Drains:LD Koremoa	*Usual cleaning $1,000/annum large clean $4,200 every 5 years*	*$ 1,000*	*$ 4,200*	*5*

Annual and Periodic Expenditure on Repairs and Maintenance (Main Operating Budget)		Base Annual	Periodic	Period (Yrs)
1082048 - R&M Grounds Drains:LD Manganu		$ 7,255		
1702048 - R&M Grounds Drains:LD Mangata		$ 10,661		
1372048 - R&M Grounds Drains:LD Mititai	*Usual cleaning $2,665/annum large clean $6,000 every 5 years*	*$ 2,665*	*$ 6,000*	*5*
1892048 - R&M Grounds Drains:LD Notorio	Usual cleaning $8,500/annum large clean $16,500 every 6 years	$ 8,528	$ 16,500	6
1442048 - R&M Grounds Drains:LD Oruarik		$ 12,000		
1492048 - R&M Grounds Drains:LD Otiria		$ 2,600		
2172048 - R&M Grounds Drains:LD Owairan	*Usual cleaning $1,500/annum large clean $4,000 every 5 years*	*$ 1,500*	*$ 4,000*	*5*
2102048 - R&M Grounds Drains:LD Tangaih	This drainage district is currently closed, Resource Consent fees being paid until current funds are exhausted	$ -		
1182048 - R&M Grounds Drains:LD Tangw 1	*Usual cleaning $2,700/annum large clean $7,000 every 5 years*	*$ 2,700*	*$ 7,000*	*5*
1672048 - R&M Grounds Drains:LD Tangw 2	*Usual cleaning $2,500/annum large clean $5,000 every 5 years*	*$ 2,500*	*$ 5,000*	*5*
1932048 - R&M Grounds Drains:LD Tangw V	*Usual cleaning initially is zero but then increasing to $3,000/annum*	*$ -*	*$ 3,000*	
2182048 - R&M Grounds Drains:LD Tatar 1	*Usual cleaning $2,132/annum large clean $6,500 every 5 years*	*$ 2,132*	*$ 6,500*	*5*
1212048 - R&M Grounds Drains:LD Tatar 2	*Usual cleaning $2,132/annum large clean $6,500 every 5 years*	*$ 1,066*	*$ 6,500*	*10*
2612048 - R&M Grounds Drains:LD Tatar 3	*Usual cleaning $3,500/annum large clean $9,500 every 10 years*	*$ 3,500*	*$ 9,500*	*10*
1292048 - R&M Grounds Drains:LD Tikinui	*Usual cleaning $800/annum large clean $1,300 every 5 years*	*$ 800*	*$ 1,300*	*5*
1692048 - R&M Grounds Drains:LD Waimama	Drainage district no longer exists	$ -		
1822048 - R&M Grounds Drains:LD Whakaha	Drain cleaning in Feb, large machine clean every 5 years.	$ 1,400	$ 3,400	5

6.5.2 Land Drainage Operation Plan

The general operational plan is to maintain the current capacity of the drainage network through regular inspection of the network and minimisation of interference in hydraulic capacity (weed clearing, spraying etcetera).

The following table shows the operational strategies carried out to ensure that the defined LOS are met and the key service criteria that are affected if the action is not carried out.

Table 6-4: Operating activities

Asset/failure mode	action	Key service criteria	Impact
Drains and Channels			
Drains	Weeds will be controlled to minimise loss of hydraulic capacity. Frequent inspections to ensure hydraulic capacity is maintained.	System Capacity and Efficiency	Med/High – flooding
Unable to reach assets to maintain.	Access roads to the floodgates, stopbanks, drains and culverts will be maintained to provide a level of vehicular access appropriate to each area.	Responsiveness	Low – delay in completing maintenance activity
Floodgates			
Debris build-up keeps gate open/shut against water flow	Floodgates regularly inspected and cleared if necessary to ensure correct operation.	System Capacity and Efficiency	Low – minor flooding in low- lying areas near river
Stopbanks			
Stopbanks – Slumping of banks results in increased risk of overtopping	Stopbanks inspected frequently to ensure bank stability is preserved, and weak or low areas can be identified and adequately addressed.	System Capacity/Reliability	High – overtopping results in stopbank damage and flooding

6.5.3 Land drainage operations and maintenance budgets

The following table illustrates the activity codes utilised for operational budgets and their relative magnitudes. Note that the WIP Increase code is essentially the Capital Works provision and is utilised in the following section on renewals.

The following table lists the budget for each scheme and highlights those that have a WIP Increase budget.

The following graph shows the pattern of operational expenditure over the next 10 years without the WIP Increase item. The variations each year are generated by the periodic maintenance provisions for some of the schemes as discussed above. Otherwise the profile is relatively stable.

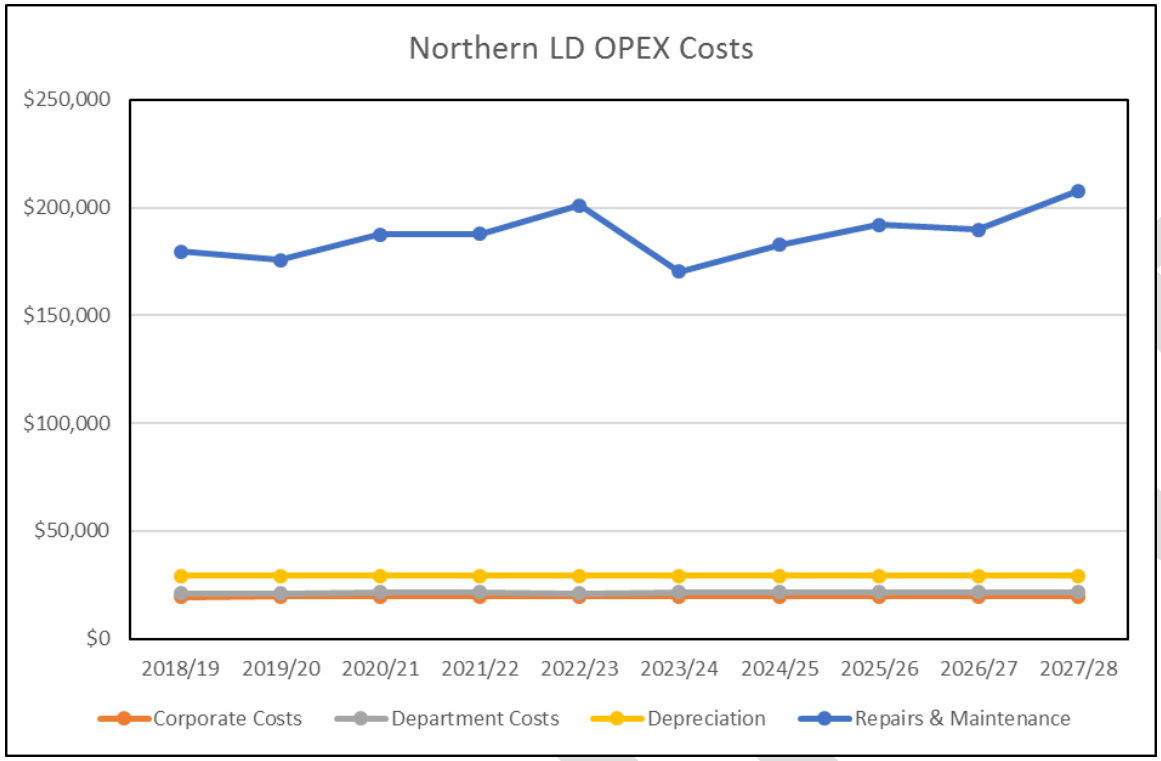
Table 6-5: Scheme operational budget by type

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
WIP Increase	30,000	30,000	30,000	30,000	30,000	30,000	30,000	112,000	30,000	133,500
Internal Activ Tran	-4,264	-4,264	-4,264	-4,264	-4,264	-4,264	-4,264	-4,264	-4,264	-4,264
Sundry Income	-	-	-	-	-	-	-	-	-	-
Corporate Costs	19,599	19,600	19,600	19,600	19,600	19,600	19,600	19,600	19,600	19,600
Department Costs	21,217	21,217	21,783	21,535	21,217	21,783	21,535	21,535	21,535	21,535
Health and Safety	-	-	-	-	-	-	-	-	-	-
Internal Activ Cost	-	-	-	-	-	-	-	-	-	-
Land Rates KDC	-	-	-	-	-	-	-	-	-	-
R&M Plant Equipment	-	-	-	-	-	-	-	-	-	-
Depreciat Amortisation	29,196	29,196	29,196	29,196	29,196	29,196	29,196	29,196	29,196	29,196
R&M Grounds Drains	179,745	175,767	187,435	187,828	201,136	170,428	182,628	192,035	189,800	207,797
Leachate Removal	-	-	-	-	-	-	-	-	-	-
Rates Remissions	-	-	-	-	-	-	-	-	-	-
Write Offs	-	-	-	-	-	-	-	-	-	-
TOTAL INCL WIP	**275,493**	**271,516**	**283,750**	**283,895**	**296,885**	**266,743**	**278,695**	**370,102**	**285,867**	**407,364**
TOTAL EXCL WIP	**245,493**	**241,516**	**253,750**	**253,895**	**266,885**	**236,743**	**248,695**	**258,102**	**255,867**	**273,864**

Table 6-6: Operational budget by scheme

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
243 - Aoroa Land Drainage Scheme	3,155	3,155	3,155	3,355	3,155	3,155	3,155	3,155	3,155	3,355
156 - Arapohue No 1 Land Drainage Scheme	2,569	2,569	2,569	2,569	2,569	2,569	2,569	2,569	2,569	2,569
223 - Arapohue No 2 Land Drainage Scheme	3,481	3,481	3,481	6,481	3,481	3,481	3,481	6,481	3,481	3,481
216 - Aratapu Swamp Land Drainage Scheme	15,339	15,339	15,339	15,339	23,339	15,339	15,339	15,339	15,339	23,339
168 - Aratapu Village Land Drainage Scheme	3,345	3,345	3,345	3,345	3,345	3,345	3,345	3,345	3,345	3,345
187 - Awakino Valley Land Drainage Scheme	25,903	25,903	25,903	25,903	25,903	25,903	25,903	25,903	25,903	25,903
212 - Awakino Point Land Drainage Scheme	10,199	6,999	10,199	6,999	10,199	6,999	10,199	6,999	10,199	6,999
109 - Land Drainage - District Wide	38,952	38,952	38,952	38,952	38,952	38,952	38,952	38,952	38,952	38,952
Work in Progress = CAPEX	*30,000*	*30,000*	*30,000*	*30,000*	*30,000*	*30,000*	*30,000*	*30,000*	*30,000*	*30,000*
201 - Greenhill Land Drainage Scheme	2,533	2,533	2,533	2,533	5,034	2,533	2,533	2,533	2,533	5,034
128 - Hoanga No 1 Land Drainage Scheme	18,981	24,320	19,547	18,981	24,320	19,547	18,981	24,320	18,981	18,981
124 - Horehore Land Drainage Scheme	27,180	21,180	21,180	27,180	21,180	21,180	27,180	21,180	21,180	130,680
Work in Progress = CAPEX	-	-	-	-	-	-	-	-	-	*103,500*
191 - Kaihu River	5,748	5,748	5,748	5,748	5,748	5,748	5,748	5,748	5,748	5,748
195 - Kaihu Valley Land Drainage Scheme	24,734	24,734	24,734	24,734	24,734	24,734	24,734	24,734	24,734	24,734
258 - Kopuru Swamp Land Drainage Scheme	7,482	7,482	7,482	7,482	7,482	7,482	7,482	7,482	7,482	7,482
133 - Koremoa Land Drainage Scheme	1,806	1,806	1,806	5,006	1,806	1,806	1,806	1,806	5,006	1,806
108 - Manganui River Land Drainage Scheme	8,519	8,519	8,519	8,519	8,519	8,519	8,519	8,519	8,519	8,519
170 - Mangatara Land Drainage Scheme	13,234	13,234	13,234	13,234	13,234	13,234	13,234	13,234	13,234	13,234
137 - Mititai Land Drainage Scheme	4,112	4,112	7,447	4,112	4,112	4,112	4,112	89,447	4,112	4,112
Work in Progress = CAPEX	-	-	-	-	-	-	-	*82,000*	-	-
189 - Notorious Land Drainage Scheme	10,954	10,954	18,926	10,954	10,954	10,954	10,954	10,954	18,926	10,954
144 - Oruariki Land Drainage Scheme	15,123	15,123	15,123	15,123	15,123	15,123	15,123	15,123	15,123	15,123
149 - Otiria Land Drainage Scheme	3,638	3,638	3,638	3,638	3,638	3,638	3,638	3,638	3,638	3,638
217 - Owairangi Land Drainage Scheme	3,287	3,287	5,787	3,287	3,287	3,287	3,287	5,787	3,287	3,287
210 - Tangaihi Land Drainage Scheme	-	-	-	-	-	-	-	-	-	-
118 - Tangowahine No 1 Land Drainage Scheme	4,840	4,840	4,840	4,840	9,140	4,840	4,840	4,840	4,840	9,140
167 - Tangowahine No 2 Land Drainage Scheme	4,036	4,036	4,036	4,036	6,536	4,036	4,036	4,036	4,036	6,536
193 - Tangowahine Valley Land Drainage Scheme	-	-	-	3,318	-	-	3,318	3,318	3,318	3,318
218 - Tatarariki No 1 Land Drainage Scheme	4,000	4,000	4,000	4,000	8,368	4,000	4,000	4,000	4,000	8,368
121 - Tatarariki No 2 Land Drainage Scheme	2,224	2,224	2,224	2,224	2,224	2,224	2,224	6,657	2,224	2,224
261 - Tatarariki No 3 Land Drainage Scheme	4,890	4,890	4,890	4,890	4,890	4,890	4,890	4,890	4,890	10,890
129 - Tikinui Land Drainage Scheme	2,555	2,555	2,555	2,555	3,055	2,555	2,555	2,555	2,555	3,055
169 - Waimamaku Land Drainage Scheme	-	-	-	-	-	-	-	-	-	-
182 - Whakahara Land Drainage Scheme	2,675	2,558	2,558	4,558	2,558	2,558	2,558	2,558	4,558	2,558
TOTAL INCLUDING WIP	***275,493***	***271,516***	***283,750***	***283,895***	***296,885***	***266,743***	***278,695***	***370,102***	***285,867***	***407,364***
TOTAL EXCLUDING WIP = OPEX	**245,493**	**241,516**	**253,750**	**253,895**	**266,885**	**236,743**	**248,695**	**258,102**	**255,867**	**273,864**

Figure 6-1: Operational budget forecast



6.6 Lifecycle Management Strategy – renewals

6.6.1 Land drainage renewal drivers and prioritisation

The general renewal strategy is to rehabilitate or replace floodgate structures, gates or culverts when justified by:

- **Asset Performance:** Renewal of an asset when it fails to meet the required LOS. The monitoring of asset reliability, capacity and efficiency during planned maintenance inspections identifies non-performing assets. Indicators of non-performing assets include:
  - Excessive inflow of river water during high tide;
  - River water is migrating between the floodgate and the stopbank; and
  - The floodgate does not have sufficient capacity to drain floodwaters within two days.

- **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 co-ordination of renewal works with other planned works such as road reconstruction.

Planned and reactive replacement works are prioritised in accordance with the following table and then programmed or in urgent cases undertaken immediately. It is important to note that any response to the reduction of LOS is agreed through consultation with the stakeholders and work is planned in accordance to what is agreed at the time. KDC retains the responsibility to the wider community and will utilise the relevant clauses in the Drainage Act 1908 as and where required.

Table 6-7: Renewal prioritisation

Priority	Renewal criteria
1 (High)	Failure has occurred and renewal is the most efficient lifecycle cost alternative. Asset failure of key system component is imminent. Regular maintenance required: **more than three visits annually**. Road upgrading scheduled for the current financial year.
2	Maintenance requiring **more than three visits per two month period** in past 12 months. Difficult to repair, due to fragile nature of material or obsolescence.
3	Pipe or structure maintenance involving two to three visits annually.
4	Existing assets have a low level of flexibility and efficiency of replacement alternative.
5 (Low)	Existing asset materials or types are such that known problems will develop in time.

The renewal strategy will be reviewed at least annually.

If work is deferred for any reason, this work will be re-prioritised against the next year's renewal projects and a revised programme established.

Renewal works identified by way of the above renewal strategies may be deferred if the cost is beyond the district's ability to fund it. This situation may arise if higher priority works are required on other infrastructure assets; short term peaks occur in expenditure or if an inadequate rating base exists.

When renewal works are deferred, the impact of the deferral on economic efficiencies and the scheme's ability to achieve the defined service standards will be informally 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.

A register of all deferred works will be maintained.

Note: Stopbanks, drains and canals are not considered for renewal. Their functionality is preserved through regular maintenance.

To date there have been no significant renewals undertaken on land drainage assets. The cost of any renewal work undertaken to date has not been captured as renewal expenditure and as a result it is very difficult to determine historical renewal expenditure.

The installation of new culverts or replacement of old culverts for access to land over drains is a roading network function. However recently there has been a large degree of inconsistency in the sizing of these culverts which may affect both the capacity of the drain and the cost of achieving access. A method for calculating culvert size needs to be developed or culverts sizes should be calculated by Council, and published by Council to eliminate future inconsistencies and potential adverse effects on drain capacity.

6.6.2 Theoretical renewal profile

The process described above for identifying and prioritising capital works renewal tends to focus on needs as they arise and is not readily applied to the longer term planning of renewal requirements. Typically, the types of faults that drive renewals cannot be identified more than a few years ahead at the most.

To obtain some indication of the likely profile of renewal works into the future the default approach is to predict the renewal date from the installation date and the expected lifetime i.e. a floodgate installed in 1970 with an expected 75 year life would be expected to need renewal in 2045. While this approach is highly inaccurate when applied to a specific asset it does have some validity when applied to large groups of assets where the variations that inevitably occur tend to smooth out somewhat.

The lifecycle expectations for land drainage assets are:

Table 6-8: Asset life expectancies

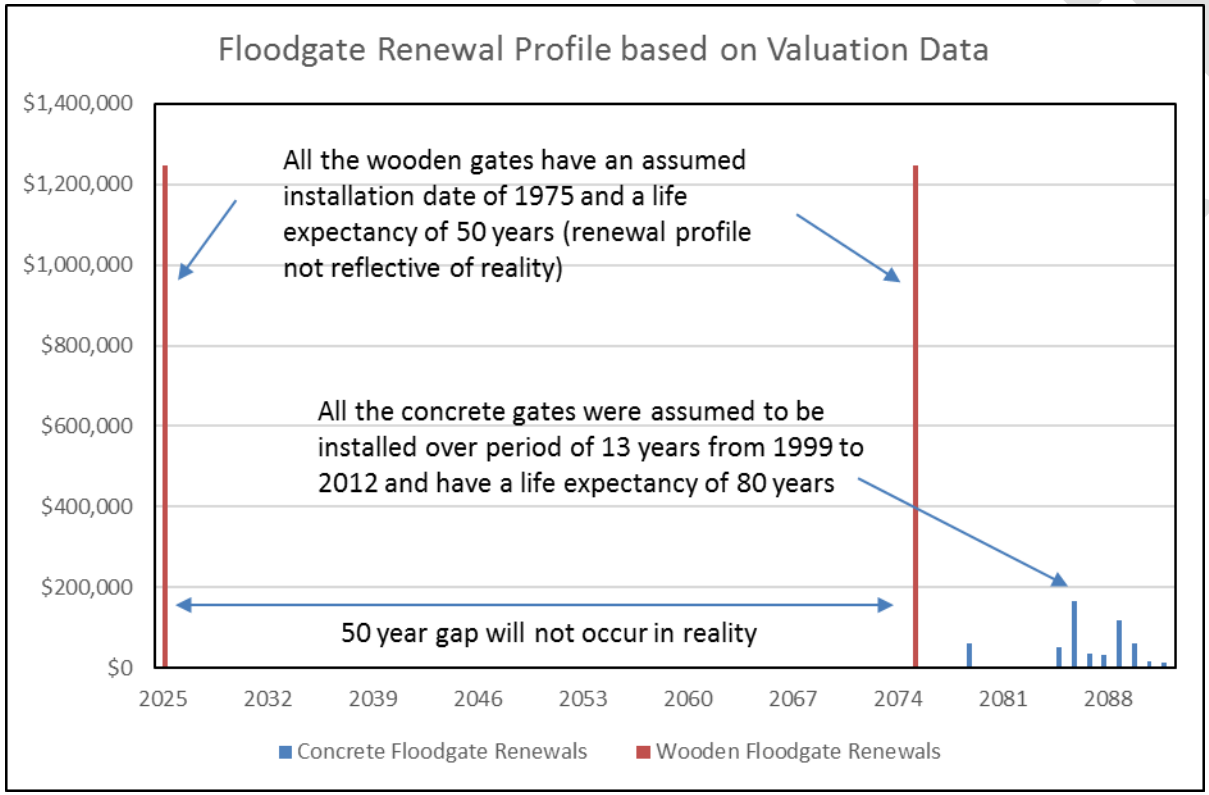
Land drainage asset	expected life
Drains	Indefinite
Channels	Indefinite
Stopbanks	Indefinite
Detention basins	Indefinite
Floodgate structures • concrete • wooden	 80 years 50 years

The data that the land drainage asset valuation is based on assumes that:

- All wooden floodgates were installed in 1975 with a life expectancy of 50 years; and
- All concrete floodgates were installed in over a 13 year period between 1999 and 2012 with an 80 year life expectancy.

When this information is combined into a renewal prediction the profile in the following chart is generated. It should be noted that the predicted value of renewal works is based on unit rates used in the valuations. The significant differences between the NALD rates and the Raupo rates for nominally similar assets has already been discussed above.

Figure 6-2: Theoretical floodgate renewal profile



The literal interpretation of this profile is that there is a significant 'bow-wave' of wooden gate renewals occurring in seven years time and then again in another 50 years after that. Renewal of concrete floodgates is not required until after 2080. While technically correct based on the input data this profile is clearly not reflecting reality. Much of this inaccuracy comes from the assumed installation dates and the expected lives.

However, the process still has validity as a financial planning tool but needs to be updated to reflect:

- More accurate information on installation dates (if known);
- Revised life expectancies to reflect observed performance and possibly reflecting localised conditions; and
- Robust condition assessment to confirm alignment between life expectancy and actual condition.

While the data used for valuation purposes has significant issues in relation to its relevance for renewal predictions it is still valid in relation to the overall magnitude of the renewals required (assuming the unit rates can be confirmed) and the depreciation expense that should be charged (assuming the expected life is realistic). The current depreciated value of the assets is of no practical consequence from a renewal planning perspective.

6.6.3 Improving the asset renewal planning

As yet the performance and criticality of the current assets in the NALD schemes are an unknown, as such an accurate renewals programme cannot be constructed for future planning,

This is an AMIP item and must be rectified to enable better knowledge and planning of the land drainage districts, their assets and the renewals of the assets for the protection of the drainage networks and the greater communities.

6.6.4 Currently proposed renewal provisions

The proposed renewal programme for LD assets is illustrated below. It currently comprises an unallocated allowance of $30,000 per annum across all of the NALD schemes with specific provisions for two floodgate renewals in later years.

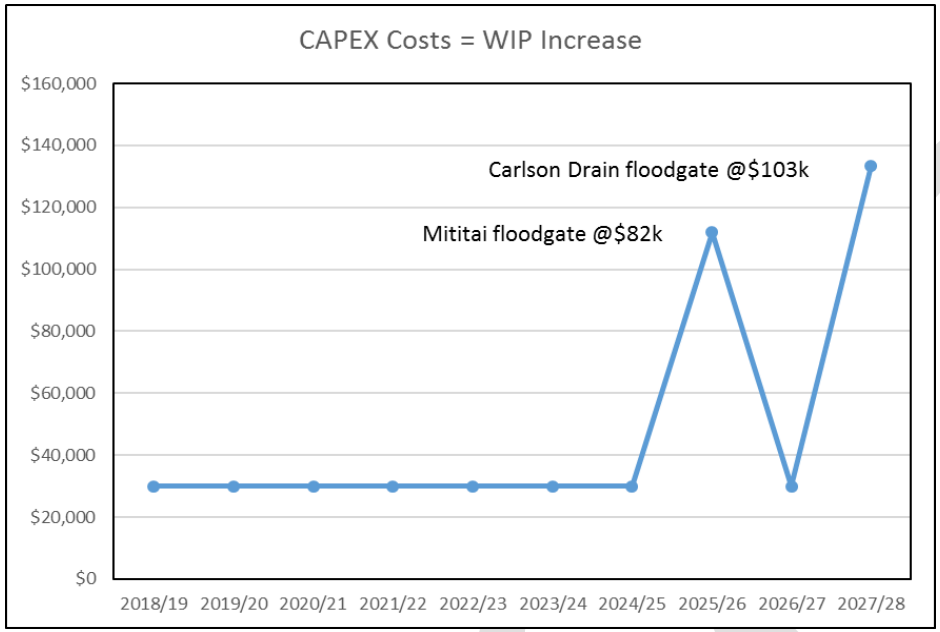
The actual allocation of this funding is determined on a 'most urgent need' basis as determined by discussion between the affected landowners and Council. This will also be influenced by the willingness of the landowners to fund the works, in whole or in part, rather than wait and the amount of funding deemed to be held as 'reserves' for a particular scheme.

Notwithstanding the issues raised above the annual provision of $30,000 would seem to be of the right magnitude if the overall renewal requirement for the floodgates is considered per the following table.

Table 6-9: Weighted average renewal expenditure required

Type	Value	Life	Avge/Yr
Wooden	$1,247,253	50	$24,945
Concrete	$ 550,368	80	$6,880
	$1,797,622		**$31,825**

Figure 6-3: Capital works forecast



6.6.5 Lifecycle Management Strategy - Development

Currently, Council and the drainage committees have no intention of developing the network further.

While it is envisaged that stopbanks may need to be raised at some point in the future, this issue requires investigation and a budget has not been set aside for this to date.

6.6.6 Lifecycle Management Strategy - Disposal

Due to the nature of this activity, it is unlikely that any drainage assets will need to be considered for disposal. Where the obligations and liabilities for maintaining and renewing the assets are borne by one stakeholder it has occurred that the stakeholder has removed the scheme from the list of KDC managed drainage districts as shown in the table within this document. This is on a case-by-case basis and the effects of this action on the wider community are always taken into consideration.

There are currently no planned land drainage network disposals.

7 Financial summary

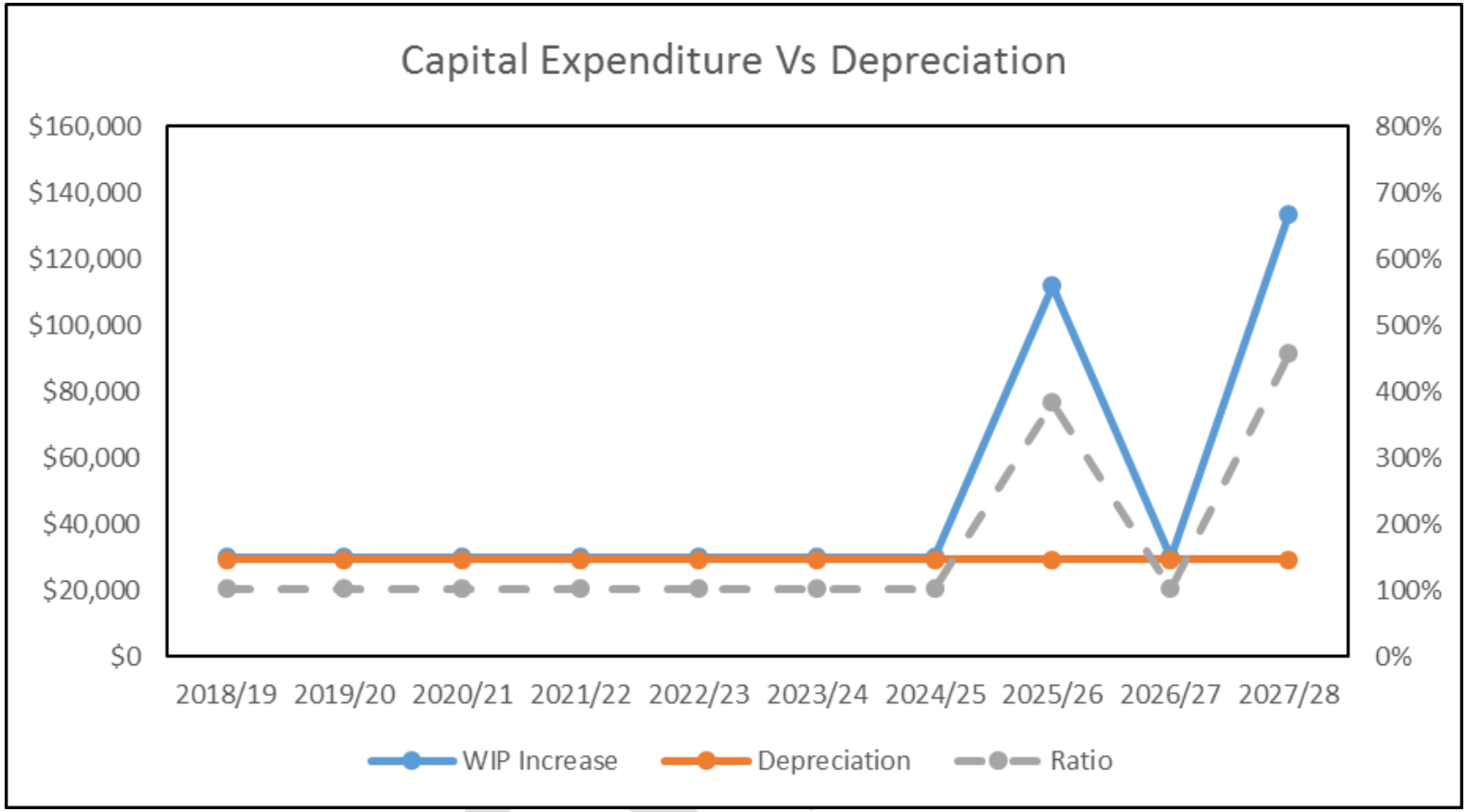
The financial forecasts for the 10 year period are included above as this provides a more comprehensive overview of the particular aspect being discussed.

A comparison between the provision for capital works and scheme depreciation indicates that in most years they are virtually in balance. Where two specific expenditure spikes occur this is above the depreciation provision but would depend on consultation with the relevant stakeholders in relation to whether the works actually proceed, the timing of the works and how they should be funded.

Table 7-1: Capital expenditure vs depreciation

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
WIP Increase	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 112,000	$ 30,000	133,500
Depreciation	$ 29,196	$ 29,196	$ 29,196	$ 29,196	$ 29,196	$ 29,196	$ 29,196	$ 29,196	$ 29,196	29,196
Ratio	103%	103%	103%	103%	103%	103%	103%	384%	103%	457%

Figure 7-1: Capital expenditure vs depreciation

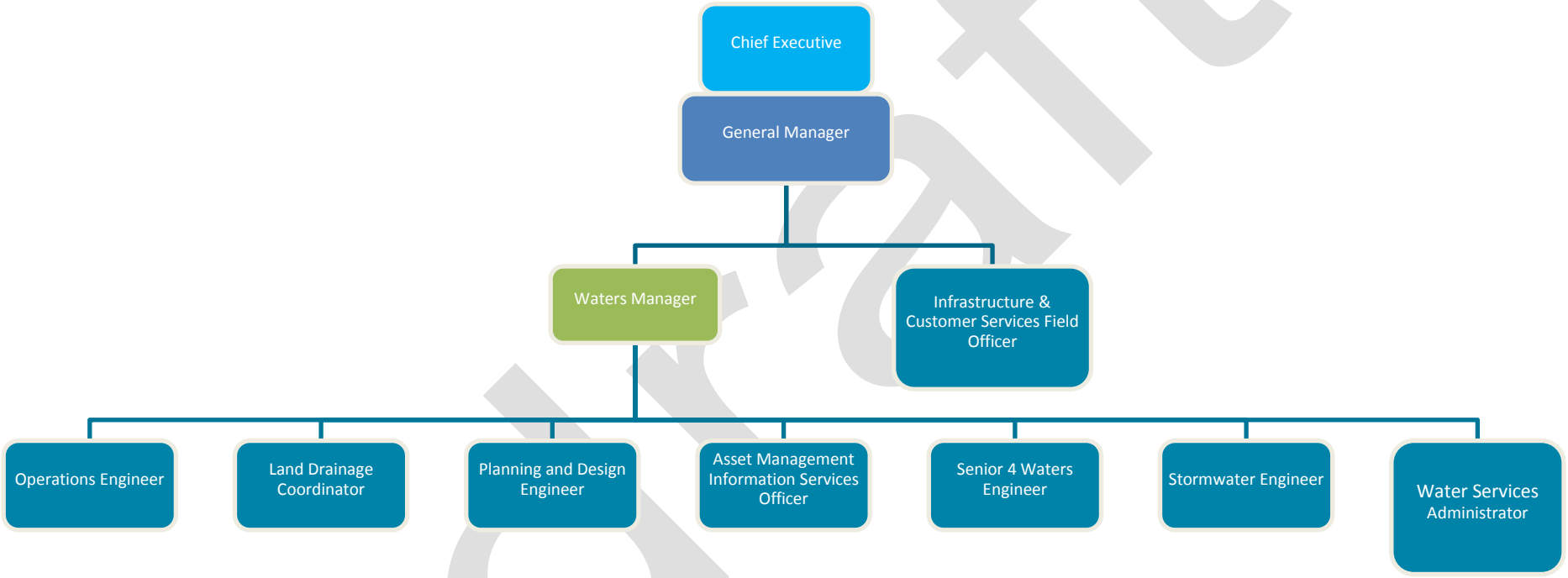


8 Service management

8.1 Organisation

The following figure illustrates Council's organisational structure.

Figure 8-1: Organisational structure



8.2 Asset management systems and processes

8.2.1 Asset management systems

Effective information systems are essential for AM. Ease of information storage and analysis enables good AM decisions. Council uses the support tools listed in Table 8.1 to manage the stormwater business:

Table 8-1: 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 asset's 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 MAGIQ(NCS) software and GAAP Guidelines.
MAGIQ (Maintenance and General Inquiry)	Customer enquiry and service request tracking	To record customer interactions and track all service requests for follow up investigation and resolution within appropriate timeframes. MAGIQ is the standardised form of record inquiry, record maintenance and reporting used for all NCS applications. Integrates with Intramaps, an inquiry tool in 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.

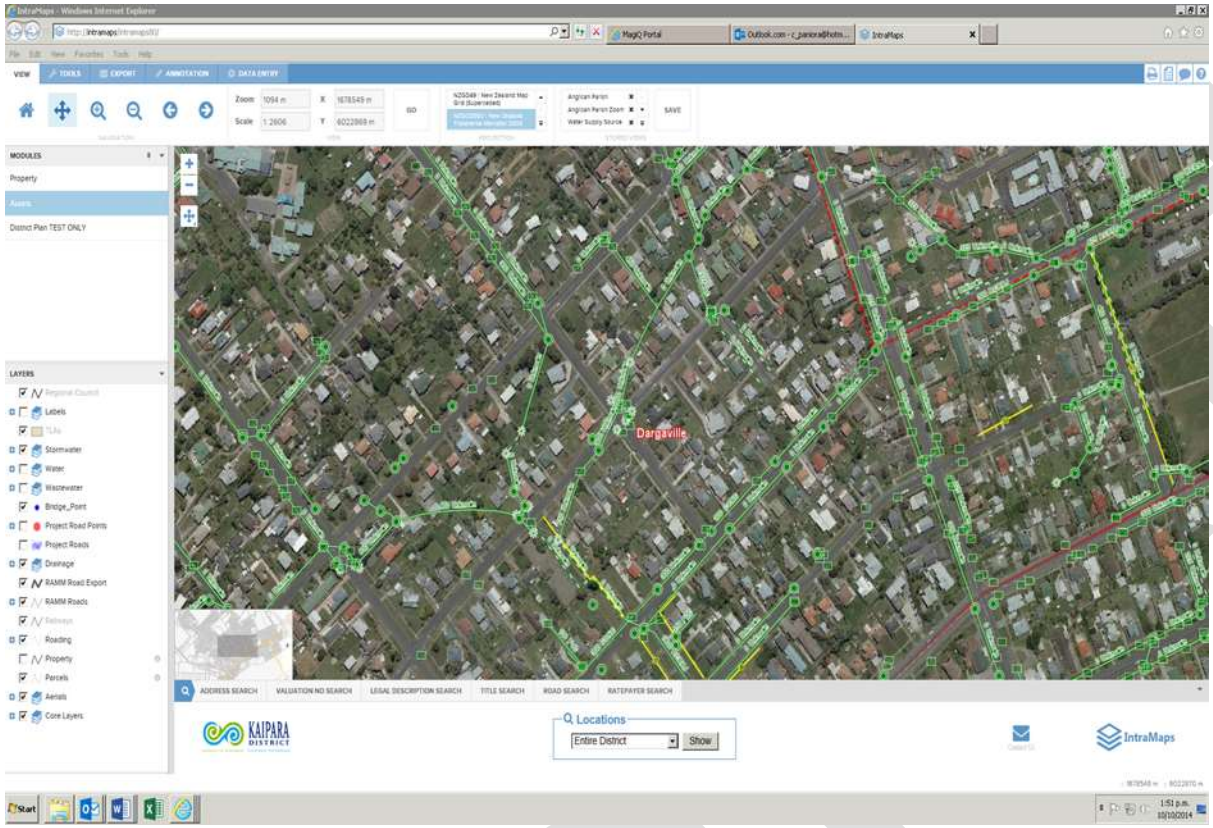
8.2.2 IntraMaps

The IntraMaps system is the core system used to house the spatial data related to Council's 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 screenshot of the IntraMaps system is shown below:

Figure 8-2: IntraMaps Screenshot



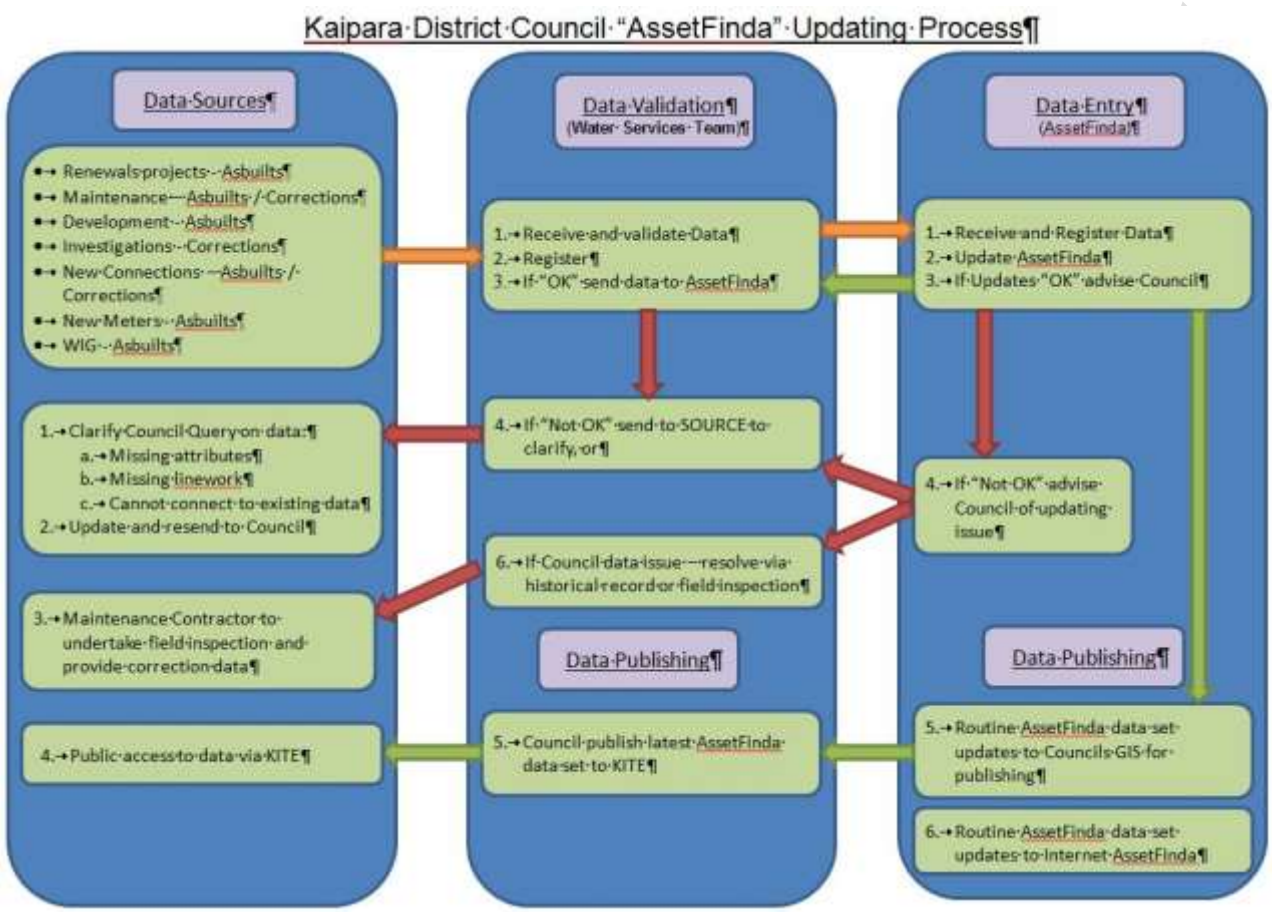
The representation of the assets within this system is believed to be reasonably comprehensive, although gaps and inaccuracies in the data are known to exist. A data improvement task has been identified and included in the AMIP to fix the known anomalies.

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 below.

Figure 8-3: Data maintenance process



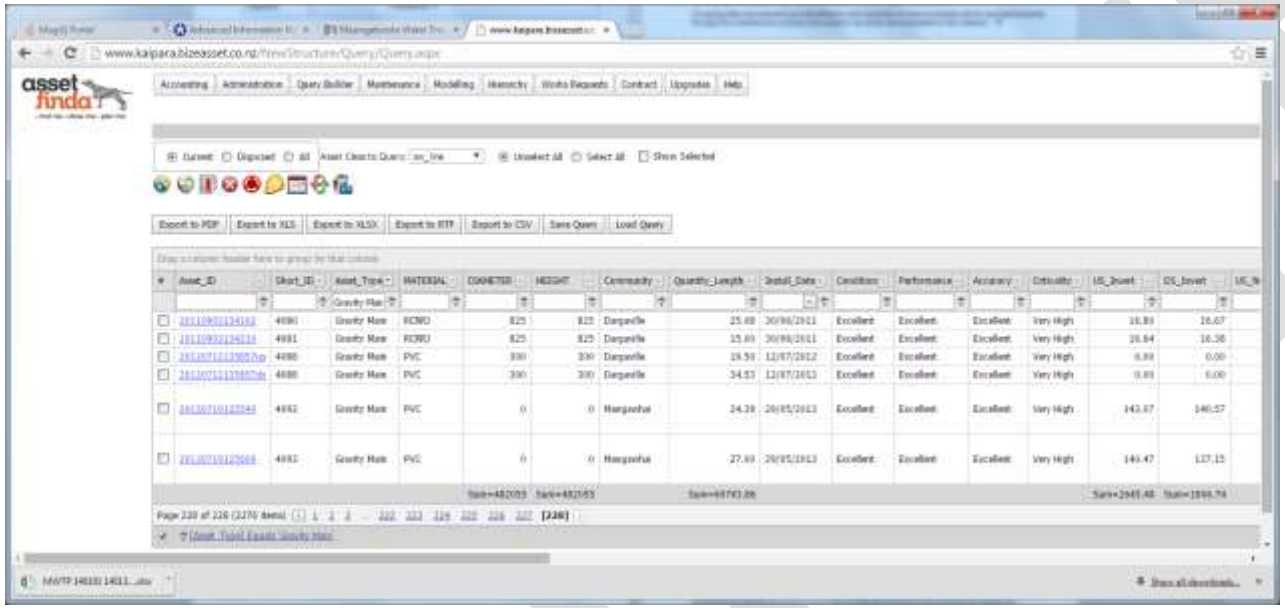
8.2.3 AssetFinda

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 screenshot of the AssetFinda system is included in Figure 8-4:

Figure 8-4: 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 Council's data; and
- 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 AMIP item has been identified to enable the AssetFinda system to be modified for the recording of this information.

8.3 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.

9 Risk management

9.1 Overview

Council's Risk Management Policy and Framework has been updated and the latest version is dated December 2012.

Risk management is undertaken to identify specific business risks associated with the ownership and management of land drainage and 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. 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 Roads and Footpaths 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.

9.2 Risk Management Policy

The land drainage schemes are exposed to a range of hazards that affect its ability to deliver services to its community in an economically, socially and environmentally sustainable manner. These hazards can originate from external events (e.g. earthquakes), from the water (e.g. high rainfall event combined with spring tide) or from the infrastructure itself (e.g. asset deterioration leading to failure).

A risk analysis of the drainage network must consider not only the impact of hazards affecting individual assets but the combined consequences of widespread failure in a major hazard event, and in particular a large flood.

In today's environment it is important that Council and the local stakeholders undertake all that could be reasonably expected to reduce the impact of a major hazard event on the community.

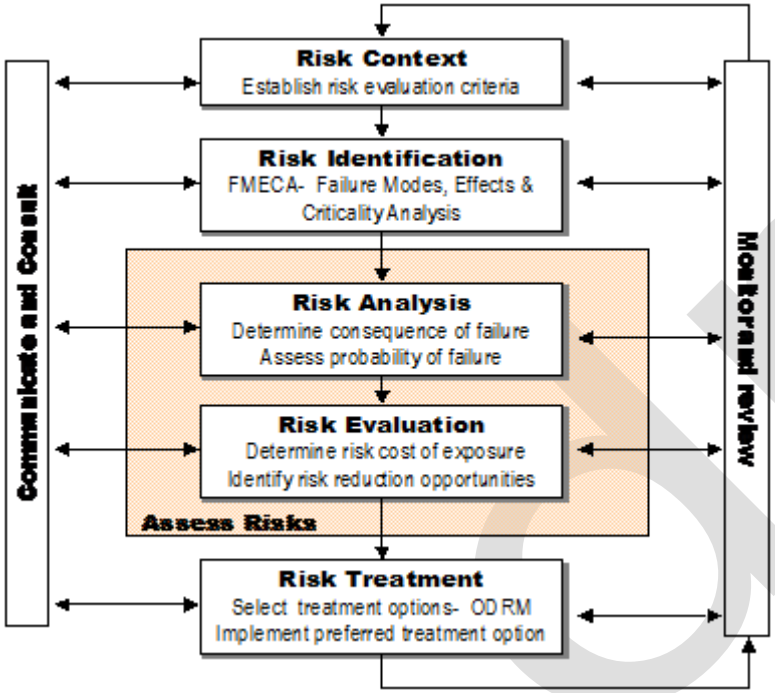
The risk posed by these hazards is a product of their consequences for service delivery and the frequency of occurrence. This section shows how Council intends to manage the variety of risk associated with hazards at all levels of its water management, in an approach consistent with that to be employed by the rest of the Council organisation.

This is accomplished by:

- Identifying all hazards;
- Identification, analysis, evaluation and treatment of the risks and consequences associated with such hazards where:
  - appropriate action is identified to manage the risks and consequences;
  - priority is assigned to the highest risks to be addressed in the short to medium term; and
  - responsibility is allocated to specific staff for managing risks.

This is conducted in accordance with the process outlined in AS/NZS 4360:2004 and illustrated below.

Figure 9-1: Risk management process



The scope of this section includes the completion of Step 1 (establishing the context for risk management in Kaipara district) and Step 2 where the land drainage network has been reviewed for potential hazards. Step 3 analyses identified risks, their potential impacts and current controls. Risks are evaluated and treatments scheduled within forward Capital and Operational programmes (Steps 4 and 5). The outcome is presented in the Risk Register that is appended to this document. A useful summary table of the highest priority risks to be addressed in the short to medium term concludes this section.

9.3 Risk identification

9.3.1 Event hazards

As part of the process for raising their awareness of risks associated with the asset in their care, Council will be sourcing and collecting up to date records of the latest information on event-based hazards in the Northland area, and will review the likely implications for risks to its infrastructure assets. In particular, information may be obtained from NRC who should have a comprehensive record of hazards and flood events in this area.

Earthquake

Although no specific studies on earthquake hazards have been undertaken for the Kaipara district, similar studies for other districts of similar geology and geography provide an insight into the effects that can be expected from an earthquake. There is likely to be significant and widespread damage to both stopbanks and floodgates in a major earthquake.

In the drainage network, possible damage includes:

- Bore casings damaged by ground displacement;
- Pump buildings are at risk of collapse;
- Joint failure in pipes, especially in liquefaction-prone sands;
- Displacement of floodgates interrupts the nature flow of water; and
- Damage to dams/weirs resulting in a sudden release of water.

King tides during heavy rainfall events

The occurrence of a heavy rainfall event at a time of king tides may result in continued and repetitive overtopping of the stopbanks and inundation of private property with saltwater.

9.3.2 Product hazards

Product hazards could include the inability to obtain resource consent to maintain outfalls in the coastal marine area.

9.3.3 Infrastructure hazards

Infrastructure hazards are defined as the hazards to public health, Council finances, service delivery, the environment, other assets in the vicinity etcetera that arise from failure of key infrastructure such as pumps, pipes and other components of the water supply networks. Once the critical assets are identified, the risks are analysed and mitigation methods are designed and fed through to the operational, maintenance or capital works programmes.

To date there has been no formal identification and analysis of infrastructure hazards. In particular, therefore little is known of the nature and extent of environmental damage risk.

This AMP acts to formalise hazard identification for these assets and identifies an action plan that once implemented will ensure that risk assessment is fully ingrained into the business.

9.4 Risk analysis and evaluation

9.4.1 Key analysis criteria

The key risk management criteria for Kaipara District Council management are:

- impacts on public health and safety;
- environmental risks;
- legal and regulatory compliance;
- financial Impact: direct costs (repair, lost revenue, third party damage, legal costs);
- image, reputation and public support; and
- Service delivery impact on customers and community.

The matrix used to assess the consequences of failure is shown in Table 9.2. Careful consideration has been given to the weightings of consequences and the resulting risk rating. The table infers, for example, that a direct repair cost of $1,000 - $3,000 is equivalent to receiving negative local media coverage. A risk of this level, if it had a probability of occurring once a year, would be identified as being a ‘high’ risk requiring a review of the risk controls and some improvement in those controls to reduce risk to ‘moderate’.

Risk exposure for each key service objective and each risk event is calculated as:

RISK EXPOSURE	=	PROBABILITY OF OCCURRENCE	x	IMPACT OF OCCURRENCE

The probability of occurrence used to determine the risk rating is defined as:

Table 9-1: Likelihood of failure

	Likelihood	Current probability
A	Rare	Could occur only in exceptional circumstances (unlikely next 50 years)
B	Unlikely	Could occur at some time in the next 50 years
C	Possible	Could occur at some time in the next 10 years
D	Likely	Could occur once a year
E	Almost certain	Is expected to occur several times a year
F	Certain	Occurs on a daily basis

Table 9-2: Consequence of failure

IMPACT (RISK)					
CONSEQUENCE	1	2	3	4	5
Description	Insignificant	Minor	Major	Severe	Catastrophic
Corporate Image	Event only of interest to individuals (<$1,000). Nil effect or community concern.	Minor community interest ($1,000-$3,000) Local media report.	Public community discussion ($3,000-$25,000) Broad adverse media coverage.	Loss of community confidence in Council ($25,000-$0.1M) National publicity. Public agitation for action.	Public investigation (>$0.1M) International coverage. Management changes demanded.
Environmental	Negligible impact (<$1,000) Reversible within 1 week.	Material damage of local importance. ($1,000-3,000) Prosecution possible. Impact fully reversible within 3 months.	Serious damage of local importance ($3,000-$15,000) Prosecution probable. Impact fully reversible within 1 year.	Serious damage of national importance ($0.15M-$0.3M) Prosecution expected. Impact reversible within 10 years.	Serious damage of national importance (>$0.3M) Prosecution. Long term study. Impact not fully reversible.

IMPACT (RISK)					
CONSEQUENCE	**1**	**2**	**3**	**4**	**5**
Description	**Insignificant**	**Minor**	**Major**	**Severe**	**Catastrophic**
Safety and Health	Negligible injury (<$500)	Minor injury ($500-$2,500) Medical attention required.	Serious Injury ($2,500-$0.1M) Hospitalisation required.	Loss of life ($0.1M-$0.25M).	Multiple loss of life or district-wide epidemic (>$0.25M).
Third Party Property Damage and Losses	Minimal liability for consequential loss (<$500).	Liability for consequential loss ($500-$5,000).	Liability for consequential loss ($5,000-50,000).	Liability for consequential loss ($50,000-$200,000).	Liability for consequential loss (>$200,000).
Loss of Service - Extent/ duration	Small number of customers experiencing minor service disruption (<$500).	Significant service disruption affecting small number of customers ($500-$2,000).	Significant localised disruption over extended period ($2,000-$20,000).	Major localised disruption over extended period ($20,000-$100,000).	Major long term district wide service disruption (>$100,000).
Kaipara Business Costs (Total recovery)	Total direct revenue loss and cost to restore service (<$500).	Total direct revenue loss and cost to restore service ($500-$5,000).	Total direct revenue loss and cost to restore service ($5,000-$50,000).	Total direct revenue loss and cost to restore service ($50,000-$100,000).	Total direct revenue loss and cost to restore service (>$100,000).

9.4.2 Risk evaluation

The matrix of likelihood and consequence of failure ratings shown in Table 9.3 is used to assess the level of risk, ranking events as low, moderate, significant or high risk.

Table 9-3: Risk matrix

Likelihood	Consequences				
	1	2	3	4	5
A	L	L	L	M	H
B	L	L	M	H	E
C	L	M	H	E	E
D	M	M	H	E	E
E	M	H	E	E	E
F	H	E	E	E	E

This allows all asset and corporate risks to be compared and ranked. The risk policy specifies the following broad treatment strategy for the levels of risk:

L = Low Risk: Manage by routine procedures.

M = Moderate Risk: Management responsibility must be specified.

H = High Risk: Risk and management strategy identified in AMP. Failure management plans available.

E = Extreme Risk: Risk and management strategy identified in AMP. Failure management plan specifically addressing event in place.

9.4.3 Communication, monitoring, review and reporting

KDC is in the process of establishing a risk register in the following structure to communicate report and monitor the implementation of the Risk Management Policy.

- Key Elements. Each key activity that Council carries out to provide a service;
- Description of the risk:
  - What can happen? The things that can go wrong if each of the activities is not carried out properly;
  - How can it happen? The specific actions might cause that risk event to occur; and

- Consequences. A description of the potential impacts arising from that risk event e.g. costs to Council, damage to public image, public health effects; and

- Current Practices (Controls). The practices that are currently carried out to manage those risks;
- Future Appropriate Practice. The practices that should ideally be carried out to manage risks to an acceptable level;
- Improvement Actions. The improvements required to close the gap between current and appropriate practice;
- Responsibility. Nominated person responsible for ensuring the risks are managed and improvements carried out in accordance with the programme; and
- Audit trail. Date of entries and revisions, target date for actions to be taken, and actual tasks completion dates.

9.5 Application to land drainage

The following table identifies Council's high and extreme risks that are relevant to land drainage, together with potential impact, current controls and an action plan to mitigate, minimise or manage the risk.

Table 9-4: Summary of extreme/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.	

LOS Failure Indicator	Asset group	Asset sub-group	Caused by	Risk Severity	Controls	
					Existing	To develop
	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.

9.6 Risk treatment

Options for risk treatment are yet to be considered. Risk reduction treatments available include:

- Reduce probability of failure by capital works (renew, provide redundancy, upgrade), maintenance expenditure, operational documentation, training etcetera;
- Reduce the impact of a failure by actions such as preparing emergency response plans;
- Accept some risk and carry the consequential costs;
- Change the LOS;
- Insure against the consequential costs; and
- A combination of the above.

Table 9.5 identifies all high and medium risks associated with land drainage, together with potential impact, current controls and an action plan to mitigate, minimise or manage the risk.

Table 9-5: Specific risk responses

Asset group	Risk	Potential impact	Risk exposure	Controls/Action Plan
Infrastructure				
Stopbanks	Sea level risk as a result of global warming.	Sea level rise causes stopbanks to be overtopped in spring tides and/or when river in flood.	High	Programme needs to be implemented to investigate stopbank heights and start raising stopbank levels.
Floodgates, drains and canals	Sea level risk as a result of global warming.	Sea level rise results in floodgates, drains and canals behind below low tide mark and therefore unable to drain.	High	Land Drainage Co-ordinator to investigate difference in level between floodgate and low tide and available fall to determine whether sea level rise is a threat.
Regulation changes	Change in regulations inhibit the ability to manage and control undesirable vegetation.	Build-up of vegetation in outlets/drains/canals resulting in loss of hydraulics and inability to efficiently drain the network.	High	Resource consent obtained that allows for the clearing of nuisance vegetation in coastal marine area.
Stopbanks - spall material	Cheap spall material not available results in significant increase in maintenance costs.	Increase in rates to ensure current level of service maintained in relation to stopbank protection.	Medium	Alternatives for spall materials are frequently re-assessed
Drains - local spraying contractors	Loss of local spraying contractors results in significant increase in maintenance costs.	Increase in rates to ensure current LOS maintained in relation to spraying and network capacity.	Medium	Contracts for other districts are grouped to increase workload to contractor. Alternative contractors are available.
Floodgates - local engineer	Loss of local engineer to repair/replace floodgates.	Increased costs to maintain/replace floodgates.	Medium	
Events				
Earthquake	Earthquake causes widespread soil displacement	Damage to stopbanks results in prolonged flood damage to low-lying	Medium	Develop emergency response plan

Asset group	Risk	Potential impact	Risk exposure	Controls/Action Plan
	and lateral movement.	areas.		
Cyclone/Spring Tide	Cyclone at time of spring tides causes overtopping of stopbanks and network capacity exceeded.	Extensive and prolonged flooding in drainage district.	Medium	
Flooding	Excessive flooding on land side of stopbanks unable to be drained in two tides.	Prolonged inundation of private property by floodwaters (possibly saltwater) resulting in extensive damage to pastures/crops.	Medium	Access available to other pumps, portable pumps available and action plans agreed with local stakeholders.
Floodgate Failure	Failure of one or more floodgates over prolonged period allowing entry of seawater.	Canals fill up with incoming tide.	Medium	Drain floodgates are shut to prevent saltwater entering drainage network.
Product				
Biological Resistance	Weeds in drainage network become resistant to Roundup.	Drain cleaning methods need to be changed to more expensive methods to maintain hydraulics.	Medium	
		Drains no longer able to be kept weed-free and capacity of network is adversely affected.	Medium	

9.7 Health and Safety:

Council has a Health and Safety (2016) 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

Council assets. *"At the Kaipara District Council (Council) we will all keep everyone safe and healthy at work, and get better at being safe every year, by doing these things".*

10 Continuous improvement

Council recognises the need to improve on its current AM practices and has committed to lifting its current level of AM. The development of this AMP is an indication of this commitment.

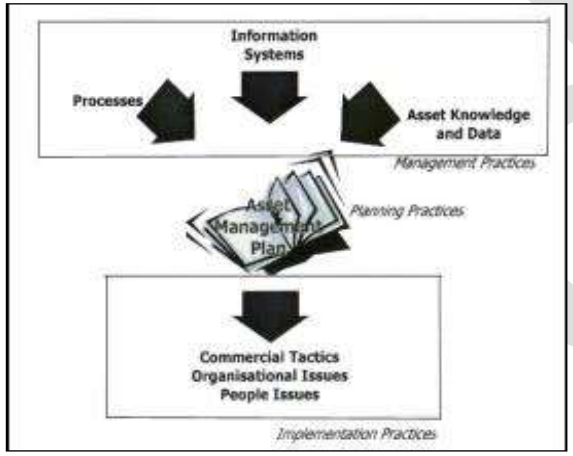
With regards to land drainage assets, there will always be a balance between the level of sophistication and investment in AM planning versus the willingness of drainage district landowners to pay for planning tasks. Given the nature and extent of the land drainage assets the level of planning established by this AMP is deemed to be of a suitable level by Council and the Drainage District Committee members.

Ensuring that the fundamental requirements for AM are in place gives Council a solid foundation on which to progress future improvements.

Sound AM planning requires the following key AM inputs:

- **Processes:** The necessary processes, analysis and evaluation techniques needed for lifecycle asset management;
- **Information Systems**: The information support systems, which support the above processes and which store and manipulate asset data; and
- **Data**: Data available for manipulation by information systems to support AM decision-making.

Figure 10-1: Key AM inputs



Council recognises the importance of these key inputs and this is reflected in the AMIP detailed in this section.

10.1 Asset Management Improvement Plan (AMIP)

Council has developed an AMIP to address the risks and issues described above. 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.

Table 10-1: Improvement Programme 2018/2028

Improvement Programme 2018/2028	
Year 1 **Planned improvement / change 2018/2019**	• Populate a central database and geospatial framework for the recording of asset attributes and condition assessment information; • Provide a central management system for consents, compliance and monitoring; • Commence an hydraulic assessment of the Northern Area Land Drainage (NALD) schemes to be able to better prepare these schemes for climate change and sea level rise; and • Commence condition assessments of floodgates.
Year 2 **Planned improvement / change 2019/2020**	• Continue assessments of NALD schemes assets; • Update creation dates for floodgates in valuation system and review expected lives of these assets; • Review valuation of floodgates and drains compared to Raupo land drainage scheme in preparation for 2021 AMP; • Continue assessments of existing drainage system to prepare for climate change and sea level rise' • Refine application of Criticality Framework to land drainage and review resulting risk assessment' • Commence consultation process with stakeholders to better define the expected land drainage LOS, clarify ownership of assets and maintenance/renewal responsibilities and clarify how long term funding of the schemes should be managed. This process will include assessment of current level of satisfaction with current arrangements; and • Assess existing drainage districts and identify where, if possible, any can be reduced or amalgamated.
Year 3 **Planned improvement / change 2020/2021**	• Continue assessments of existing drainage system to prepare for climate change and sea level rise; • Commence assessment of the potential impacts of increasing the focus on water quality issues as this is impacted by land drainage activities; • Generate indicative renewal programme from the system including updated condition assessments, asset valuations,

	projected remaining lives and allocation of responsibility for renewals; • Commence consultation process to progress amalgamations or boundary changes of schemes where this has been identified as potentially beneficial; and • Generate updated AMP for 2021
Years 4-10 **Planned improvement / change 2021/2028**	• The proposed programme in years 1-3 will yield a lot of information on asset condition, reviewed land drainage district boundaries, reviewed LOS and insight into how climate change will impact on the system; • The nature and extent of these changes are difficult to predict at this time but could conceivably require a significant rethink about how land drainage is managed in these districts; and • The programme from years 4-10 will largely reflect the changes that are identified in years 1-3 and their progressive implementation.

10.2 Monitoring and review

The AMP is a living document that is relevant and integral to daily AM activities. To ensure the AMP remains useful and relevant the following ongoing AMP monitoring and review tasks will be undertaken.

- **AMP Revision –** The AMP will be revised and updated on a three-yearly basis to coincide with the LTP process, and will incorporate the outcome of service level reviews and any new knowledge resulting from the AMIP.
- **Quality Assurance Audit –** Audits will be undertaken to ensure that the integrity and cost effectiveness of data collected for use in the AMP is maintained.
- **External Audit –** An external audit of each review of the AMP is to be undertaken prior to presentation to Council, to provide Council with the confidence that the AMP has been prepared and is being managed competently.
- **Annual Plan –** The Annual Plan and Annual Report will be monitored for consistency with this AMP.
- **Capital Expenditure Review –** Annual review of the capital expenditure programmes will continue to be undertaken to ensure that the programmes developed reflect the best needs of the asset.

Appendix A: Resource Consent Register

KAIWAKA STORMWATER					
Asset condition 2 good condition					
Reticulation Pipe line length 320m		320	Severe	Possible	Significant
Manholes 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 pipeline		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 Freyberg Road drain to Marina F/gate			Major	Moderate	High

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

Consent number	Type code	Details	Expiry Date
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 B: 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
AMIP	Asset Management Improvement Plan
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/KDC	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
KDC/Council	Kaipara District Council
KITE	Kaipara Information Technology Environment

Term	Definition
LGA	Local Government Act 2002
LID	Low Impact Design
LIM	Land Information Memoranda
LOS	Level of Service
LTP	Long Term Plan
NALD	Northern Area Land Drainage
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
SWCMP	Stormwater Catchment Management Plans
UPVC	Un-plasticised polyvinylchloride (pipe type)
URP	Usual Resident Population
WSSA	Water and Sanitary Services Assessment

KAIPARA DISTRICT COUNCIL

Kaipara District Council

Asset Management Plan 2018

Raupo Land Drainage District

November 2017

Status: Draft

QUALITY STATEMENT

PROJECT MANAGER		PROJECT TECHNICAL LEAD
Matthew Smith		Matthew Smith
PREPARED BY		
Matthew Smith	…….....	……/……/……
CHECKED BY		
	…….....	……/……/……
REVIEWED BY		
	…….....	……/……/……
APPROVED FOR ISSUE BY		
Curt Martin	…….....	……/……/……

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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	05 July 2017	First Draft	MS			
B						
C						
D						
E						
F						
G						
H						

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1 Executive summary

1.1 Introduction

The goals of the Raupo Land Drainage (RLD) network are to achieve the following in a cost-effective manner:

- Protect land from tidal waters;
- Control surface water during flooding; and
- Divert run-off from inland hills.

As per the LGA 2002:

1. The purpose of local government is –
    a. To enable democratic local decision making and action by, and on behalf of, communities; and
    b. To meet the current and future needs of communities for good-quality local infrastructure, local public services and performance of regulatory functions in a way that is most cost-effective for households and businesses.
2. In this Act, **good-quality**, in relation to local infrastructure, local public services, and performance of regulatory functions, means infrastructure, services, and performance that are –
    a. Efficient; and
    b. Effective; and
    c. Appropriate to present and anticipated future circumstances

In order to do this a number of drains, floodgates, stopbanks and a storm pump have been constructed and integrated with naturally formed channels to achieve these goals. These assets are overseen by a self-managed; drainage board comprised of representatives of the district who are assisted by Council staff and a drainage co-ordinator.

1.2 The challenges

A number of high risks have been associated with the land drainage network, these include but are not limited to:

- Stopbanks being overtopped at their current height due to climate change and predicted sea level rise;

- Sea level rise results in land drainage assets inability to drain sufficiently at low tide; and
- Changes in regulations inhibit Council's ability to manage and control undesirable vegetation.

Actions have been assigned to either control or eliminate these risks; however a budget has not yet been assigned to these actions.

Condition assessment – It has been realised that the condition of the systems assets are degrading and though they are "viewed" throughout each fiscal year by landowners and the KDC representative. A formal assessment had never been conducted, as of 2015/2016 funds have been allocated to conducting these assessments and several floodgates have been identified as needing work. The assessments will continue each year to allocate a condition rating to all of the Raupo Drainage District (RDD) assets.

Renewals – Once the condition of each asset is known these will be renewed or replaced as indicated, already several floodgates have been completely renovated, and all of the "salt water" assets have been inspected, this will continue into the foreseeable future.

The Assets – An improvement item is to identify and record all of the current assets and their condition and associate values and costs to these (locations and recent work are shown in Figure 1-1).

Knowledge of the network's capacity to adequately drain significant storm events is limited to actual performance during historical rainfall events. Historical evidence indicates that the network continues to provide the capacity for which it was designed.

An assessment of the likely future demands on the drainage network's capacity has also identified potential environmental changes as a result of global warming, and legislative changes as having the potential to result in moderate to significant impacts on the drainage network and its ability to achieve its stated goals and Levels of Service (LOS). The condition of drainage assets has been informally assessed and a renewal programme has been developed to reflect this assessment. Land drainage activities include operations, maintenance and renewals. Currently there are no plans for further developing the drainage network, nor are there plans to dispose of any of the assets within the network.

Ongoing operational, maintenance and renewal expenditure forecasts have been identified for the next 20 years. This represents an average expenditure of $272,000 per year until 2026/2027. From 2001/2002 the average annual expenditure for RDD was $202,000 per year for five years.

Figure 1-1: Raupo current assets

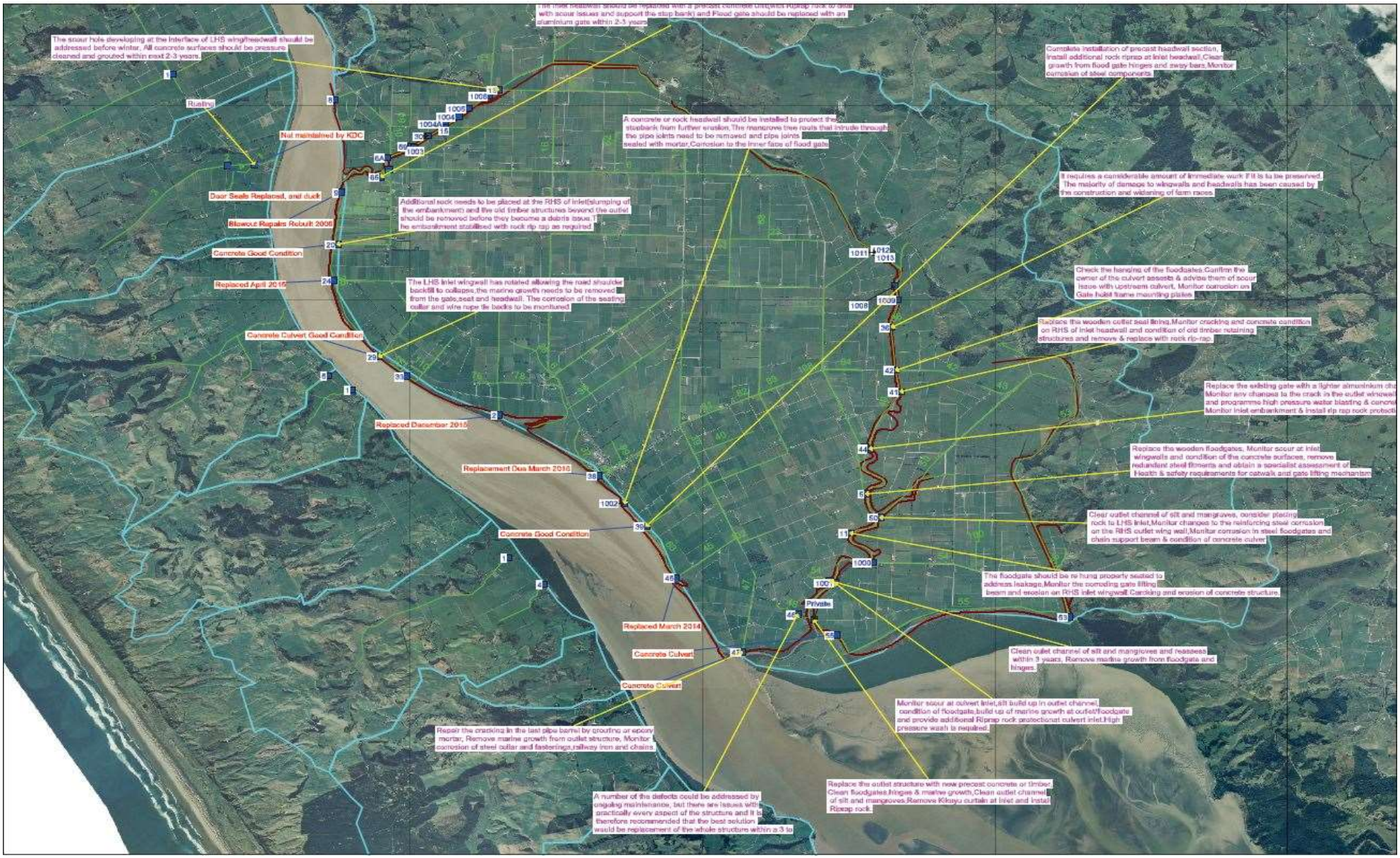


Table 1-1: Summary of RLD asset valuations (2016)

RLD Area	Quantity	Sum of replacement value	Calculated average unit rate
Building	4	$281,326	$70,331
Drains	1	$4,346,256	$4,346,256
Earth stopbank	1	$2,697,952	$2,697,952
Floodgates concrete	4	$462,980	$115,745
Floodgates wooden	49	$5,590,802	$114,098
Land	0	0	0
Pumping structure	1	$175,209	$175,209
Pumps	1	$174,120	$174,120
Rip rap	12,000	$523,715	$44
	total	**$14,252,361**	

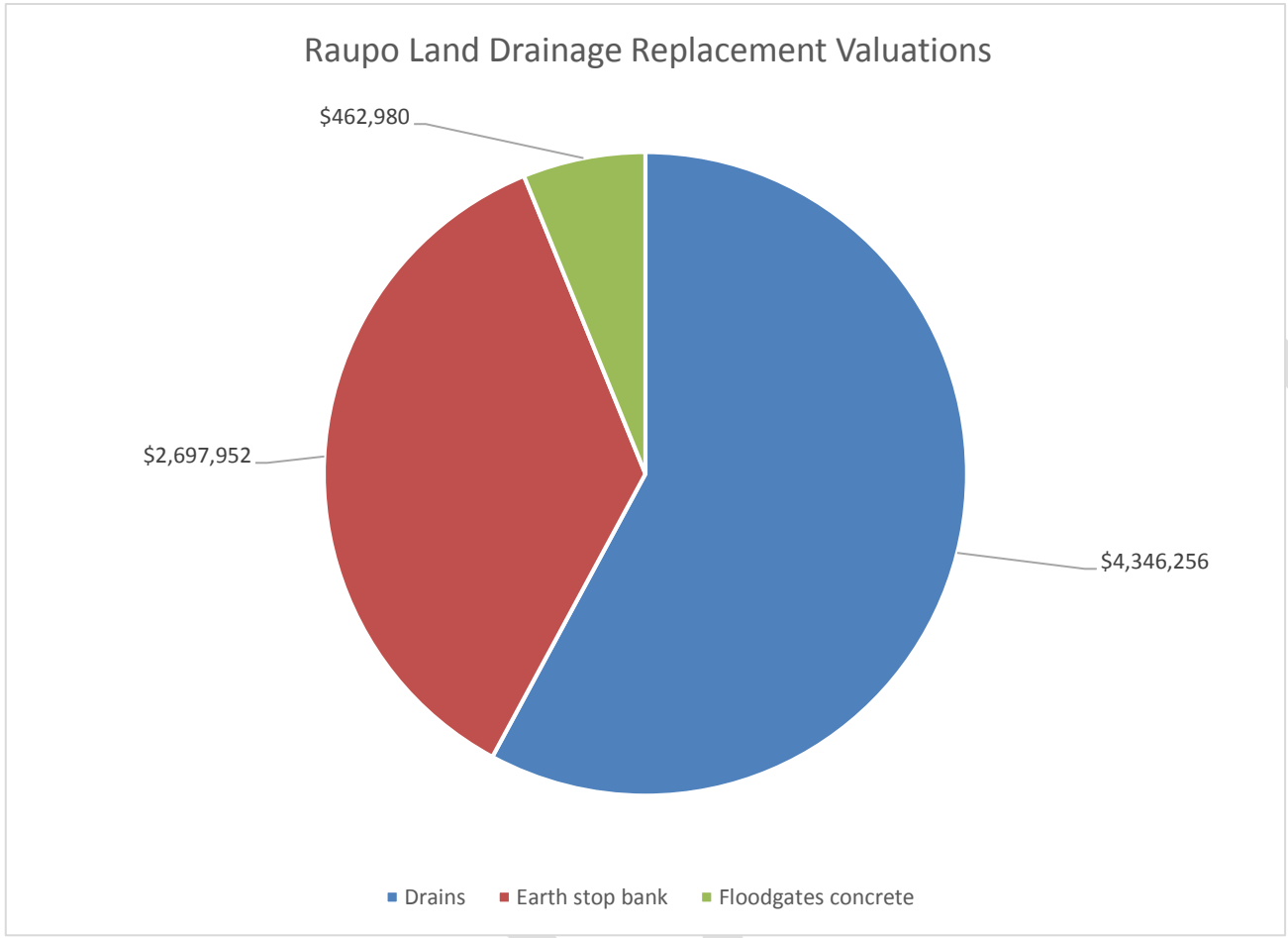
1.3 Key issues

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

Table 1-2: Key issues requiring attention

Issue	Location
Investigate condition of existing floodgates.	All
Investigate capacity of existing system, to better understand future consequences.	All
Survey current stopbank levels.	All
Geotechnical analysis of stopbanks to better understand strength and durability.	All

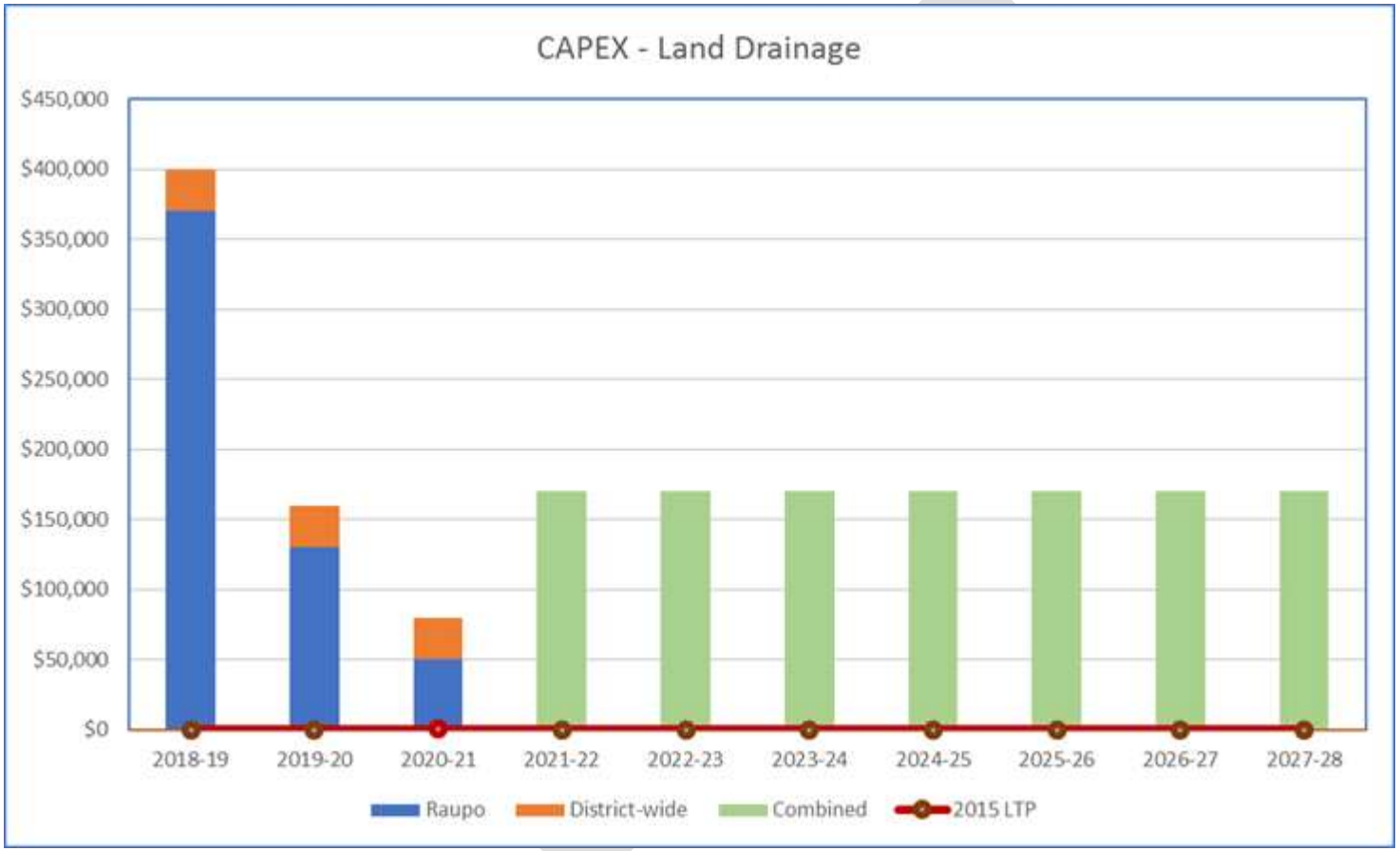
Figure 1-2: RLD replacement valuations



1.4 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 1-3 and Figure 1-4 below.

Figure 1-3: Raupo planned expenditure



1.5 Continuous improvement

Council has developed an Asset Management Improvement Plan (AMIP) to capture issues and plan the improvements required to the RLD assets and asset management (AM) practices. A summary of the AMIP is included in the Appendices.

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 AM and delivery of the stormwater business are:

- Review Stormwater LOS;
- Investigate the condition of existing floodgates;
- Investigate current capacity of the drainage network;
- Survey current stopbank levels;
- Geotechnical analysis of stopbanks to better understand strength and durability;
- Possibly undertake the development of a Stormwater Catchment Management Plan (SWCMP) for Raupo;
- Undertake Dargaville Flood study;
- Fully clarify asset ownership;
- Review asset register to ensure all known assets are properly recorded, including stopbanks, floodgates and detention ponds;
- Review the current status of resource consents for water discharge to the receiving environment;
- Understand and fully realise climate change impacts in conjunction with Northland Regional Council (NRC) reports; and
- Update 2021 AMP.

Table 1-3: Asset Management Improvement Plan 2018/2028

Asset Management Improvement Plan 2018/2028	
Year 1 **Planned improvement / change 2018/2019**	• Provide a central database and geospatial framework for condition assessment information and generate renewal programme from the system; • Provide a central management system for consents, compliance and monitoring; • Undertake a hydraulic assessment of the RDD to be able to better prepare this area for climate change and sea level rise; • Continue assessments of floodgates within target areas, Raupo and Dargaville etcetera; • Undertake assessments of existing stopbanks, levels and conditions, to help prepare for climate change and sea level rise; • Assess existing drainage districts and identify where, if possible, any can be reduced or amalgamated; and • Assess the current drainage district boundaries and identify if these are still accurate, the boundaries will be adjusted as required.
Year 2 **Planned improvement / change 2019/2020**	• Provide a central database and geospatial framework for condition assessment information and generate renewal programme from the system; • Provide a central management system for consents, compliance and monitoring; • Continue assessments of floodgates within target areas, Raupo and Dargaville etcetera; • Continue to undertake assessments of existing stopbanks, levels and conditions, to help prepare for climate change and sea level rise; • Assess existing drainage districts and identify where, if possible, any can be reduced or amalgamated; and • Where required, conduct hydraulic analysis of specific catchments to assess future upgrades to existing flood protection systems.

Asset Management Improvement Plan 2018/2028	
Year 3 **Planned improvement / change 2020/2021**	• Continue assessments of floodgates within target areas, Raupo and Dargaville etcetera; • Continue to undertake assessments of existing stopbanks, levels and conditions, to help prepare for climate change and sea level rise; • Any drainage districts identified to be amalgamated or reduced to be prepared and processed ready for the next AMP update; • Where required conduct hydraulic analysis of specific catchments to assess future upgrades to existing flood protection systems; and • Identified actions from hydraulic assessments to be processed into lists and associated costs prepared for next AMP update.
Years 4-10 **Planned improvement / change 2021/2028**	• Continue assessments of floodgates within target areas, Raupo and Dargaville etcetera; • Continue to undertake assessments of existing stopbanks, levels and conditions, to help prepare for climate change and sea level rise; • Assess existing drainage districts and identify where, if possible any can be reduced or amalgamated; • Where required conduct hydraulic analysis of specific catchments to assess future upgrades to existing flood protection systems; and • Forward programme of identified actions around preparing drainage districts for climate change and sea level rise, raising stopbanks and other flood protection measures to be approved and projects started.

2 Strategic Context

2.1 Purpose

The RLD network represents a major investment by the community and is of vital importance to the quality of life of the district's residents and the sustainable management of both tidal and flood waters. The community expectation that this investment in land drainage assets is secure and managed in a way which maximises return in terms of outputs and costs as reflected in the overall objective of AM, which is:

`'To meet the required level of service in the most cost-effective way through the creation, operation, maintenance, renewal and disposal of assets to provide for existing and future customers'.

The specific purpose of this AMP is to:

- Demonstrate responsible stewardship of land drainage assets;
- Manage risk of premature asset failure;
- Identify medium to long term financial requirements; and
- Identify long term issues and impacts and possible solutions for the land drainage assets.

The Local Government Amendment Act 2002 places an emphasis on prudent AM. The Act requires local authorities to:

- Prepare and adopt, every three years, a Long Term Plan (LTP) (10 years plus), which describes the local authorities activities, community outcomes and provides integrated decision-making and long term focus;
- In determining their LTP, consider all relevant information and assess the cost/benefit of options;
- Provide an opportunity for the public to participate in decision-making;
- Manage assets prudently in the interests of the district and its inhabitants; and
- Clearly identify significant forecasting assumptions and risks.

This AMP will provide the basis for identifying changes in service potential and determining long term strategies for RLD assets.

2.2 Service description and scope

A layout plan of the RLD is included in Section 5. The scope and approximate value of the assets covered by this AMP are shown in Table 2.1.

Table 2-1: Schedule of water assets included in this AMP

Raupo land drainage area	Quantity	Sum of replacement value	Calculated average unit rate
Building	4	$281,326	$70,331
Drains	1	$4,346,256	$4,346,256
Earth stopbank	1	$2,697,952	$2,697,952
Floodgates concrete	4	$462,980	$115,745
Floodgates wooden	49	$5,590,802	$114,098
Land	0	$0	$0
Pumping structure	1	$175,209	$175,209
Pumps	1	$174,120	$174,120
Rip rap	12,000	$523,715	$44
	total	**$14,252,361**	

This AMP covers a period of three years commencing 01 July 2018. All expenditure is based on unit costs as at 30 June 2016.

Council's LTP identifies Council's purpose in relation to land drainage as "To minimise the risks and impacts of flooding attributed to inadequate land drainage" and "to enhance the sustainability of agriculture through cost-effective maintenance and enhancement of drainage networks."

In order to achieve this purpose Council and the Raupo Drainage Board, through professional and physical works contracts, undertake the following:

- Asset management;
- Floodgate maintenance;
- Drain spraying and machine cleaning;
- Network operations and maintenance;
- Capital and refurbishment programme; and
- Consent monitoring.

2.3 Key issues

The key issues Council are currently managing as part of the stormwater activity are summarised in Table 2-2 below. These issues are further addressed the Assets section of this AMP.

Table 2-2: Key Issues for Council's land drainage activities

Issue	Description
Ownership of land drainage assets	Further clarification of ownership and associated operation and maintenance responsibilities is needed across the RDD.
Extending services	There is the possibility that the current network will need extending or some alterations due to the impacts of climate change and sea level rise, this will definitely need to be reviewed and a full stormwater catchment analysis commissioned for the Raupo District complete with assessments and options for mitigating any negative effects.
Public safety	The community wishes to pipe the deep open drains in urban areas (Ruawai). 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 Catchment Management Plans (SWCMPs) for each township.
Asset data	The current asset data and asset register are unreliable and inaccurate in terms of the information contained within, it is essential that this information is gathered to increase the knowledge of our current systems to enable Council to effectively and efficiently plan future works and capital upgrades.
Coastal discharges	A better understanding of the impact that stormwater discharge has on the receiving environment they discharge into is required, areas where there are pre-existing coastal outlets that are as yet unidentified and unmarked need to be investigated thoroughly and the appropriate consents and monitoring established for the welfare of the receiving environment.

2.4 Relationship to community outcomes, council policies and strategies

2.4.1 Broad planning context

The Local Government Act (LGA) provides an overall planning framework that Council is obliged to comply with. In broad terms this requires Council to engage with its community and stakeholders to determine what Council is to focus on achieving for the district. This is then translated to the types of activity Council will be involved in, the resources and assets it will need to provide for those activities and how this will be funded.

2.4.2 Long Term Plan (LTP)

This is developed, consulted and adopted every three years and covers the following three financial years in detail and provides indicative direction for the following seven years (10 years total). The next LTP will become operative on 01 July 2018. This process starts at a high level and works down to individual activities and the associated budgets and required rates and charges.

Council has adopted a new Vision Statement that includes specific reference to managing (maintaining and improving) its infrastructure.

The LTP 2018/5021 is still being generated. It is not expected that the role of stormwater drainage will significantly change from the LTP 2015 as repeated below.

Figure 2-1: Vision Statement

Table 2-3: RLD services and community outcomes

RLP Services contribute to the following community outcomes	How this service contributes
Safety and good quality of life	• Minimise flooding of property through efficient land drainage practices; • Ensure drainage paths and floodgates that are registered remain clear and unobstructed as designed; and • Ensure that land drainage systems do not present a safety hazard.
Sustainable economy	• Minimise flood damage to properties by ensuring land drainage systems have adequate capacity.
Special character and healthy environment	• Control flooding and flow of stormwater into the receiving environment, whilst protecting local interests.

The overall approach acknowledges that the focus and priorities will vary with different geographical areas, for example:

- West Coast: Increasingly attractive to tourism and lifestyle. An area with high ecological, historical, environmental and cultural values;
- Dargaville: An attractive place to shop, visit, live and works. A service and tourist centre;
- Kaipara Harbour: A taonga preserved for all to enjoy, retaining a rural atmosphere. Balancing the competing demands of commercial and recreational activities; and
- Mangawhai: Fully serviced urban centre located in an outstanding coastal environment.

This overall vision for the RDD provides a broad initial direction for the development of drainage priorities and how those assets may be managed. This information, along with community consultation and discussion with other interested parties contribute to the development of the community outcomes identified in the LTP. These outcomes have a direct influence on the management of the various water supply schemes.

The community outcomes that the drainage activity contributes to most are largely expected to be unchanged from the LTP 2015 i.e.

What We Want To See

- *To ensure that stormwater flooding and discharge to the environment is contained and managed to minimise impacts on people, property and the environment.*

Why We Do It

- *To protect people, dwellings, private property and public areas from flooding by removing floodwater;*
- *To discharge stormwater and collect contaminants in a manner that protects the environment and public health; and*
- *Council's approach to land drainage is to minimise the impact on arable farm land by reducing adverse effects from stormwater runoff on the environment.*

The drainage network is subjected to high intensity rainfall events.

The Level of Service (LOS)

- *Drains will have the capacity to enable floodwater to recede within three tidal cycles, design Average Recurrence Interval (ARI) for rural areas is 10%;*
- *Stopbanks are 2.6m above Mean Sea Level leaving 0.5m above extreme high tide for the Raupo area;*
- *Raupo Drainage Committee, a formal committee of Council, is in place to perform delegated functions;*
- *All flood protection activities outside of RDD are administered by informal community committees supported, where practical, by Council's Land Drainage Co-ordinator, in accordance with each Committee's request for assistance. Maintenance on privately owned stopbanks is undertaken by the landowner; and*
- *NRC is responsible for catchment management.*

2.4.3 Infrastructure Strategy

As part of the LTP, Council is required to produce a Long Term Financial Strategy and an Infrastructure Strategy for its major asset using activities. These documents are required to look out not less than 30 years to identify the issues and challenges that Council will face during that period, how Council would likely respond to them, what this will cost and where the funding will come from. This recognises the long-lived nature of the infrastructure assets that Council utilised to provide services, the potential for technology and expectations to change considerably and the potential for expenditure to be quite 'lumpy' as assets enter their renewal cycles.

2.5 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:

Table 2.4: Stakeholders

External stakeholders	Interest
Kaipara district community	• RDD ratepayers; • Public safety; • Public health; • Protection of private property; • Environmental protection; and • Water quality of local harbours and ephemeral waterways for commercial and recreational activities.
Government agencies (e.g. Department of Health, Ministry for the Environment, Audit New Zealand)	• Adherence to government policies and framework; • Ensuring Council is transparent and accountable; • Public safety; and • Environmental health and protection
Local Iwi	• Protection of historical relationship of Maori and their culture and traditions with their ancestral lands, water, sites, wahi tapu and other taonga.
Civil defence and emergency management	• Understanding land drainage control and measures to ensure public safety. • To better understand flood issues within the local area.
Northland Regional Council (NRC)	• Adherence to NRC policies and plans e.g. NRC – Regional Plan; • Environmental impacts and protection; • Protection and increase of water quality and water quality standards; and • Planning for climate change and sea level rise
Maintenance Contractor	• Maintain existing services; • Understand Council's LOS and its targets and requirements; and • Understand the local network and Council's direction for the AMP period.

External stakeholders	Interest
Visitors to the district	• Public safety; • Environmental protection; • Minimal flooding and flood protection of tourist areas within the surrounding district; and • Quality of ephemeral waterways and harbours for recreational activities.

Internal stakeholders	Interest
Raupo Drainage Committee	• Representing the interests of the RDD; • Protecting RDD ratepayers' interests and ensuring the transparency of Council's actions and projects; • Maintaining and managing the LOS to the community and ensuring that necessary works are completed on time and in the right order; • Planning future works; and • Maintaining water quality.
Councillors	• Representing the public's interests and those of the greater district; • Protecting the ratepayers' interests and ensuring the transparency of Council's actions and projects; • Planning of future works; • Maintaining water quality; • Allowing for future growth and the provision of services; and • Maintaining and increasing LOS to the communities.
Finance Manager	• Understanding the financial implications of the AMP period and how this will affect rates and ratepayers of the district; • Ensuring the completeness of asset data and how this affects current valuations and Council's Investment Confidence ratings; and • Ensuring that budgets are valid and able to be adhered to; and • Protection of public interest in regards to spending on public assets.

Internal stakeholders	Interest
Information Services Manager	• Ensuring that all information is recorded correctly; • Keeping track of assets and asset data; • Vested interest in completeness of asset data and value; and • Increasing the reliability of Council asset registers.
Records and Information Manager	• Ensuring Council's transparency on identified works; and • Retaining and cataloguing Council information for auditable purposes.
Northern Transportation Alliance (NTA)	• Protection of road assets from stormwater; • Planning flow of stormwater away from road assets; • Protection of road users; and • Identifying growth, renewal and LOS projects where stormwater and road asset projects coincide.

2.6 Community engagement

Council consults with the Raupo Drainage Committee in the first instance who represent the greater Raupo community which includes the Ruawai township. If required Council will engage the public to gain an understanding of customer expectations and preferences. This enables Council to provide a LOS that better meets the community needs. Council's knowledge of customer expectations and preferences is based on:

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

Council undertakes customer surveys on a regular basis, using the National Research Bureau Ltd. These customer perception 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 2016 regarding the stormwater service:

- 81% of residents that are provided with a piped stormwater system responded with being very/fairly satisfied with the stormwater service (82% in 2014); and
- 18% were not very satisfied. (19% in 2012).

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

2.7 Potential significant negative effects

The RLD activity is an essential service that is provided to our communities and the environment. Discharges from the drainage network can impact cultural, social, environmental and economic well-being. In addition to managing the quantity of floodwater it is recognised that the activity also includes the quality of discharges to and from the network on the receiving environment. Both aspects of land drainage 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. These standards are relevant for land drainage in respect to the stormwater design information and is supported by local knowledge and site specific designs. Holistically the design of systems in accordance with the Engineering Standards will minimise the impacts of 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 LOS provided throughout the network.

The negative impacts identified by Council and mitigation measures in place are provided below:

Table 2-5: Potential significant negative effects

Identified significant negative effect	Cultural	Social	Economic	Environmental	Mitigation
LOS vs Feasibility The construction and maintenance costs of infrastructure upgrades to meet a set LOS is beyond the means of the Community to afford.		✓	✓		The provision of a set level of land drainage systems should be assessed on a case-by-case basis. This will be managed through consultation with the Raupo Drainage Committee (RDC) and the community 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 RDD 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 viewpoint.
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.

Identified significant negative effect	Cultural	Social	Economic	Environmental	Mitigation
Flooding direct impact Land drainage districts usually incorporate a large catchment area which has the capacity to generate large amounts of stormwater runoff and flows. This needs to be managed in a way that meets the required LOS and also protects the receiving environment.		✓	✓	✓	Within urban areas 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. Though the drainage districts are different form urban areas the methodologies are similar and they utilise different approaches to reaching the same goals. In this instance the bulk of floodwaters are managed through large open drains and canals which mainly self-clean with each tide. It should be acknowledged here that effects of climate change on the district's weather patterns can result in a reduced LOS being provided by the drainage 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. This will start in the first instance with better recording of the current state of assets and the provision of a SWCMP.

3 Level of Service (LOS)

3.1 Overview

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 land drainage activity with agreed expectations of customers and their willingness to pay for that LOS.

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 LOS 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 Council wishes to achieve; and
- **Best practices and standards** - specify the design and construction requirements to meet the LOS and needs of stakeholders.

The LOS for land drainage have been developed to contribute to the achievement of the stated community outcomes that were developed in consultation with the community (Section 2.4), and taking into account:

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

The LOS that Council has adopted for this AMP are derived from the LTP 2018/2028 consultation process. Table 3.6 below details the LOS and associated performance measures for the land drainage activity.

The LTP performance measures are reported through the annual reporting process. Council's current actual performance will be reported in the Annual Report 2018/2019.

The Asset Management Improvement Plan (AMIP) includes an action for Council to continuously 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.

3.2 Legislative framework and linkages

The Raupo Land Drainage District AMP is related to national and local legislation, regulatory and policy documents as listed in through Table 3-1 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.

Table 3-1: 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; and • 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

Acts
The Sale of Goods Act 1908
The Fair Trading Act 1986
Public Records Act 2005

Table 3-2: Relevant regulatory requirements

National policies, regulation, standards and strategies
Government's Sustainable Development Action Plan
Code of Practice for Urban Subdivision
NAMS Manuals and Guidelines
Office of the Auditor-General's publications
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; • QV Cost Builder (Rawlinsons NZ Construction Handbook).

Table 3-3: Relevant Council planning and policy documents

Local policies, regulations, standards and strategies
Council District Plan (DP)
Council Long Term Plan
Raupo Land Drainage District 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 2011 and policies
Council Procurement Strategy and Policy Documents March 2012

Table 3-4: Relevant Council Bylaws

Council Bylaws
Land Drainage Bylaw

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

Local Government Act 2002:

As per the LGA 2002:

1. The purpose of local government is –
    a. To enable democratic local decision making and action by, and on behalf of, communities; and
    b. To meet the current and future needs of communities for good-quality local infrastructure, local public services and performance of regulatory functions in a way that is most cost-effective for households and businesses.

2. In this Act, **good-quality**, in relation to local infrastructure, local public services, and performance of regulatory functions, means infrastructure, services, and performance that are –

    a. Efficient; and

    b. Effective; and

    c. Appropriate to present and anticipated future circumstances

This Act requires local authorities to:

- Prepare a range of policies, including Significance, Funding and Financial Policies.
- Prepare an LTP (LTP formerly the Long Term Council Community Plan or LTCCP), at least every three years, which must identify:
    - Activities and assets;
    - How the AM 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; and
    - 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 wastewater and stormwater (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)); and
- 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 (S16).

Resource Management Act 1991 and amendments (RMA):

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

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 is 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 (DP), 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:

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 and Engagement 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 LOS options, and undertaking consultation on LOS 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 as-builts 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 RMA 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 DPs 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 RMA. 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; and
- 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; and
- 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 Council's strategic planning function. This AMP supports and justifies the financial forecasts and the objectives laid out in the LTP. It also provides a guide for the preparation of each Annual Plan and other forward work programmes.

3.3 Industry standards and guidelines

The Department of Internal Affairs (DIA) has generated a range of mandatory measures that must be reported on for the various water services. The Kaipara District Council LOS measures align with these requirements. This requirement is intended to provide for more transparent and consistent reporting across the country. The measures are also incorporated into the WaterNZ National Performance Review process. A summary of the DIA requirements follows:

Table 3-5: DIA non-financial performance measures

Flood Protection Non-Financial Performance Measures Rules 2013
Performance Measure One (maintenance of works): The major flood protection and control works that are maintained, repaired and renewed to the key standards defined in the local authority's relevant planning documents (such as its activity management plan, AMP, annual works programme or LTP).

3.4 Proposed Levels of Service (LOS) – customer focused

Table 3-6: Proposed LOS measuring performance

Measuring performance					
What the community can expect from Council	**How Council measures this**	**LTP Year 1 Target 2018/2019**	**LTP Year 2 Target 2019/2020**	**LTP Year 3 Target 2020/2021**	**LTP Years 4-10 Target 2021/2028**
Drains will have the capacity to enable floodwater to recede within three tidal cycles, design ARI for rural areas is 10%. Stopbanks are 2.6m above Mean Sea Level leaving 0.5m above extreme high tide for the Raupo area. RDC, a formal committee of Council, is in place to perform delegated functions. All flood protection activities outside of the Raupo district are administered by informal	The number of schemes maintained to their full service potential.	100% of schemes maintained to ensure that they provide protection to the agreed standard and the scheme assets are maintained as established in the adopted AMPs.	100% of schemes maintained to ensure that they provide protection to the agreed standard and the scheme assets are maintained as established in the adopted AMPs.	100% of schemes maintained to ensure that they provide protection to the agreed standard and the scheme assets are maintained as established in the adopted AMPs.	100% of schemes maintained to ensure that they provide protection to the agreed standard and the scheme assets are maintained as established in the adopted AMPs.
	Non-performance of drainage network due to poor monitoring or maintenance causing an inability to contain a	< 5 service requests per year.	< 5 service requests per year.	< 5 service requests per year.	< 5 service requests per year.

Measuring performance					
What the community can expect from Council	**How Council measures this**	**LTP Year 1 Target 2018/2019**	**LTP Year 2 Target 2019/2020**	**LTP Year 3 Target 2020/2021**	**LTP Years 4-10 Target 2021/2028**
community committees supported where practical, by Council's Land Drainage Co-ordinator, according to each committee's request for assistance. Maintenance on privately owned stopbanks is undertaken by the landowner.	1:5 year flood as measured by public feedback i.e. service requests that result in additional cleaning to drains needed.				
	Council inspection of drainage network to ensure that a 1:5 year flood is contained by the network.	Twice yearly inspections.	Twice yearly inspections.	Twice yearly inspections.	Twice yearly inspections.
	Targeted maintenance of the stopbank system in the RDD to prevent tidal flows from inundating private property during high tide and/or when the river is in flood.	Minimum yearly inspections and targeted maintenance completed.	Minimum yearly inspections and targeted maintenance completed.	Minimum yearly inspections and targeted maintenance completed.	Minimum yearly inspections and targeted maintenance completed.

Table 3-7: Summary of LOS achievement Annual Report 2016/2017

Levels of Service statement	Performance measures	Status	Comments
Reliability Monitor drainage of rivers and streams. Ensure minimal flood risk and coastal erosion to the community.	The number of schemes maintained to their full service potential.		Achieved
	Council inspection of drainage network to ensure that a 1 in 5 year flood is contained by the network.		Not achieved Lack of resourcing meant that in some schemes inspection only occurred once this financial year.
	Targeted maintenance of the stopbank system in the RDD to prevent tidal flows from inundating private property during high tide and/or when the river is in flood.		Achieved

3.5 Strategies for achieving service levels

To achieve the desired LOS specific improvements and management processes will be implemented.

3.5.1 System adequacy

This largely reflects the capacity of the system to capture and convey the flows arising from extreme weather events without damage occurring to habitable floors or arable land. This is not well-defined across the district and it is intended to undertake a number of SWCMP studies in areas subject to growth or with known historical issues. This will identify capacity shortfalls, works that should be undertaken and also minimum floor levels that should be adopted for any new construction inside the land drainage boundaries. The SWCMPs will provide a level of clarity that the desired level of capacity can be achieved for each of the subject areas that is not currently available and will provide much needed guidance on the effects of proposed sea level and climate changes. Areas that have not been studied and/or upgraded will remain at the LOS that has been historically provided.

There are two primary elements to the discharge of floodwater and KDC has limited capability to influence either at this time:

Water quality – Floodwater discharges, collects and conveys whatever contaminants are on the ground surface into the receiving waterways. This varies from grow contaminants such as rubbish, drink bottles etcetera, biological contaminants such as e-coli, chemical contaminants such as zinc, fertilisers etcetera and particle contaminants such as clay.

There is a range of technologies available to reduce these contaminants including chemical treatment, physical filters and settling ponds together with natural processes that focus on reducing flow velocities, maintaining groundcover and encouraging natural filtration by directing flow through planted areas. These tend to work best with less intense storms when volumes and flow rates are lower.

KDC has limited resourcing in this area with the main direction coming from the land drainage committee itself, and also with the main focus being on removing flood waters as soon as possible and not relying on retention/detention structures within the existing flow paths. There are currently two detention ponds at the south end of the drainage district which perform satisfactorily in providing attenuation during large storm events, there is no requirement or focus on upgrading these at this date.

While KDC supports a greater focus on water quality it can only be implemented where practicable and is not always possible in every situation, the members and stakeholders of the RDD understand and promote water quality though temper this with the requirement to allow floodwaters unfettered access to the discharge points to maintain the current LOS to the greater community.

Flow rates – A discharge consent could specify flow rates for a particular return period storm but KDC has very limited capacity to influence this.

3.6 Response times

There are three key steps to achieving the target service levels for this consideration:

Defining appropriate measures and targets – This is often defined by the following acronym and requires all elements to be in place to be successful. This applies to all targets defined by a LOS process.

Alignment with Maintenance Contracts and staff performance objectives – Response time targets are a key deliverable in maintenance contracts and there needs to be a direct alignment between the targets identified in any LOS process and the targets identified in the maintenance of the land drainage district. Similarly, if customer response forms a defined part of the role of a staff member this should be reflected in the performance objectives of this person.

Contractor and organisational performance –The contractor must have effective measurement and reporting processes in place that allows accurate and timely reporting of actual performance against the contract specification for response times. For performance to be managed effectively requires regular reporting of performance and follow-up of any under-performance with a view to bringing it into compliance. This may be through bonuses and penalties built into the contract or the exercise of enforcing the contract. The latter might ultimately lead to the cancellation of the contract if the required performance is consistently not being achieved. Similarly, the performance of staff members in relation to response times also needs to be tracked if these measures are to be reported on be a focus for achievement.

3.7 Customer satisfaction

This is a much more difficult measure to influence as it reflects the customer's overall perception of the quality of the land drainage service that they receive or experience. This will be heavily influenced by whether or not they have had a personal experience (and the outcome of that), the unpredictable frequency and magnitude of storm events that have occurred in the survey period and overall satisfaction with the conduct of Council (via personal experience, experience of others and media coverage) and their understanding of how the land drainage system works; and its associated limitations. Feedback (both positive and negative) is most valuable when it identifies the specific reason for that view, assuming there is one.

Notwithstanding the above, a customer satisfaction survey, or compilation of complaints, will indicate the overall alignment between community expectation and what is being achieved and this may signal the need for change. This is particularly the case if flood protection is ranking significantly lower than other Council services. A sudden change in the level of satisfaction from year to year should trigger a discussion about what has changed or occurred, during that time that could have influenced this.

4 Drivers of change

4.1 Overview

This section of the AMP analyses factors affecting demand including population growth and social 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; and
- Council is able to respond to customer needs.

4.2 Growth and demand change

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 land drainage infrastructure is a difficult undertaking. This AMP has largely been based on historical data and growth predictions provided by Statistics New Zealand in order to identify potential future demand on the public stormwater infrastructure and though this may not specifically affect the RLD district, growth across the district and how it impacts on asset investment and the likely changes to the current LOS in regards to stormwater management are directly relatable.

The impact of growth is currently managed in multiple ways:

4.2.1 Regulatory control

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

4.2.2 District Plan (DP)

The DP is the legal framework that is used for land use planning.

4.2.3 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 SWCMPs developed to date are planned to be updated during the 2018/2021 period then formally adopted by Council, the RLD district will need to follow this approach to enable KDC and the Committee to better understand the drivers and effects climate change will have and how this impacts the current system. This will allow for better planning and implementation of flood protection methodologies.

4.2.4 Education

Education is an important tool for providing property owners with an understanding of their role and responsibility for managing their private 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 and work 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 and may be added to the AMIP. Education promotes environmental awareness and the effects of activities such as intensive land applications, where contaminants may enter the stormwater system and thus the receiving environment.

The components of demand management are shown in Table 4.1.

Table 4-1: Examples of land drainage demand management strategies

Demand component	Land drainage examples
Operation: Looks at LOS provided by the infrastructure and the application of best practice options for sustainable	• Maintaining the existing land drainage network through the application of efficient operations and maintenance will ensure that the current LoS is met whilst also identifying and highlighting any issues

Demand component	Land drainage examples
long term management.	across the district, the better the network is maintained the more efficient it is; and • Integration of national and international standards for land drainage design into Engineering Standards documents.
Design: Constantly changing standards allow for better land drainage design and management, Low Impact Design (LID) and treatment at source.	• Application of low impact design as per existing standards and as technology is constantly improving allow for better stormwater management, reduced peak runoff and better water quality; and • Integration of improved technology and increased awareness of changes to stormwater management internationally, attendance at conferences and allowing consultants to raise any improvements they feel will better suit environmental needs, will ensure that the best solution to meet the required land drainage LOS will be constructed whilst also maintaining focus on environmental improvements and water quality.
Incentives: Encourage the application of LID throughout the community, soakage, rain gardens and other source treatment options.	• Community education and interaction to promote the use of flow calming, detention/attenuation ponds and other source treatment options, this will enable the mitigation of damage from peak flows and to allow for water quality treatment prior to the discharge to the receiving environments
Community education/interaction: Develop partnerships with the communities in the district.	• Production of Engineering Standards to aid development in the selection of the best practicable option for land drainage management; and • Working with schools and engaging the community at an earlier level to promote water health.
Connection denial: Regulation of connections to the public system to promote long term stability.	• Where development occurs within the urban area of the land drainage district, 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 this will help mitigate any large flows directly impacting on the current land drainage network.

4.3 Population growth

4.3.1 Overall Growth Scenario

Statistics New Zealand (SNZ) issued revised population *projections* on 22 February 2017, using an estimated resident population at 2013 as the new base.

The LTP 2015 assumptions used the high growth scenario with population projections of:

- 20,000 in 2016 - already exceeded by the 2013 base of 20,500;
- 21,400 in 2026 - a figure now expected to be exceeded three years earlier in 2023 by even the updated low growth scenario of 22,600; and
- 22,000 in 2031 – a figure now expected to be exceeded three years earlier in 2028 by even the updated low growth scenario of 22,800.

In moving to the latest 2017 projections data, a decision needs to be taken on whether to continue to use the high growth scenario or to use lower growth options. The annual average population increases under the three scenarios are:

- High – population increase of 8,300 over 30 years = 276 persons per annum;
- Medium – population increase of 4700 over 30 years = 157 persons per annum; and
- Low – population increase of 1,200 over 30 years = 40 persons per annum.

Even the recently updated SNZ *high* growth scenario of 276 persons per annum is below the average of 315 persons per annum seen from 2006 to 2016. If one assumes some moderation of the 2006/2016 highs due to the cyclic nature of economic development and growth, then use of the updated *high* growth scenario is reasonable. This is supported by the increasing influence of Auckland over time, particularly in the southern part of the district, which should see sustained population growth over time.

The assumption is that population growth will be in line with Statistics New Zealand's 2013 base high series projections which will see population increases of:

- 2,900 (12.5%) from 23,100 to 26,000 between 2018 and 2028; and
- 2,000 (7.7%) from 26,000 to 28,000 between 2028 and 2038.

The SNZ projections show the population growth rate slowing in all regions, cities, districts of New Zealand, including Kaipara district, between 2018 and 2038 because:

- All areas will be home to more people aged 65 years and over by 2038; and
- Deaths will increase relative to births in almost all areas as the population ages.

4.3.2 Population growth distribution

It is expected that most population growth will continue to occur in the southern part of the district.

The table shows shares of district growth over various time periods. With reference to the LTP timeframe 2018/2028, it shows:

- Dargaville taking 10.7% of district population growth, growing by 310 persons to reach a population of 5,330 by 2028;
- A 76.2% share of district population growth (2,210 persons) occurring in the southern half of the district with rural Rehia-Oneriri growing by 900 people (31.0%) and the combined Mangawhai CAU's growing by 1,160 people to reach a population close to 5,000 (40%) taking the bulk of that growth;
- Relatively low shares of growth in the smaller urban CAU's of Ruawai (0.3%), Kaiwaka (2.8%) and Maungaturoto (2.1%) totalling just 150 persons although there will be considerable growth in the rural area around them. And
- Continued low shares of district growth (14.5%) in the north and northwest, totalling 420 persons.

4.3.3 Population fluctuations

A significant proportion of unoccupied dwellings in the district become occupied during holiday periods. At the time of the 2013 Census an average 26% of dwellings (2,764 of 10,681) were unoccupied. Rates of unoccupied dwellings in Te Kopuru (10.6%), Maungaru (6.5%), Dargaville (7.2%), Maungaturoto (10.0%), Ruawai (11.4%), and Kaiwaka (13.3%) are lower and likely reflect normal rates of vacant dwellings, at any given time of the year. By contrast, Kaipara Coastal (27.3%), Rehia-Oneriri (24.8%) and Mangawhai (52.7%) have significantly higher vacancy rates and are likely to see population fluctuations as vacant homes are occupied in holiday periods.

In an effort to estimate the scale of population fluctuation:

- Assume occupancy of up to 100% of dwellings in Kaipara Coastal, Rehia-Oneriri and Mangawhai during holiday periods;
- For normally unoccupied dwellings in these areas, assume occupancy of 0.5 persons per dwelling above the 2013 average occupancy in Kaipara Coastal, Rehia-Oneriri and Mangawhai during holiday periods to take account of families with children and guests, which are likely to result in higher average occupancy than normally occupied dwellings; and
- Assume no change in dwelling occupancy in Maungaru, Dargaville, Te Kopuru, Ruawai, Maungaturoto and Kaiwaka during holiday periods.

Using the 2013 base data, the usually resident district population of 20,600:

- Could have risen during holiday peak times by over 7,000 persons (7,111) to 27,600, an increase of 35%; and
- Just under half of that increase was in Mangawhai, gaining 3,400 persons at peak, an increase of 131%.

If the same percentage increases are applied to the 2018 and 2028 population assumptions:

- The resident district population of 23,100 persons in 2018 could increase by 8,013 persons during peak holiday periods to over 31,000;
- The resident District population of 26,000 persons in 2028 could increase by over 9,000 persons during peak holiday periods to over 35,000.
- As Mangawhai grows from a usual resident population of around 3,700 in 2018 to around 4,890 in 2028 its population could fluctuate up to 8,610 in 2018 (an increase of 5,000 at peak) and 11,287 in 2028 (an increase of 7,200 at peak).

4.3.4 Dwelling growth

The 2015 assumption is that dwelling growth rates will be more or less consistent with rating unit growth projections. As well as using the rating data as a source and for comparison it is useful to take the SNZ generated population growth assumptions and assess:

- The number of dwellings required to accommodate the usual resident population; and
- Apply an additional unoccupied dwelling component for holiday homes and vacant dwelling stock using 2013 Census occupancy rates.

The assumption is for steady to strong dwelling growth in LTP decade 2018/2028 moderating in the 2028/2038 decade as population growth rates begin to slow with an aging population. Projections indicate:

- Nearly 2,000 (1,912) additional dwellings will be built in the district over the LTP 2018/2028 period; and
- Another 1,400 built between 2028 and 2038.

The largest amounts of dwelling growth will be in the Mangawhai CAUs with over 1,000 dwellings delivered in the LTP 2018/2028 period and another 900 dwellings by 2028. Rehia-Oneriri CAU, covering much of the southern part of the district is expected to see ongoing strong growth (450 dwellings in LTP decade 2018/2028 and over 300 more dwellings out to 2028). Dargaville is expected to gain 130 dwellings over the LTP period and 70 more homes built in the following decade to meet a modest growth in population.

4.3.5 Most Likely Scenario

The following table shows the projected scenario for population change across the larger Kaipara communities. These projections are from Statistics New Zealand using population data from the 2013 census as a base. Statistics New Zealand provides low, medium and high series projections; KDC has chosen to use high level projections.

Table 4-2: Annual rating unit growth forecasts 2012/2022:

Projected Population for Kaipara District Council 2013 (base) – 2043 Update based on HIGH Projection														
Area	Population (Actual or forecast) at 30 June							Population Change			Share of District Growth			Vacant Census 2013
	2013	2018	2023	2028	2033	2038	2043	2013-43	2018-28	2028-38	2013-43	2018-28	2028-38	
District	20500	23100	24600	26000	27100	28000	28800	8300	2900	2000				
Te Kopuru	510	540	560	580	590	610	620	110	40	30	1.3%	1.4%	1.5%	10.6%
Kaipara Cst	3190	3370	3470	3560	3610	3610	3570	380	190	50	4.6%	6.6%	2.5%	27.3%
Maunguru	1820	1950	2050	2140	2220	2280	2310	490	190	140	5.9%	6.6%	7%	6.5%
Dargaville	4610	5020	5180	5330	5440	5500	5530	920	310	170	11.1%	10.7%	8.5%	7.2%
Maungaturoto	810	920	950	980	1000	1010	1030	220	60	30	2.7%	2.1%	1.5%	10%
Ruawai	470	490	490	500	510	530	540	70	10	30	0.8%	0.3%	1.5%	11.4%
Kaiwaka	640	700	740	780	830	860	900	260	80	80	3.1%	2.8%	4%	13.3%
Rehia-Oneriri	5840	6510	6990	7410	7770	8060	8310	2470	900	650	29.8%	31%	32.5%	24.8%
Mangawhai	1430	2060	2400	2710	2990	3240	3460	2030	650	530	24.5%	22.4%	26.5%	52.7%
Mgwhai Heads	1170	1670	1930	2180	2400	2580	2750	1580	510	400	19%	17.6%	20%	
Mgwhai Hbr	0	0	0	0	0	0	0	0	0	0				
Mgwhai total	2600	3730	4330	4890	5390	5820	6210	3610	1160	930	43.5%	40%	46.5%	

There are currently no identified growth driven capital projects for Raupo Land Drainage over the next three years.

4.4 National Policy Statement on Urban Development Capacity 2016

This policy statement requires all councils to provide for growth to occur in their areas such that a lack of 'development infrastructure' (which includes water services) is not an impediment to that growth.

There are no communities in Kaipara larger than 30,000 population experiencing high rates of growth and so compliance only with requirements PA1-4 is required. Broadly these can be summarised as:

- For expected growth in the period from now to three years, the land and development infrastructure has to be feasible, zoned and serviced (or able to be serviced if it is developer responsibility);
- For medium term growth (3-10 years) the land does not need to be serviced but plans to service must be included in the LTP; and
- For long term growth (10-30 years) the land does not need to be serviced but provision to do so needs to be included in the Infrastructure Strategy.

In practical terms, it is difficult for Council to predict when a particular developer might decide to proceed and what the staging of that development might be. In the absence of a specific proposal it is not cost-effective for Council to pro-actively install capacity for developments that 'might' proceed.

The approach adopted by Council is therefore to engage with the development community and seek a co-ordinated approach that will provide for the development on a 'just in time' basis and with confidence that any works required are financially feasible for both the developer and Council.

4.5 Increase in land drainage services

With the proposed changes to the climate and sea level there is already growing concern regarding the current LOS of the RLD district and how this will be affected. It has already been proposed that a catchment-wide hydraulic assessment will need to be conducted and a SWCMP created to identify the changes in rainfall and expected runoff, and how this will be affected by sea level rise and what the repercussions to the current RLD district may be.

4.6 Technological change

Historically the methodology for dealing with floodwaters was to collect it in large open drains and canals and discharge this through floodgates as soon as possible to remove this from the workable land. It is also noted that the current drainage district is situated in such a way that the time of concentration allows for large portions of floodwaters to be removed through the floodgates between tides before larger flows from the rear of the catchment make it to these points. This allows for the stakeholders properties to remain mainly free of floodwaters whilst the floodwaters flow in a controlled manner into the receiving environment. 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 LID in the management of floodwater. This involves implementing solutions to mimic the natural environment prior to development, and managing the impacts on the receiving environments.

Such advancements in floodwater 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 Kaipara district. A constant awareness of technology changes is necessary to most effectively predict future trends and their impact on the utility infrastructure assets.

Although as stated above there have been advances in stormwater management and how this can be implemented in either a limited capacity or on a larger grandiose scale, the terminology and engineering behind these practical solutions still hold the same for land drainage as it is stormwater that we are trying to treat and remove from the current network. Whilst there will still be a greater reliance on large canals and waterways to remove the peak flows, riparian planting, detention ponds and other source treatment options will still remain options when trying to treat for water quality and design.

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

4.7 Legislative change

Legislative change can significantly affect Council's ability to meet minimum LOS, and may require improvements to infrastructure assets. Changes in environmental standards and the RMA 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 for the Environment (MfE) is promoting a series of National Environmental Standards that can be enforced as regulations under the RMA. 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.

NRC is in the process of finalising the plans and policy surrounding proposed sea level rise and climate change. Once this has been formally adopted KDC will prepare and adopt any changes required to its standards and DP to meet the new requirements.

4.8 Environmental considerations

4.8.1 Focus on water quality

Environmental considerations are an ever-changing issue. As such, there is a requirement for Council to provide the best service it can with the most up-to-date information.

With climate change and predicted sea level rise KDC will need to alter its focus and the considerations around flood levels, stormwater discharge and consented discharge limits to match the requirements from NRC, the change in public expectations and the altering natural environment.

Public perception of the impact of stormwater on the natural environment has altered noticeably over the last decade and has turned towards treating stormwater at the source and maintaining the quality of the harbours and waterways. The quality of stormwater runoff therefore has a significant impact on the quality of the receiving environment, being streams and rivers.

There is a growing awareness of the environmental issues related to the quality of stormwater runoff on the receiving environments of our streams, rivers and groundwater 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 state. 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 current Engineering Standards and community education); and
- 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; and
- Greater application of LID in the overall stormwater management on a catchment basis.

Figure 4-1: Commentary from NRC on 2016 Recreational Water Quality

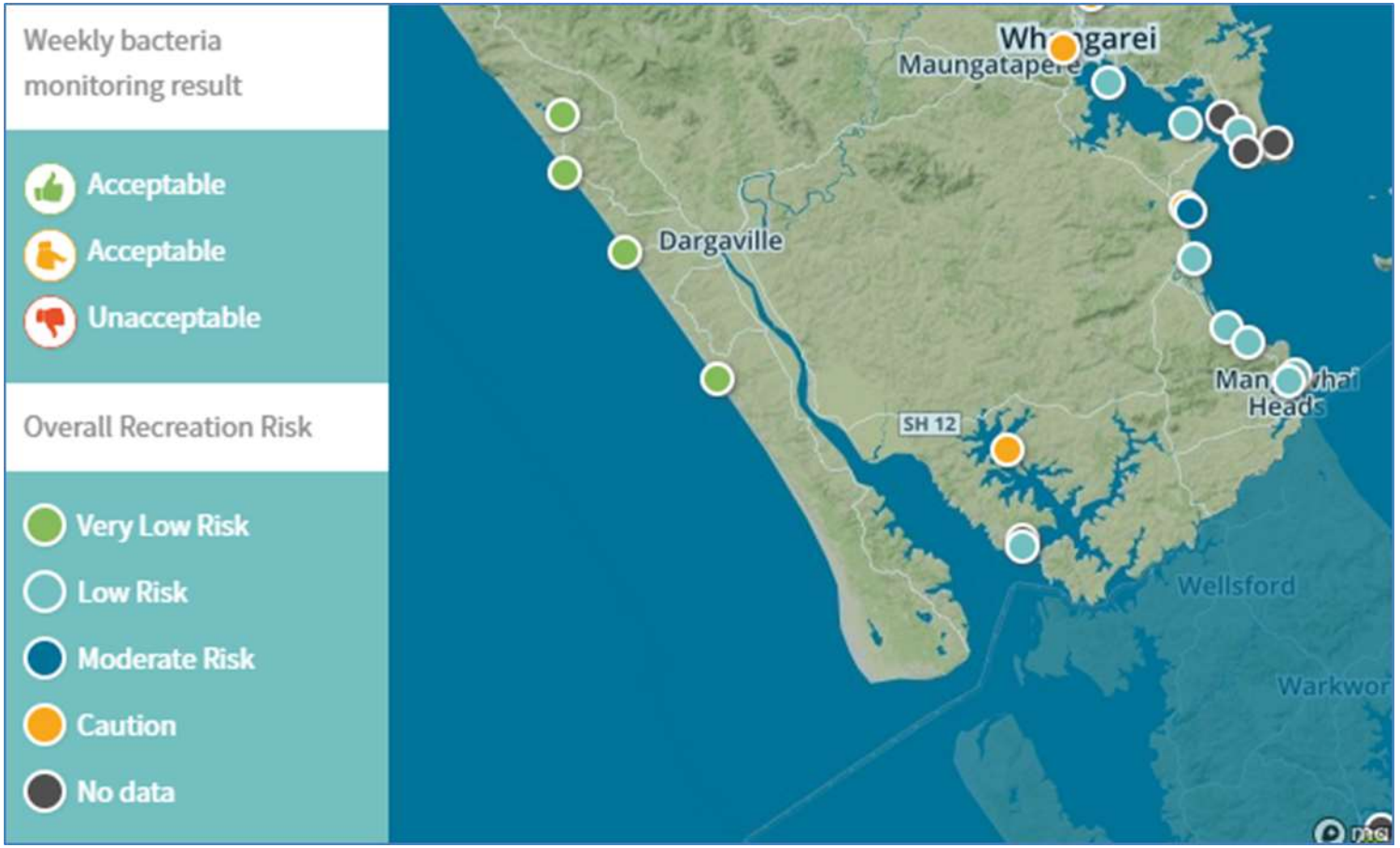
Okay to swim at most popular swim spots; NRC

The vast majority of Northland's most popular coastal swimming spots – and most of their freshwater equivalents – are suitable for swimming all or most of the time, regional council data shows.

Council Environmental Monitoring Manager Jean-Charles Perquin says hundreds of water samples were collected from 44 popular coastal and 13 freshwater summer swimming sites between late November last year and late February.

The annual water testing looks for bacteria used to gauge the risks of contracting gastrointestinal and other infections while using popular beaches, rivers and lakes for swimming, water sports and other forms of recreation.

Mr Perquin says 99.1 percent (606 out of 611) samples at coastal sites and 89.4% (161 out of 180) samples at freshwater sites over summer met national 'guideline values', meaning they were considered suitable for swimming.


Weekly bacteria monitoring result
Acceptable
Acceptable
Unacceptable
Overall Recreation Risk
Very Low Risk
Low Risk
Moderate Risk
Caution
No data
Dargaville
SH 12
Wellsford

4.8.2 Climate change

The MfE advises 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 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 LOS capacity, due to increased overall rainfall and raised groundwater tables
- Increased coastal flooding through higher tide and surge levels;
- Increased flooding due to higher tides and rainfall breaching existing stopbanks;
- Increased flooding due to higher **low** tides retaining stormwater and inundating an existing system by removing the ability for it to drain completely;
- Potential overwhelming of existing treatment devices leading to increased contaminant loadings in the receiving environment; and
- Increased coastal and fluvial erosion resulting from increased tide variations and discharges from the stormwater system.

NRC monitors rainfall at five sites throughout the Kaipara district to understand the long term effects of climate change on rainfall patterns. In addition The National Institute of Water and Atmospheric Research (NIWA) maintains 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. MfE 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 4-2 below is an extract from the MfE publication and highlights the potential effects of climate change on stormwater networks.

[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

Table 4-3: Effects of climate change on Raupo land drainage network

Resource	Key climate influences	Impacts of climate change
Ruawai stormwater reticulation	Increased rainfall	• Increased frequency and/or volume of system flooding; • Increased peak flows in streams and related erosion; • Groundwater level changes; and • 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; and • 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; and • Sediment supply.	• Effects of sea level rise and other changes will vary regionally and locally, this will have an as yet unquantifiable effect on existing land drainage and flood protection systems; and • 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 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 current 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 manages the impact of urban growth and development on the stormwater infrastructure and receiving environment through the application of SWCMPs and planning provisions set out in the DP. As such a similar approach will need to be taken with the RLD district to accurately capture and identify the effects of climate change and sea level rise on the existing land drainage network

The functions of an SWCMP 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); and
- Identify mitigation options for the stormwater network.

The outputs from the SWCMPs can be used to define capital works programmes and development contributions, this will help identify the issues facing the RLD district and help prepare future planning to meet the changes in environmental considerations and also to help focus on the LOS that will be required and how to best meet these in the future.

4.9 Summary of drivers of change

Table 4.4 below provides a summary of how the above issues will impact on the management of Raupo drainage assets.

Table 4-4: Summary of issues affecting stormwater assets

Issues	Impact on stormwater assets
Population growth	Increased urbanisation and a greater tourist population will mean that the land drainage protections will need to include these drivers in their future endeavours, this may mean part of the focus is protecting the road assets and also providing other amenities like the cycle trail proposed for the southern section of the Raupo stopbanks.
Technical change	The changes in the technical approach to stormwater management, including regulatory and statutory requirements will impact on the future design of land drainage assets. It is unlikely that retrospective design will be required, however, the renewing or provision of any discharge consents are likely to be required to meet these standards.

Issues	Impact on stormwater assets
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 land drainage network.
Customer expectations	Council's current Engineering Standards include the LOS that are committed to providing to the community for stormwater management and some of these applications will be needed to provide greater protection to the current network with regards to SWCMPs and quantities and velocities of flows.
Environmental considerations	It is likely that environmental considerations to protect the natural environment and available resources will become more important and regulated. This will also arise from technology changes and customer expectations. With increasing focus on water quality more wetlands and other water treatment options are being asked for as a design consideration.
Climate change	The potential impacts of climate change on the land drainage design to the year 2090, is provided for within the current 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.

5 The assets

5.1 Asset description

The RDD assets consist of a series of stopbanks, floodgates (terminal and internal), canals and drains that collect rain and floodwaters from private properties and discharges to the Northern Wairoa River during low tide.

The extent of the drainage district is shown in Figure 5.2.

It should be noted that the drainage of individual paddocks is the responsibility of the property owner. Drainage Network drains provide a connection to the drainage network only. Likewise, all floodgates location on the boundary between drainage Committee drains and private drainage is the responsibility of the property owner.

The Raupo Drainage network assets are summarised in Table 5.1.

Table 5-1: Raupo drainage network assets

Asset	Quantity	Purpose
Stopbanks	69.4 km	Prevent tidal flows from inundating private property during high tides and/or when the river is in flood.
Floodgates	52	Prevent tidal flows from entering during high tide and to enable the draining of canals and drains at low tide.
Canals	137.6 km	Canals are collector drains that collect water from a number of smaller drains or in the case of Canals G and K intercept all runoff from the hills.
Drains		Collect water from individual or multiple properties
Pump	1	Two move floodwater from Drain Nº5 into Nº49 canal.

Figure 5-1: Raupo land drainage

Figure 5-2: Raupo Drainage network boundaries

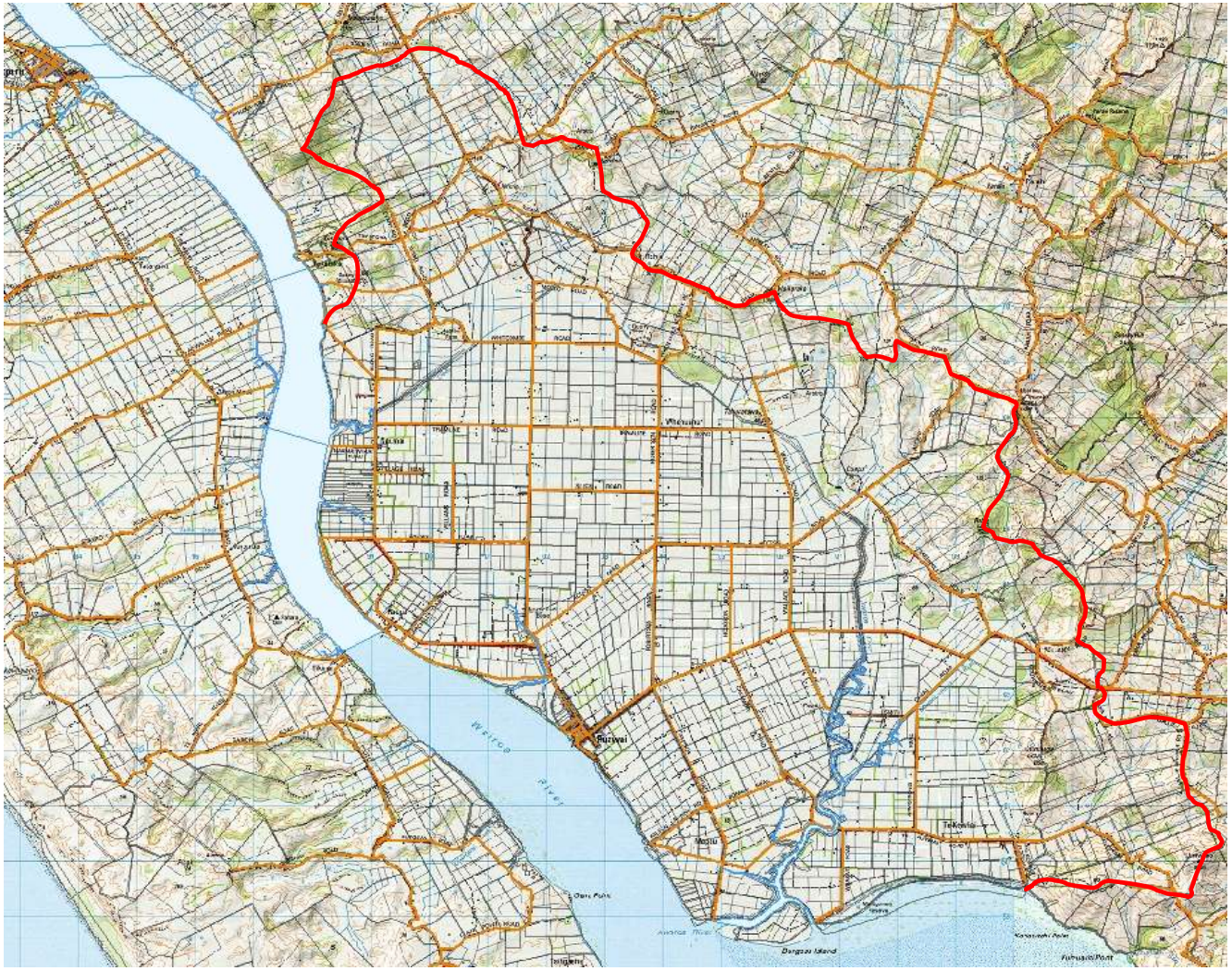


Figure 5-3: Location of Stopbanks

Figure 5-4: Internal Drainage Network

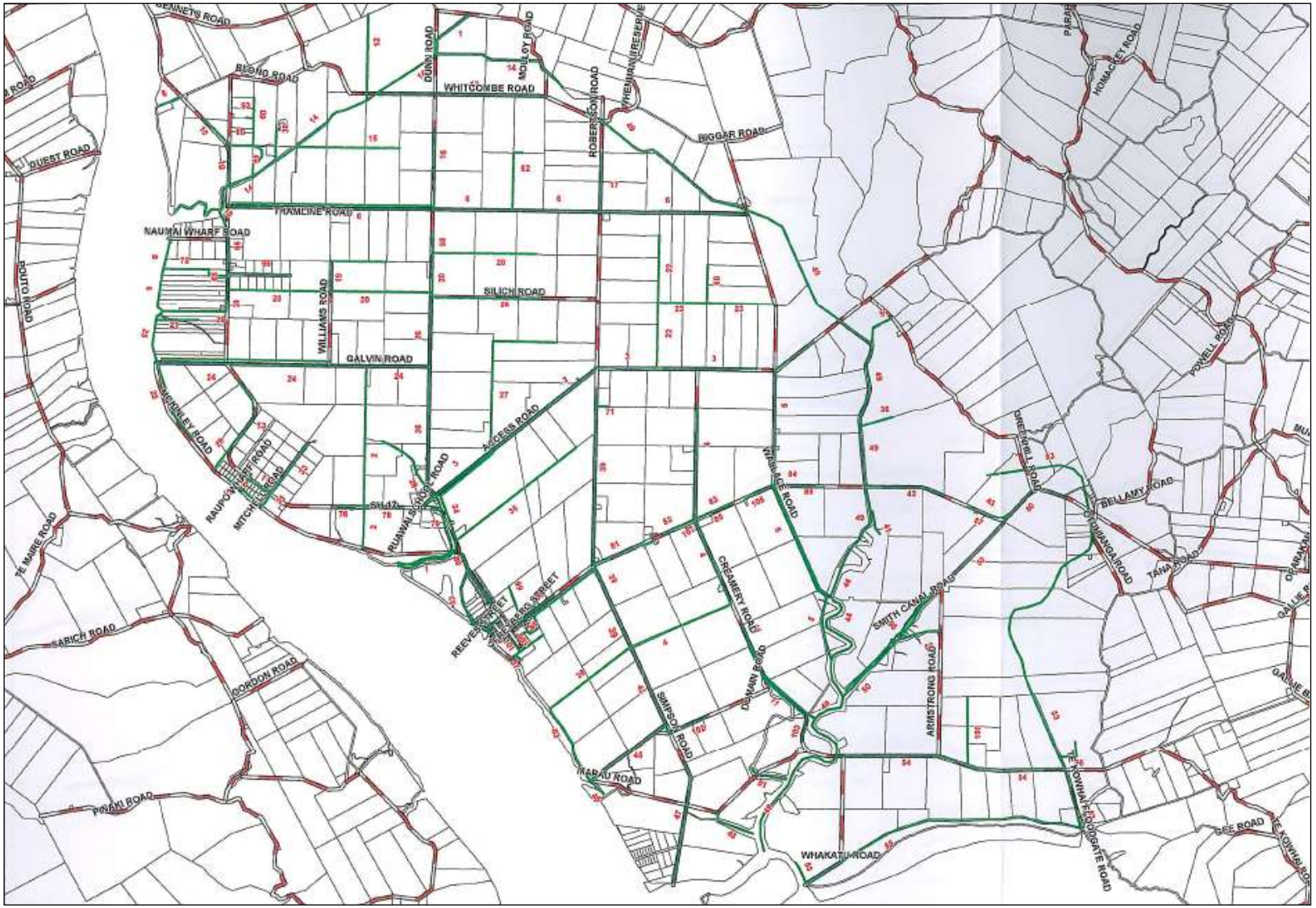
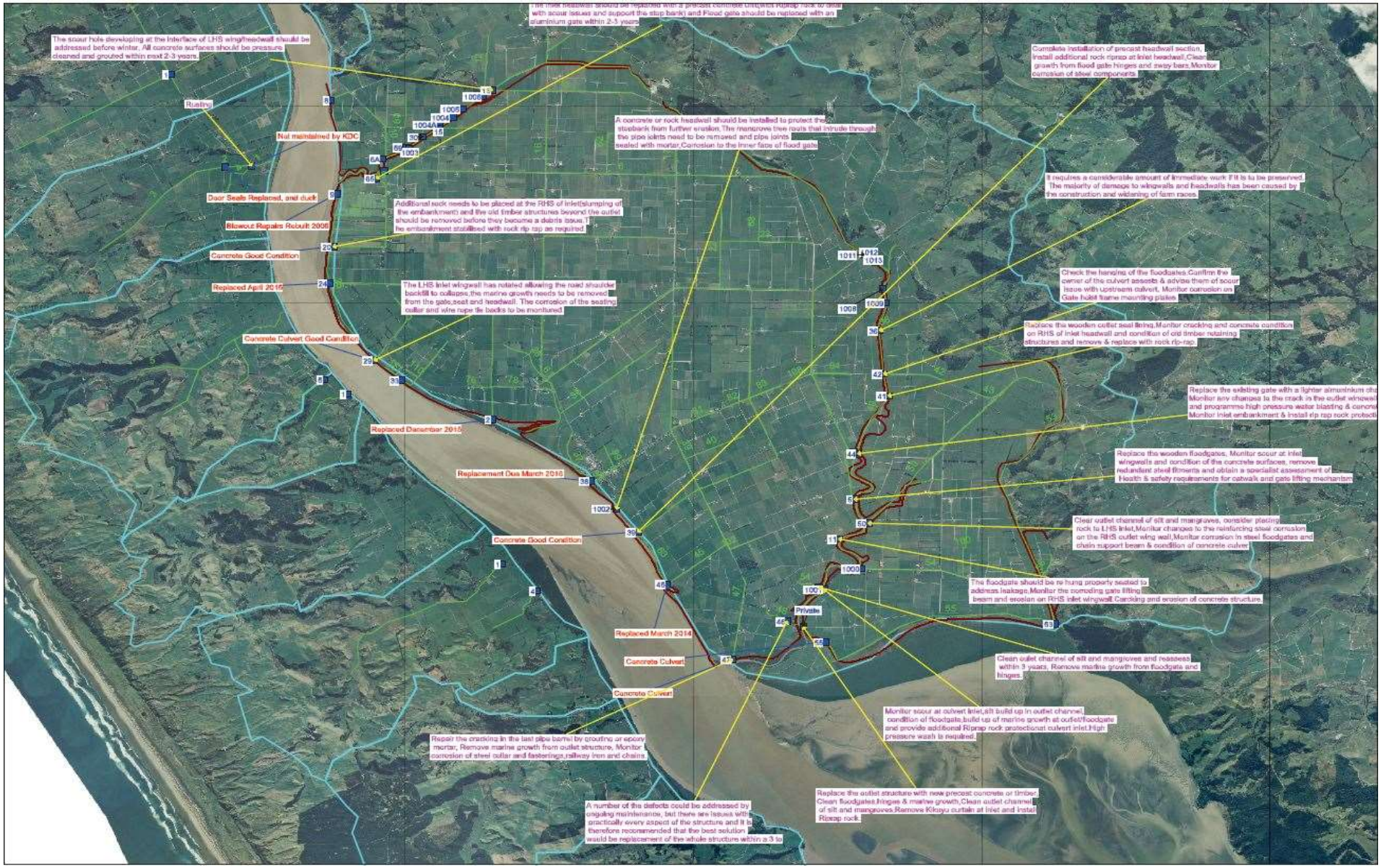


Figure 5-5: Locations of Raupo floodgates

Figure 5-6: Current Condition of Raupo floodgates



5.2 Stopbanks

The original stopbanks were formed by dumping tidal mud to form continuous banks from Toka Toka to Te Kowhai. In 1927/1928, the Public Works Department carried out an extensive programme of stone pitching the river side of the stopbanks south of Ruawai.

Most stopbanks are topped up by regular drain cleaning. As a result the heights of the banks are variable and are likely to be higher than currently required for flood protection. Over time the stopbanks have been built up to a height of 2.6 to 2.7 metres above Mean Sea Level.

It is considered that the stopbanks are maintained to a specific design standard; however there is currently little documentation available to confirm this standard.

The previous AMP suggests that the design standard for foreshore banks is a crest level of 3.5 metres above Mean Sea Level, leaving a freeboard of 0.5 metres above extreme tide levels.

In recent years, as part of stopbank maintenance, Council has undertaken erosion protection works by adding fresh spall material to riverside of the stopbanks from the Ruawai Township South.

Stopbanks are not considered to require renewal at any time, but instead require suitable maintenance to retain their form and functionality.

Figure 5-3 illustrates the stopbank locations.

5.3 Floodgates

The RLD network includes 52 floodgates of varying description, size and material.

When discussing floodgates, this AM Plan considers a floodgate to incorporate the inlet and outlet wingwalls, the pipes or barrels of the floodgate, the actual gate itself, and any chains, winch and gantry associated with the lifting of the gate. In the case of several of the larger floodgates, riprap material in the floodgate outlet is also considered to be a part of the floodgate.

Floodgates range from small diameter concrete pipes with small concrete wingwalls and wooden gate, to large diameter, multi-barrel steel channels, with extensive wooden wingwalls and multiple steel gates (see Figure 5-7 for examples of difference in floodgate types).

The age of each individual floodgate is not known however a formal condition assessment has been undertaken and a renewals programme has been developed.

Due to their construction and materials used, it is generally accepted that most if not all gates will leak during high tide. The resulting inflow of water is not significant, even at larger gates, and has not warranted remedial works. The use of rubber seals are been investigated together with alternative designs and construction methods that may facilitate better seals between gates and barrels.

For renewal purposes, a floodgate is considered as having two components, the structure and the gate.

Figure 5-7: Various floodgates

5.4 Drains and Canals

The original drainage network dates back to the early 1900s when early settlers and, from 1905, the Raupo Drainage Committee, undertook to drain the land fronting the river. Eventually the drains were extended back to the hills.

Figure 5-4 illustrates the location and interconnectivity of the Raupo drainage network. Appendix C contains a register of all drains and canals, identifying their length and criticality.

Initially drains were constructed to specific dimensions, however due to ongoing erosion and periodic drain maintenance a gradual increase in drain width has occurred over time and their dimensions vary along their length. To categorise them by dimensions would require frequent and time-consuming measurement.

Instead all drains and canals have been categorised by their criticality in relation to the area drained or volume of runoff carried. Therefore canals and major drains with a larger number of drains feeding into them are considered to be more critical than those draining several paddocks. See Figure 5.6 for a pictorial view of drains and their criticality ratings.

Figure 5-8: Drains and canals by criticality

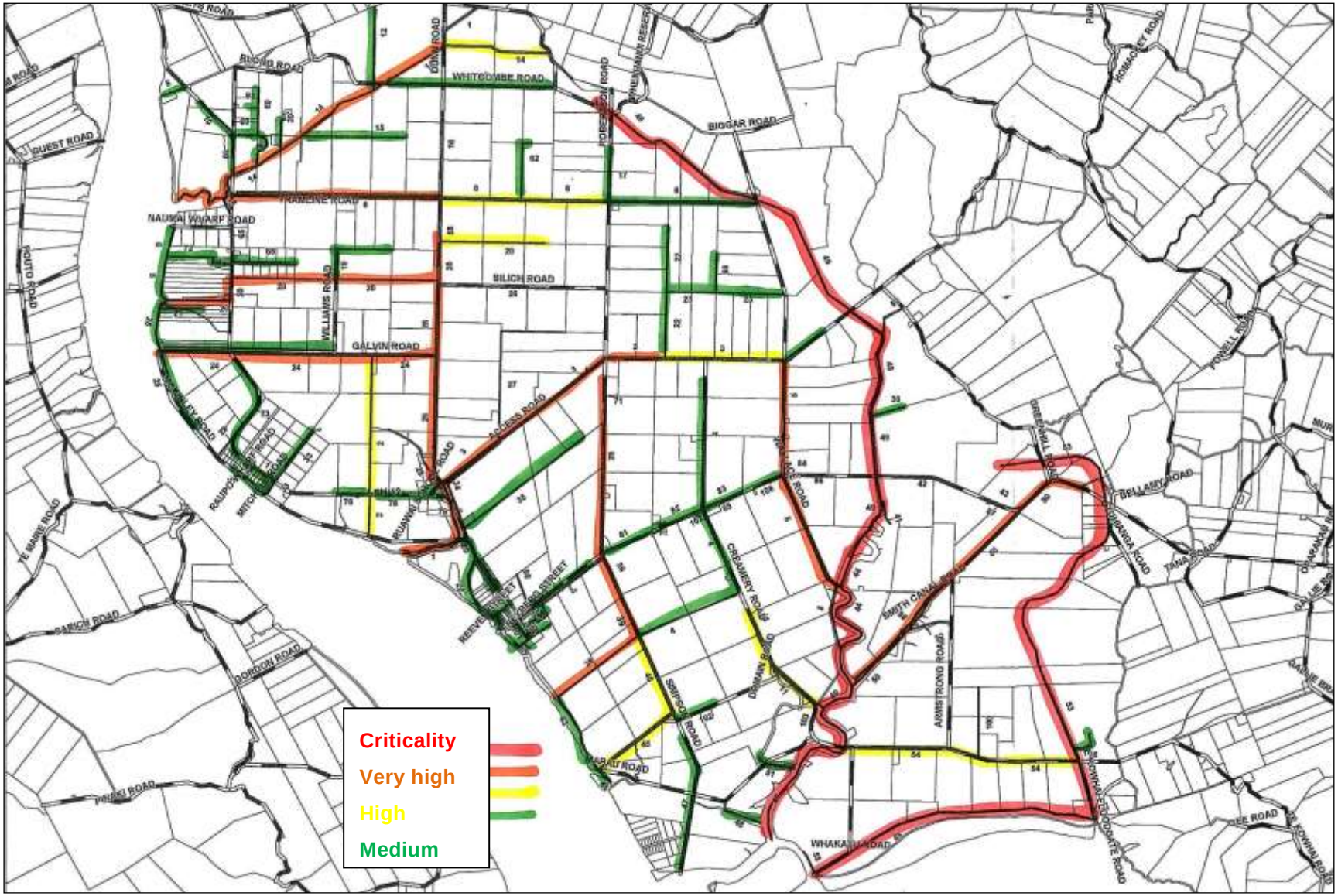


Figure 5-9: Canal, collector drain and minor drain



5.5 Culverts

Culverts are installed to facilitate access to private property (i.e. under driveways), to enable access for maintenance and also as part of the drainage network. Council currently has no records as the quantity, size and age of these assets.

Figure 5-10: Storm pump

5.6 Storm pump

The drainage network includes one 50 horsepower storm pump, located at the end of Wallace Road that pumps water out of drain nº5 and into Canal nº 49G. The pump was commissioned in 1971 and has undergone limited but regular maintenance. It is housed in a small shed situated above the well chamber.

A weed screen ensures that the well chamber is relatively free from flood debris and a ramp has been constructed to allow access to a portable tractor-driven pumping unit should power failure occur.

5.7 Buildings

The RLD Committee also owns three buildings:

- The Drainage Committee office;
- Drainage Committee depot building; and
- Residential dwelling (including new garage).

The depot and the office were both built in 1940 and the dwelling was constructed in 1957. The dwelling is tenanted and the office is still in use. However Council is considering its options in relation to the depot which is now surplus to the district's needs.

5.8 Critical assets

Critical assets have been defined as being assets with a high consequence of failure.3 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 been undertaken over the last three year period and the majority of the saltwater floodgates have been assessed by Opus. A criticality assessment framework was undertaken in 2016 and an initial assessment based on the age of existing assets was conducted. The framework is shown below.

Historical evidence and local knowledge has identified the assets in Table 5-2 which could be considered to be "critical", in that failure of these assets could compromise the RLD 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 Northern Wairoa River in the event of heavy rain warnings.

Further understanding and definition of mitigation measures is required.

Table 5-2: Critical stormwater assets

Asset group	Assessment of criticality	Criticality
Local stormwater reticulation (where provided) < 900mm	Generally small diameter mains that contractor can readily maintain and clear. This is business as usual even if they have a structural failure. Consequences of overland flow in event of pipe failure not considered to be above Low.	Low

[3] 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 group	Assessment of criticality	Criticality
Large culverts ≥ 900mm	Largest stormwater pipes are approximately 1,200mm in vicinity of Countdown, Victoria Street, Dargaville (these were inspected in 2014). Consider pipes ≥ 900mm to be Moderate due to consequences of ground stability and/or flows taking alternative path in event of pipe failure. Capacity of these pipes is adversely impacted by high river levels associated with major rain events and/or spring tides. However this limitation is not associated with pipe condition.	Moderate
Culverts under roads	Under State Highways are the responsibility of NZ Transport Agency (NZTA). Under local roads are responsibility of KDC Roading. Within urban areas there are generally alternative routes and low likelihood of entire road being compromised.	N/A
Pipes running under buildings	Some pipes run under buildings but are not clearly identified. Pipes under Countdown site now in carpark. Some of Dargaville previously has combines wastewater and stormwater systems and location of some of the oldest pipes may be under buildings. These would have elevated criticality due to risk of foundation erosion and difficulty maintaining	High (Major)
Stormwater pumps	No stormwater pump systems within towns.	N/A
Detention ponds are 1 in Dargaville and 4 in Mangawhai.	These have a regular quarterly inspection and maintenance schedule, although more focused on plant management and clearance of blockages. None of ponds are fenced but are designed to allow easy exit. Some of Mangawhai ponds are in gated communities but fundamental risks continue. Risks would be: • Danger to persons if there is unauthorised or accidental entry into pond; • Danger of wall collapse if overtopped or collapses; and • Danger of unmanaged flooding if outlets blocked. Risks warrant importance of maintaining inspections and Moderate criticality. Ponds generally include some residual water, are unfenced (but compliant) and are relatively	Low

Asset group	Assessment of criticality	Criticality
	new. This allows for escape for all but very small children. Some of Mangawhai ponds are in gated communities without open public access.	
Inlet and outlet grates	The Risk Register in the Stormwater AMP schedules 14 grates in the Dargaville area and 31 coastal outlets at Mangawhai. There are three potential issues with these grates: • blockages of inlet grates with debris and diversion of the flow through adjacent properties or over roads; • children entering the drains if the grate is not in place. This could occur at upstream or downstream end and is more of an issue with longer lines or where a change of direction does not make the other end apparent; and • Significant scouring of the beach leading to undermining of the pipe, erosion of sand dunes and/or erosion of banks fronting the marine area. Most sites that need grates are now installed and staff are aware of these requiring more attention than others. All are subject to quarterly inspections plus specific checks prior to major weather events. This would confirm Moderate criticality.	Moderate
Piped outlets onto beaches	There are a small number of these and subject to quarterly inspections. Inspection relates to managing any maintenance requirements due to relatively dynamic environment rather than concerns about failure.	Low
Open drains	There are many open drains throughout the various communities and the Risk Register in the Stormwater AMP lists consequences of failure between Minor and Severe. Failure would typically take the form of blockage by silt/foliage and/or erosion of banks threatening buildings. Generally regarded as low criticality and owners will advise Council if drains through private property require maintenance.	Low - Open drains in private property

Asset group	Assessment of criticality	Criticality
	Inspection regime in place to identify maintenance requirements but more for aesthetics than concern about capacity. The low-lying parts of Dargaville, particularly around Aratapu, Sunnynook and Ruawai are the most likely to cause concern albeit most likely due to high river levels than the limitations of the open drains. Maintaining these drains in good condition is important for managing potential criticism even if flood event is more driven by what is happening in the river than the drain.	Moderate - Open drains in lowest parts of Dargaville and Ruawai (to be specifically identified).
Overland flow paths through suburban areas	These are generally not well-defined or managed. Some have easements but this probably does not significantly change this situation. There is potential for localised flooding if inappropriate fencing, building or land development is undertaken. Council could have legal powers to remedy this after the event if an easement is in place. If no easement would be more difficult and may require application of civil law. Would be tempting to give this some elevated criticality but seems unlikely that KDC would be able to fully resource ongoing inspection and compliance enforcement. Considered to be mainly nuisance flooding.	Low
Stopbanks on Northern Wairoa River (Dargaville and Ruawai)	Stopbanks (earth embankment, timber and concrete) are the primary protection to prevent Dargaville and Ruawai from flooding under extreme river events. There are no flood pumps on the inland side if a breach or back-up of runoff occurs. The river can be up to 1m above Dargaville CBD and Ruawai street levels. Stopbank failure would generate significant damage and disruption in Dargaville, particularly in CBD and business areas. RLD district includes settlement of Ruawai and State Highway 12 and has an active management committee. Potential for high consequence damage and disruption would justify High (Extreme) criticality and need for regular stability inspections. Understood that NRC is currently assessing the necessary heights for various river flood scenarios.	High (Extreme)

Asset group	Assessment of criticality	Criticality
	NRC is currently (2015/2016) leading a review of flood levels in the river and this will influence understanding of flood exposure.	
Floodgates	Floodgates are required to prevent flow from river in high river level events. Impact likely to be less catastrophic than failure of stopbank but if combined with heavy rain could generate localised flooding of lower Dargaville and Ruawai. Gates are gates or floating ball type and have been known to fail. Failure is unlikely to be one or two at a time and location would be relatively obvious. However there is risk that gate cannot be accessed or repaired before significant damage arises. These are already subject to regular inspections and High (Major) criticality would justify this.	High (Major)
Land drainage schemes	Other land drainage schemes (28) are mostly under control of local Management Committees who are quite hands-on in relation to willingness to commit expenditure versus level of protection required. Funding is by targeted rates collected and administered by KDC. Much of stopbank maintenance is undertaken by the landowner concerned. Generally the land protected is farmland only. Risk exposure would be economic losses to crops and stock with presumably limited potential for flooding of isolated low-lying farmhouses, farming equipment/milking sheds and buildings. It is presumed that stock could be moved to higher ground or that extent of flooding (depth and flow rate) would not generate significant stock losses. The schemes generally do not affect State Highways. Note that Ruawai stopbanks are part of the RLD District Stopbank section.	Low
Access to assets	Access to stormwater and land drainage assets can be impacted by localised flooding associated with high intensity rainfall and by wider spread flooding associated with high river levels and/or slow runoff from land drainage schemes. Depending on the circumstances this can conceivably last for several days. Access to particular assets is not considered to be an issue relative to inability to access the	Low

Asset group	Assessment of criticality	Criticality
	area because of road flooding. Impacts are difficult to predict but this is not considered to be a pressing concern for this activity.	

5.9 Asset values

5.9.1 Overview

The purpose of valuations is for reporting asset values in Council's financial statements. The LGA 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 2016. The valuation process is summarised in the report, *Water Supply, Stormwater and Land Drainage Asset Revaluation 30 June 2016*.

5.9.2 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; and
- *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; and

- *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.

6 Lifecycle strategy and management

6.1 Introduction

This section of the AMP identifies Council's strategy and programme for managing, maintaining and renewing assets within the RDD. The programmes described within this section have been developed to achieve the LOS identified in Section 3 of this AMP.

This section presents the Lifecycle Management Plan for land drainage assets and includes:

- Operations, maintenance, renewal and development strategies; and
- Work programmes and associated financial forecasts.

6.2 Design parameters

Design parameters for all new land drainage assets are not well-defined. Documentation on the history of land drainage in the RLD district identifies design capacities for drains and canals, but does not specify standards of construction for any assets.

As a result, the installation of new culverts has varied, with undersized and oversized culverts been installed.

The Raupo Drainage Committee, together with Council, needs to review what knowledge they have regarding design standards and document a definitive standard for the design and construction of land drainage assets.

Future standards could either be included in Council's existing engineering design standards or separately in a specific land drainage standard for design and construction.

6.3 Work categories

The lifecycle management strategies are divided into the following five work categories:

6.3.1 Asset operations

The active process of utilising an asset which will consume resources such as manpower, energy, chemicals and materials.

6.3.2 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:

- **Unplanned maintenance:** Work carried out in response to reported problems or defects (e.g. repair burst water main);
- **Preventative maintenance:** Work additional to schedules inspections and maintenance identified during inspections as essential to continued operation; and
- **Planned maintenance:** Work carried out to a predetermined schedule (e.g. pump station inspection, mains scouring) or programmed as a result of identified needs (e.g. pump overhaul).

6.3.3 Asset renewal

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

6.3.4 Asset development:

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 capacity or performance in response to changes in supply needs or customer expectations.

Development works fall into two separate categories as follows:

- Council funded; and
- Developer funded as part of subdivisional development or by way of contributions.

6.3.5 Asset disposal

Disposal is any of the activities associated with the disposal of a decommissioned asset. Assets may become surplus to requirements for any of the following reasons:

- Under-utilisation;.
- Obsolescence;
- Provision exceeds required LOS;
- Uneconomic to upgrade or operate;

- Policy change;
- Service provided by other means (e.g. private sector involvement); and
- Potential risk of ownership (financial, environmental, legal, social, vandalism).

Currently the budget for the RDD only identifies operations and maintenance costs, with all asset renewal expenditure included under maintenance budgets for each asset group.

In future, the budget will be changed to ensure that renewal and new asset costs are captured separately from maintenance costs.

6.4 General lifecycle management strategies

Table 6.1 shows the Council maintenance 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.

6.4.1 Maintenance strategies

Table 6.1: Maintenance strategies for land drainage assets

Asset/failure mode	Action	Key service criteria	Impact
General maintenance			
All assets	Maintain assets in a manner that minimises the long term overall total cost while ensuring efficient day-to-day management.	Cost/affordability	Low/Medium – increased costs and risk of failure.
Unplanned maintenance			
All assets Disaster i.e. cyclone and/or major flooding, stopbank collapse, floodgate collapse, pump malfunction.	Maintain a suitable level of preparedness for prompt and effective response to flooding, stopbank or floodgate collapse or pump failure by ensuring the availability of suitably trained and equipped staff and service delivery contractors. Specifically: local engineers and property owners.	Flood prevention	Medium – flooding of private property.

Asset/failure mode	Action	Key service criteria	Impact
Planned inspections			
All assets	Undertake scheduled inspections as justified by the consequences of failure on LOS, costs or safety.	All	Low – Slow to react to minor flooding caused by premature asset failure
Planned preventative maintenance			
As with planned inspections	Undertake programme of planned asset maintenance to minimise the risk of critical asset failure (e.g. pump overhaul) or where justified economically (e.g. race track re-levelling).	All	As with planned inspections

6.4.2 Renewals strategies

The general renewal strategy is to rehabilitate or replace floodgate structures or gates, culverts or the storm pump when justified by:

- **Asset performance:** Renewal of an asset when it fails to meet the required LOS. The monitoring of asset reliability, capacity and efficiency during planned maintenance inspections identifies non-performing assets. Indicators of non-performing assets include:
  - Excessive inflow of river water during high tide;
  - River water is migrating between the floodgate and the stopbank; and
  - The floodgate does not have sufficient capacity to drain floodwaters within two days.
- **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 co-ordination of renewal works with other planned works such as road reconstruction.

Planned and reactive replacement works are prioritised in accordance (Table 6.2) and then programmed or, in urgent cases, undertaken immediately.

Table 6-2: Selection criteria for asset renewal

Priority	Renewal criteria
1 (High)	• Failure has occurred and renewal is the most efficient lifecycle cost alternative; • Asset failure of key system component is imminent; • Regular maintenance required: **more than three visits annually;** and • Road upgrading scheduled for the current financial year.
2	• Maintenance requiring **more than three visits per two month period** in past twelve months; and • Difficult to repair, due to fragile nature of material, or obsolescence.
3	• Pipe or structure maintenance involving two to three visits annually.
4	• Existing assets have a low level of flexibility and efficiency of replacement alternative.
5 (Low)	• Existing asset materials or types are such that known problems will develop in time.

The renewal strategy will be reviewed at least annually.

If work is deferred for any reason, this work will be re-prioritised alongside the next year's renewal projects and a revised programme established.

Renewal works identified by way of the above renewal strategies may be deferred if the cost is beyond the district's ability to fund it. This situation may arise if higher priority works are required on other infrastructure assets; short term peaks occur in expenditure or if an inadequate rating base exists.

When renewal works are deferred, the impact of the deferral on economic inefficiencies and the scheme's ability to achieve the defined service standards will be informally 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.

A register of all deferred works will be maintained, the total value of which will be recognised in the financial reporting.

Note*:* Stopbanks, drains and canals are not considered for renewal. Their functionality is preserved through regular maintenance.

6.4.3 Development strategies

Currently, Council and the Drainage Committee have no intention of developing the network further.

6.4.4 Disposal strategies

Due to the nature of this activity, it is unlikely that any drainage assets will need considered for disposal.

The only exception to this statement is the depot building and land, which are now surplus to the needs of the Drainage Committee. Options in relation to this asset are now being considered by Council.

6.5 General standards and specifications used

6.5.1 Operations, maintenance, renewals and development standards

Council contractors are required to comply with the following standards and legislation when maintaining, operating, renewing and developing the water supply network:

- Local Government Act 2002;
- This AMP;
- Resource consents and RMA 1991;
- Processes and procedures not defined in this document;
- Health and Safety in Employment Act 1992;
- Building Act 1991;
- Pesticides Act 1979 and regulations 1983;
- Poisons Act 1969 and regulations;
- Health Act 1993;
- Approved safety plan; and
- Good engineering practice.

6.5.2 Disposal Standards

In all cases asset disposal processes must comply with Council's legal obligations under the LGA 2002, which covers:

- Public notification procedures required prior to sale;
- Restrictions on the minimum value recovered; and
- Use of revenue received from asset disposal.

6.6 Land drainage lifecycle management plan

6.6.1 Land drainage operation plan

The general operational plan is to maintain the current capacity of the drainage network through regular inspection of the network and minimisation of interference in hydraulic capacity (weed clearing, spraying etcetera).

Table 6.3 shows the operational strategies carried out to ensure that the defined LOS are met and the key service criteria that are affected if the action is not carried out.

Table 6-3: Land drainage operational strategies

Asset/failure mode	Action	Key service criteria	Impact
Drains and channels			
Drains.	• Weeds will be controlled to minimise loss of hydraulic capacity. • Frequent inspections to ensure hydraulic capacity is maintained	System capacity and efficiency	Med/High – flooding
Unable to reach assets to maintain.	Access roads to the floodgates, drains and the pump station will be maintained to provide a level of vehicular access appropriate to each area.	Responsiveness	Low – delay in completing maintenance activity
Floodgates			
Debris build-up keeps gate open/shut against water flow.	Floodgates regularly inspected and cleared if necessary to ensure correct operation.	System capacity and efficiency	Low – minor flooding in low-lying areas near river
Stopbanks			
Stopbanks Slumping of banks results in increased risk of overtopping.	Stopbanks inspected frequently to ensure bank stability is preserved, and weak or low areas can be identified and adequately addressed.	System capacity/reliability	High – over topping results in stopbank damage and flooding

Asset/failure mode	Action	Key service criteria	Impact
Storm pump			
Pump station Mechanical or electrical failure.	The pump station will be inspected and maintenance undertaken on the pump motor on a monthly basis to ensure pump is in satisfactory condition.	Reliability	Medium – pump failure occurs and flooding results
Portable pump Mechanical failure.	The portable pump will be tested annually to ensure standby pumping capacity is available in the event of a failure at the pump station.	Availability/reliability	Low – localised flooding

The 20 year financial projections for operations are summarised in Table 6.8.

6.6.2 Land drainage maintenance plan

Weed spraying and machine cleaning of drains is carried out by Compass Engineering Ltd, Crompton Engineering Ltd provides maintenance services for the floodgates and Jennings and Jennings Ltd undertakes drain and channel maintenance for KDC.

Planned maintenance work includes weekly inspection of all structures, and monthly servicing of the motor at the Wallace Road pump station. An annual check is undertaken on the electrical components at the pump station. An annual inspection is also conducted on the detention basins.

A major issue associated with the maintenance of floodgates is the impact of NRC's Water and Soils Plan on the ability to perform maintenance activities on certain floodgate outlets within marine zone 1 without the need for resource consent. This will impact on the administrative cost of maintaining the network especially if consents are required for individual floodgates (as opposed to a blanket consent).

A number of drains have experienced slumping of the banks which result in the gradual widening of the drains and the loss of pastured land and occasionally the loss of a fenceline. This has resulted in the widening of the larger drains over time and is of ongoing concern to landowners. Options to halt this process include the timber lining of drains (full depth or partial depth), however the impact on lifecycle costs have not yet been assessed.

When flooding occurs a number of ponding areas develop, the size of which are dependent upon the rainfall intensity and duration. To date Council has not formally recognised these areas. The mapping of these flood areas should be undertaken in the near future.

The current maintenance and inspection strategies are highlighted in Table 6.4 below. Cost associated with this work is summarised in Table 6.7.

The nature and frequency of the work is consistent with the maintenance strategies above and the age, condition, performance and criticality profiles of the assets.

The 20 year financial projections for maintenance are summarised in Table 6.7.

Table 6-4: Maintenance tasks

Planned Inspections	Frequency
Drains	
Summer spraying	Monthly – October to May
Machine weed racking	Monthly
Winter Inspections	Weekly
Floodgates	
Inspect and Clear gravel, silt and vegetation accumulation	Weekly
Grates	
Grate cleaning and removal of debris	Monthly
Stopbanks	
Inspect for erosion/slumping and seepage	Monthly in Summer Fortnightly in Winter
Pump	
Electric motor – Inspection and maintenance	Monthly
Electrical, control	Annual testing
Maintenance of access ways and tracks	As required
Buildings	
Re-roofing	20 Yearly
Re paint exterior	10 yearly
Miscellaneous Repairs	As required

6.6.3 Land drainage renewal plan

To date there have been no significant renewals undertaken on land drainage assets. The cost of any renewal work undertaken to date has not been captured as renewal expenditure and as a result it is very difficult to determine historical renewal expenditure.

The installation of new culverts or replacement of old culverts for access to land over drains is a Road network function. However recently there has been a large degree of inconsistency in the sizing of these culverts which may affect both the capacity of the drain and the cost of achieving access. A method for calculating culvert size needs to be developed or culverts sizes should be calculated by Council published by Council to eliminate future inconsistencies and potential adverse effects on drain capacity.

The renewal strategies used are described in Section 6.4.2 of this AMP. Identified renewals needs are based on end of asset life predictions and lifecycle cost estimates. The lifecycle predictions are based on current information including informal assessment of performance and condition gained from weekly inspections.

Table 6-5: Lifecycle expectation for land drainage assets

Asset	Lifecycle expectation
Drains	Indefinite
Channels	Indefinite
Stopbanks	Indefinite
Detention basins	Indefinite
Floodgate structures: • concrete • wooden • plastic	 • 75 years • 30 years • 75 years
Flap gates: • aluminium • plastic • wooden	 • 20 years • 20 years • 30 years
Buildings	50 years
Pump and motor	40 years

Based on the performance and condition of Raupo drainage assets, renewal of a large number of floodgate structures and gates are anticipated in the 20 year planning period covered by this AMP (see Table 6.6). In addition, the pump motor will need to be either reconditioned or replaced in the next five years.

Table 6-6 Condition based renewal requirements

Asset	Renewal numbers			
	1st 5 yrs	6 - 10yrs	11 - 15 yrs	16 - 20 yrs
Flap gates	15	22	8	5
Floodgate structures	1	7	3	2

Based on the size, material and nature of the floodgate an indicative cost to replace each floodgate has been established the levels of expenditure anticipated within each five year band are shown in Table 6.7.

Table 6-7 Summary of requirement renewal expenditure

Year band	Floodgate structures	Flap gates	Storm pump
1 to 5 years	$300,000 in 2016/2017	$1,600 per annum	Nil
6 to 10 years	$200,000 per annum	$2,250 per annum	Nil
11 to 15 years	$200,000 per annum	$950 per annum	Nil
16 to 20 years		$500 per annum	Nil

6.6.4 Land drainage development plan

Currently no further growth development of the RLD network is planned.

While it is envisaged that stopbanks may need to be raised at some point in the future, this issue requires investigation and a budget has not been set aside for this to date.

6.6.5 Land drainage disposal plan

There are currently no planned land drainage network disposals.

6.7 Financial summary

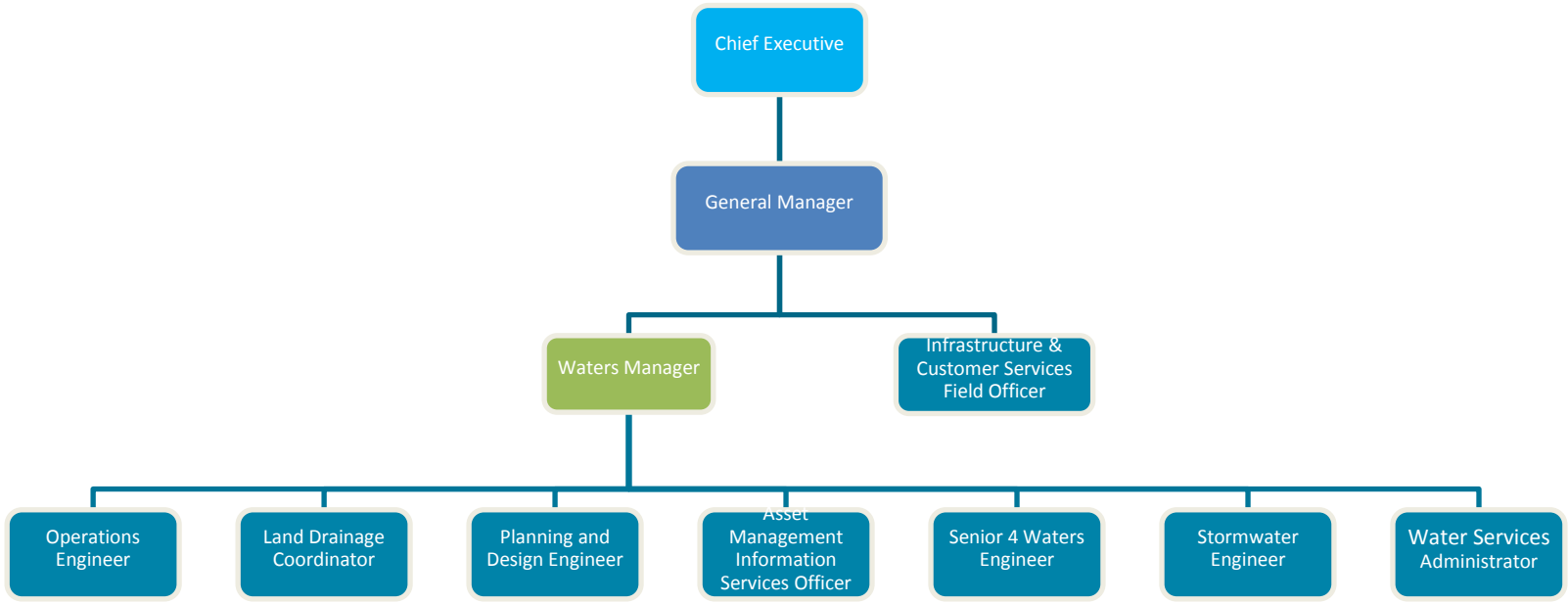
Table 6-8: 10 Year Opex Financial summary

GLActivityCostCentreCodeDescription	179 Raupo Land Drainage Scheme									
tx_BudgetSet	74									
tx_Amount	**Financial Year**									
	2019	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
Activity Costs	**247,901**	**254,724**	**202,818**	**207,849**	**218,766**	**218,925**	**225,000**	**231,468**	**238,358**	**245,904**
Flood Protection and Control Works	**247,901**	**254,724**	**202,818**	**207,849**	**218,766**	**218,925**	**225,000**	**231,468**	**238,358**	**245,904**
1792007 Insurance Premiums:LD Raupo	1,500	1,530	1,561	1,593	1,628	1,666	1,704	1,745	1,789	1,833
1792015 Councillor Remunera:LD Raupo	2,581	2,633	2,685	2,742	2,802	2,866	2,932	3,003	3,078	3,155
1792029 Land Rates KDC:LD Raupo	2,100	2,142	2,185	2,231	2,280	2,332	2,386	2,443	2,504	2,567
1792040 Management Services:LD Raupo	50,000	51,400								
179204101 Floodgates:LD Raupo	25,000	25,700	26,317	26,975	27,676	28,423	29,219	30,067	30,969	31,960
179204102 Machine Cleaning:LD Raupo	20,000	20,560	21,053	21,580	22,141	22,739	23,375	24,053	24,775	25,568
179204103 Stopbank Repairs:LD Raupo	40,000	41,120	42,107	43,160	44,282	45,477	46,751	48,106	49,550	51,135
179204104 Pumps:LD Raupo	5,004	5,144	5,268	5,399	5,540	5,689	5,849	6,018	6,199	6,397
179204105 Spraying:LD Raupo	83,000	85,324	87,372	89,556	91,885	94,365	97,008	99,821	102,816	106,106
179204106 Miscellaneous Works:LD Raupo	9,999	10,279	10,526	10,789	11,069	11,368	11,687	12,025	12,386	12,783
1792044 Advertising:LD Raupo	576	588	599	612	625	640	654	670	687	704
1792053 Electricity Supply:LD Raupo	1,000	1,020	1,040	1,062	1,086	1,111	1,136	1,163	1,192	1,222
1792067 Printing/Stationery:LD Raupo	448	457	466	476	486	498	509	521	534	548
1792068 Staff Business Trvl:LD Raupo	576	588	599	612	625	640	654	670	687	704
1792078 Valuation Services:LD Raupo	5,117	5,219			5,555					
1792083 Rates Remissions:LD Raupo	1,000	1,020	1,040	1,062	1,086	1,111	1,136	1,163	1,192	1,222
Grand Total	**247,901**	**254,724**	**202,818**	**207,849**	**218,766**	**218,925**	**225,000**	**231,468**	**238,358**	**245,904**

7 Service management

7.1 Organisation

Figure 7-1: Kaipara District Council executive organisational structure



7.2 Asset management systems and processes

7.2.1 Asset management systems

Effective information systems are essential for AM. Ease of information storage and analysis enables good AM decisions. Council uses the support tools listed in Table 7.1 to manage the stormwater business:

Table 7-1: 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 MAGIQ (NCS) software and GAAP Guidelines.
MAGIQ (maintenance and general inquiry)	Customer enquiry and service request tracking	To record customer interactions and track all service requests for follow-up investigation and resolution within appropriate timeframes. MAGIQ is the standardised form of record inquiry, record maintenance and reporting used for all NCS applications. Integrates with Intramaps, an inquiry tool in 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.

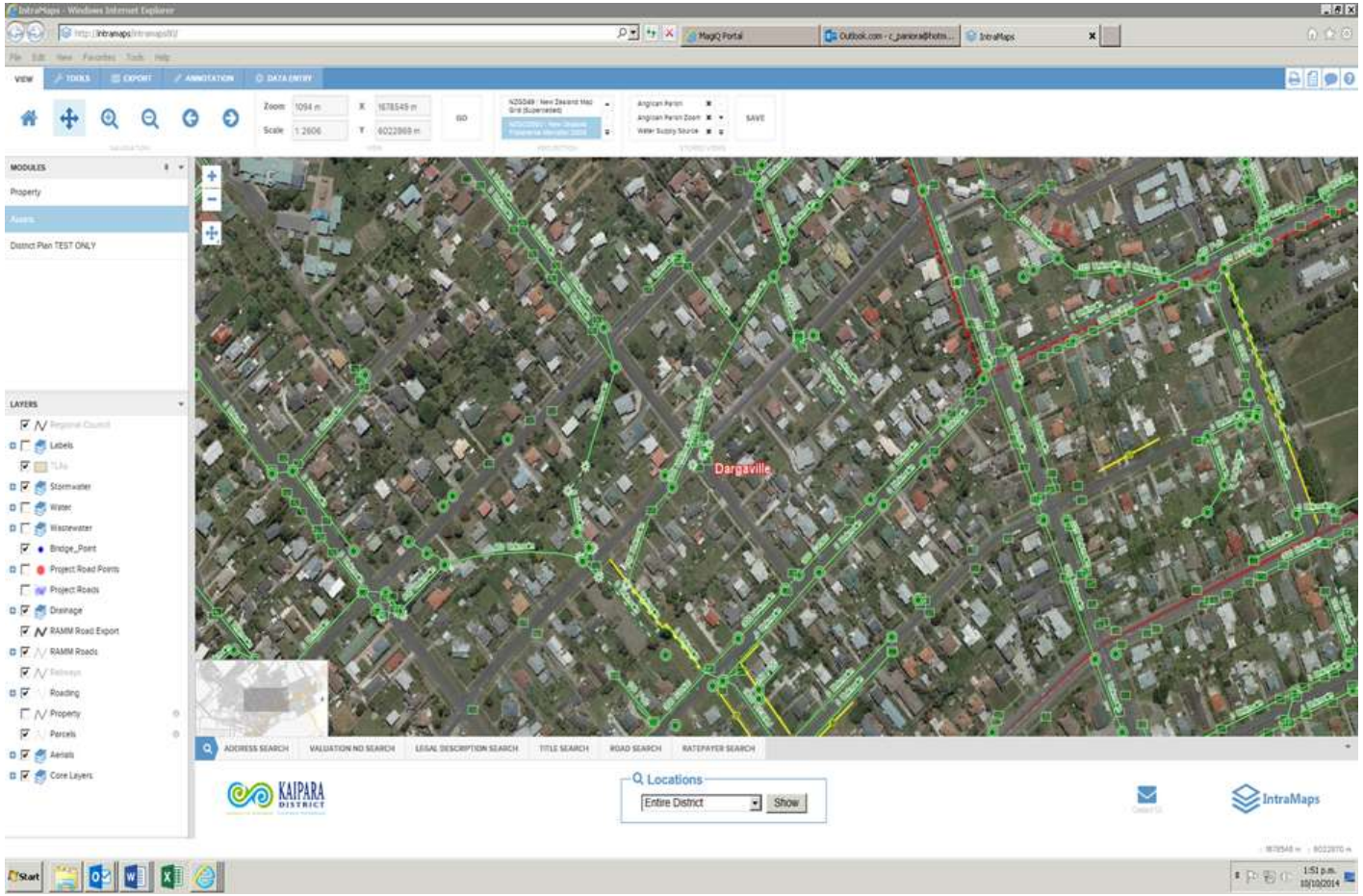
7.2.2 IntraMaps

The IntraMaps system is the core system used to house the spatial data related to Council's 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 screenshot of the IntraMaps system is shown in Figure 7-2 below:

Figure 7-2: IntraMaps screenshot



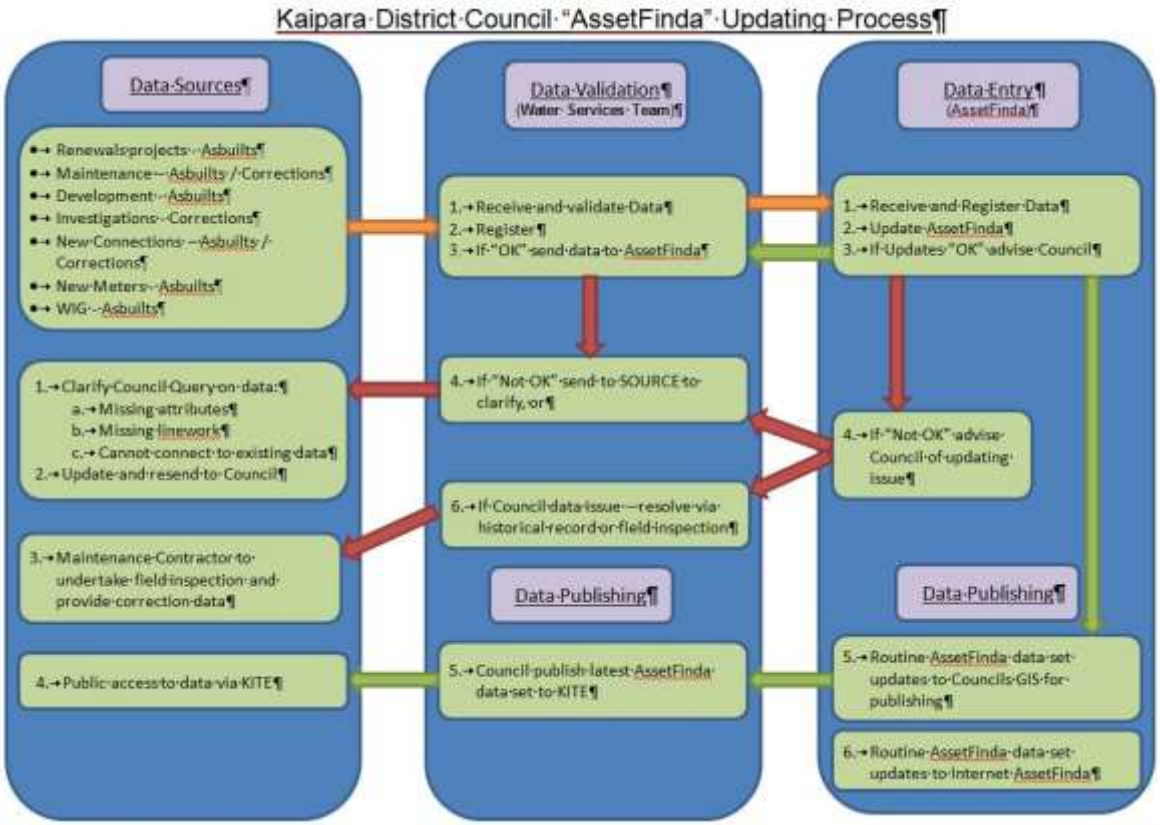
The representation of the assets within this system is believed to be reasonably comprehensive, although gaps and inaccuracies in the data are known to exist. A data improvement task has been identified and included in the AMIP to fix the known anomalies.

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 7-2 below.

Figure 7-2: Data maintenance process



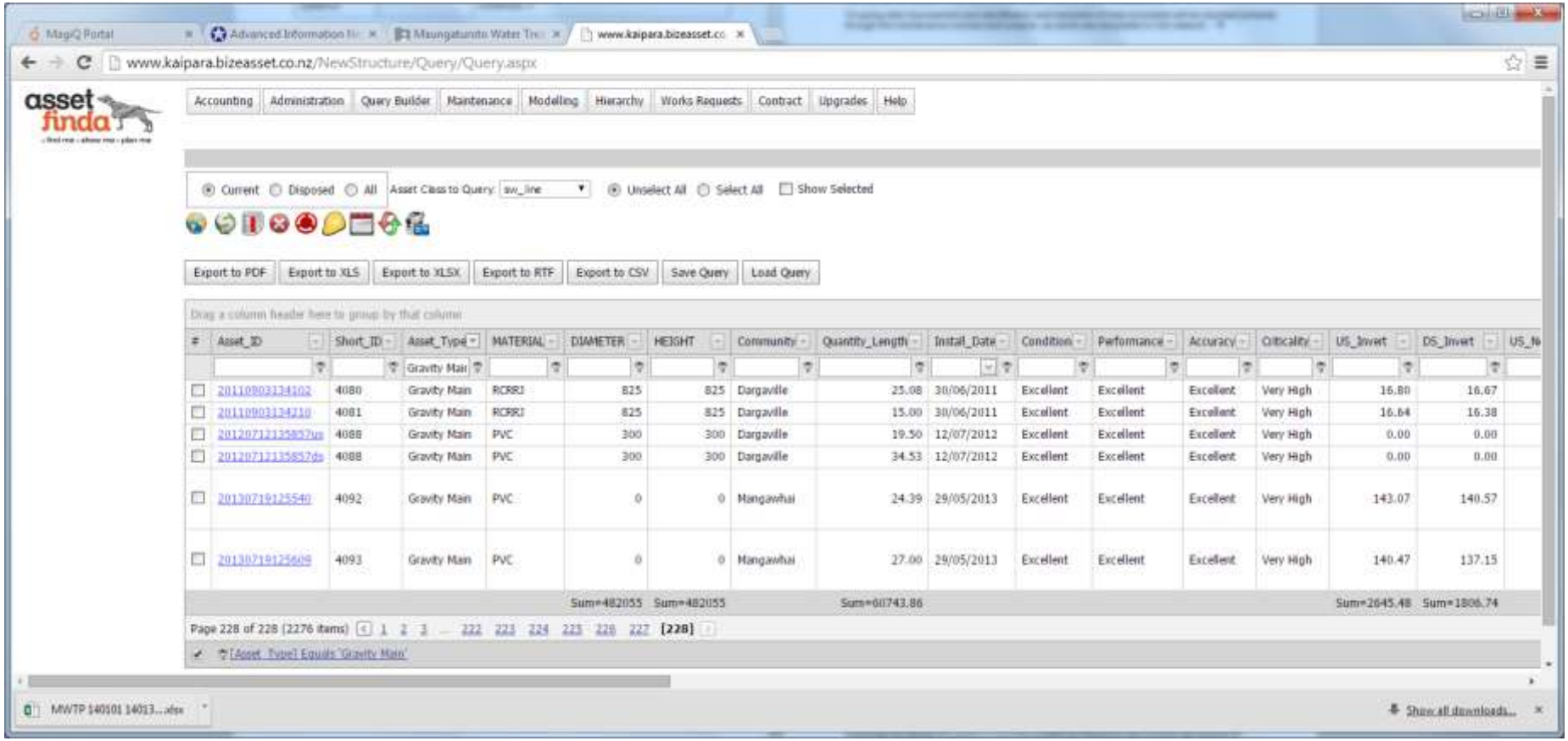
7.3 AssetFinda

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 screenshot of the AssetFinda system is included in Figure 7-3 below:

Figure 7-3: 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 Council's data; and
- 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/ 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.

7.4 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 land drainage and 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 had not previously formalised a risk management strategy. Council developed 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 appendix C

Table 7-2 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 7-2: 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.

7.5 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.

7.6 Risk management

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

Council and the drainage committee are familiar with the risks associated with the RLD network, however Council's approach to risk management has not previously formalised.

7.7 Risk Management Policy

The RLD network is exposed to a range of hazards that affect its ability to deliver services to its community in an economically, socially and environmentally sustainable manner. These hazards can originate from external events (e.g. earthquakes), from the water (e.g. high rainfall event combined with springtide) or from the infrastructure itself (e.g. asset deterioration leading to failure).

A risk analysis of the drainage network must consider not only the impact of hazards affecting individual assets, but the combined consequences of widespread failure in a major hazard event, and in particular a large flood.

In today's environment it is important that Council and the drainage committee undertake all that could be reasonably expected to reduce the impact of a major hazard event on the community.

The risk posed by these hazards is a product of their consequences for service delivery and the frequency of occurrence. This section shows how Council intends to manage the variety of risk associated with hazards at all levels of its water management, in an approach consistent with that to be employed by the rest of the Council organisation.

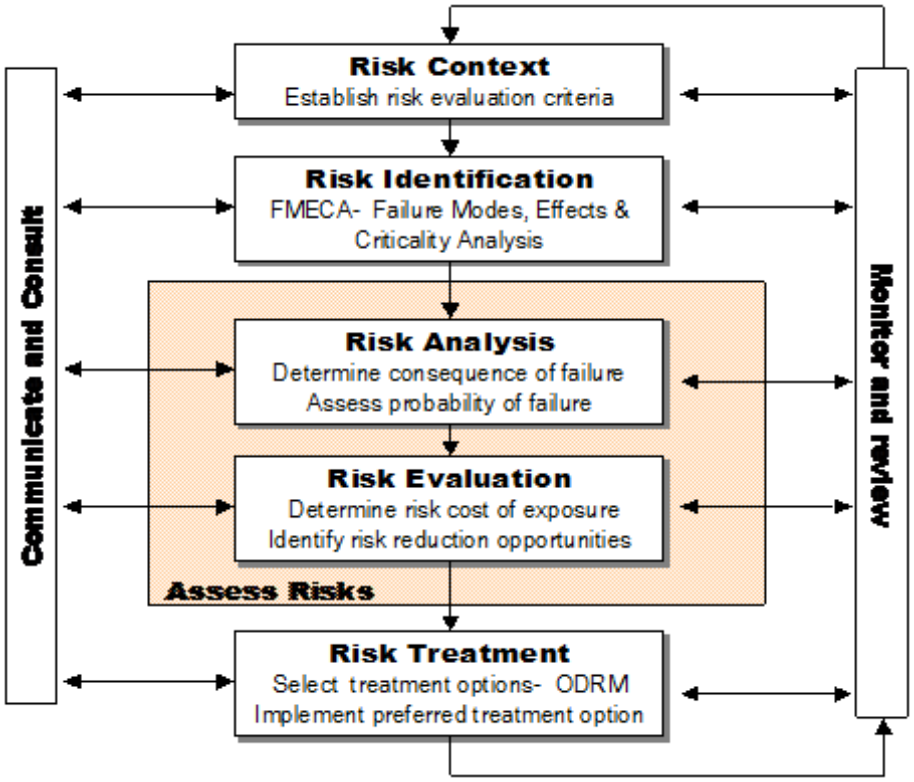
This is accomplished by:

- Identifying all hazards;
- Identification, analysis, evaluation and treatment of the risks and consequences associated with such hazards where:

- Appropriate action is identified to manage the risks and consequences;
- Priority is assigned to the highest risks to be addressed in the short to medium term; and
- Responsibility is allocated to specific staff for managing risks.

This is conducted in accordance with the process outlined in AS/NZS 4360:2004 and illustrated in Figure 7-5.

Figure 7-5: Risk management process



The scope of this section includes the completion of Step 1 (establishing the context for risk management in Kaipara district) and Step 2 where the RLD network has been reviewed for potential hazards. Step 3 analyses identified risks, their potential impacts and current controls. Risks are evaluated and treatments scheduled within forward Capital and Operational programmes (Steps 4 and 5). The outcome is presented in the Risk Register that is appended to this document. A useful summary table of the highest priority risks to be addressed in the short to medium term concludes this section.

7.8 Risk identification

7.8.1 Event hazards

As part of the process for raising their awareness of risks associated with the asset in their care, Council will be sourcing and collecting up-to-date records of the latest information on event-based hazards in the Northland area, and will review the likely implications for risks to its infrastructure assets. In particular, information may be obtained from NRC who should have a comprehensive record of hazards and flood events in this area.

Earthquake

Although no specific studies on earthquake hazards have been undertaken for the Kaipara district, similar studies for other districts of similar geology and geography provide an insight into the effects that can be expected from an earthquake. There is likely to be significant and widespread damage to both stopbanks and floodgates in a major earthquake.

In the drainage network, possible damage includes:

- Bore casings damaged by ground displacement;
- Pump buildings are at risk of collapse;
- Joint failure in pipes, especially in liquefaction-prone sands;
- Displacement of floodgates interrupts the nature flow of water; and
- Damage to dams/weirs resulting in a sudden release of water.

Power failure

The prolonged loss of power supply to the pump of more than 48 hours could result in floodwaters overtopping drains and inundating private property.

King tides during heavy rainfall events

The occurrence of a heavy rainfall event at a time of king tides may result in continued and repetitive overtopping of the stopbanks and inundation of private property with saltwater.

7.8.2 Product hazards

Product hazards could include the inability to obtain resource consent to maintain outfalls in the CMA.

7.8.3 Infrastructure Hazards

Infrastructure hazards are defined as the hazards to public health, Council finances, service delivery, the environment, other assets in the vicinity etcetera that arise from failure of key infrastructure such as pumps, pipes and other components of the water supply networks. Once the critical assets are identified, the risks are analysed and mitigation methods are designed and fed through to the operational, maintenance or capital works programmes.

To date there has been no formal identification and analysis of infrastructure hazards. In particular, little is known of the nature and extent of environmental damage risk.

This AMP acts to formalise hazard identification for these assets and identifies an action plan that, once implemented, will ensure that risk assessment is fully ingrained into the business.

7.9 Risk analysis and evaluation

7.9.1 Key analysis criteria

The key risk management criteria for KDC management are:

- Impacts on public health and safety;
- Environmental risks;
- Legal and regulatory compliance;
- Financial Impact: direct costs (repair, lost revenue, third party damage, legal costs);
- Image, reputation and public support; and
- Service delivery impact on customers and community.

The matrix used to assess the consequences of failure is shown in Table 7-4. Careful consideration has been given to the weightings of consequences and the resulting risk rating. The table infers, for example, that a direct repair cost of $1,000 - $3,000 is equivalent to receiving negative local media coverage. A risk of this level, if it had a probability of occurring once a year, would be identified as being a ‘high’ risk requiring a review of the risk controls and some improvement in those controls to reduce risk to ‘moderate’.

Risk exposure for each key service objective and each risk event is calculated as:

Risk Exposure = **Probability of Occurrence** x **Impact of Occurrence**

The probability of occurrence used to determine the risk rating is defined in Table 7-3.

Table 7-3: Risk probability ratings

Code	Likelihood	Current probability
A	Rare	Could occur only in exceptional circumstances (unlikely next 50 years)
B	Unlikely	Could occur at some time in the next 50 years
C	Possible	Could occur at some time in the next 10 years
D	Likely	Could occur once a year
E	Almost certain	Is expected to occur several times a year
F	Certain	Occurs on a daily basis

Table 7-4 Hazard and Risk Assessment

Impact (Risk)					
CONSEQUENCE Description	1 Insignificant	2 Minor	3 Major	4 Severe	5 Catastrophic
Corporate image	Event only of interest to individuals (<$1,000). Nil effect or community concern.	Minor community interest ($1,000-$3,000). Local media report.	Public community discussion ($3,000-$25,000). Broad adverse media coverage.	Loss of community confidence in Council ($25,000-$0.1M). National publicity. Public agitation for action.	Public investigation (>$0.1M) International coverage. Management changes demanded.
Environmental	Negligible impact (<$1,000). Reversible within 1 week.	Material damage of local importance. ($1,000-$3,000). Prosecution possible. Impact fully reversible within 3 months.	Serious damage of local importance ($3,000-$15,000) Prosecution probable. Impact fully reversible within 1 year.	Serious damage of national importance ($0.15M-$0.3M) Prosecution expected. Impact reversible within 10 years.	Serious damage of national importance (>$0.3M) Prosecution. Long term study. Impact not fully reversible.
Safety and health	Negligible injury (<$500)	Minor injury ($50-$2,500). Medical attention required.	Serious Injury ($2,500-$0.1M) Hospitalisation required.	Loss of life ($0.1M-$0.25M).	Multiple loss of life or district-wide epidemic (>$0.25M)).

Impact (Risk)					
CONSEQUENCE Description	1 Insignificant	2 Minor	3 Major	4 Severe	5 Catastrophic
Third Party Property Damage and Losses	Minimal liability for consequential loss (<$500).	Liability for consequential loss ($500-$5,000).	Liability for consequential loss ($5,000-$50,000).	Liability for consequential loss ($50,000-$200,000).	Liability for consequential loss (>$200,000).
Loss of Service - Extent/ duration	Small number of customers experiencing minor service disruption (<$500).	Significant service disruption affecting small number of customers ($500-$2,000).	Significant localised disruption over extended period ($2,000-$20,000).	Major localised disruption over extended period ($20,000-$100,000).	Major long term district wide service disruption (>$100,000).
Kaipara Business Costs (Total Recovery)	Total direct revenue loss and cost to restore service (<$500).	Total direct revenue loss and cost to restore service-($500-$5,000).	Total direct revenue loss and cost to restore service ($5,000- $50,000).	Total direct revenue loss and cost to restore service ($50,000-$100,000).	Total direct revenue loss and cost to restore service (>$100,000).

7.9.2 Risk evaluation

The matrix of likelihood and consequence of failure ratings shown in Table 3.3 is used to assess the level of risk, ranking events as low, moderate, significant or high risk.

Table 7-5: Risks priority rating matrix

LIKELIHOOD	CONSEQUENCES				
	1	2	3	4	5
A	L	L	L	M	H
B	L	L	M	H	E
C	L	M	H	E	E
D	M	M	H	E	E
E	M	H	E	E	E
F	H	E	E	E	E

This allows all asset and corporate risks to be compared and ranked. The Risk Policy specifies the following broad treatment strategy for the levels of risk:

L = Low Risk: Manage by routine procedures.

M = Moderate Risk: Management responsibility must be specified.

H = High Risk: Risk and management strategy identified in AMP. Failure management plans available.

E = Extreme Risk: Risk and management strategy identified in AMP. Failure management plans specifically addressing event in place.

7.9.3 Communication, monitoring, review and reporting

Council is in the process of establishing a risk register in the following structure to communicate report and monitor the implementation of the risk policy.

- Key Elements - Each key activity that Council carries out to provide a service;
- Description of the risk:
  - What can happen? - The things that can go wrong if each of the activities is not carried out properly.
  - How can it happen? - The specific actions might cause that risk event to occur.
  - Consequences - A description of the potential impacts arising from that risk event e.g. costs to Council, damage to public image, public health effects.
- Current Practices (Controls) - The practices that are currently carried out to manage those risks;

- Future Appropriate Practice - The practices that should ideally be carried out to manage risks to an acceptable level;
- Improvement Actions - The improvements required to close the gap between current and appropriate practice;
- Responsibility - Nominated person responsible for ensuring the risks are managed and improvements carried out in accordance with the programme; and
- Audit trail - Date of entries and revisions, target date for actions to be taken, and actual tasks completion dates.

7.10 Risk treatment

Options for risk treatment are yet to be considered. Risk reduction treatments available include:

- Reduce - above.

Table 7-6 identifies all high and medium risks associated with RLD, together with potential impact, current controls and an action plan to mitigate, minimise or manage the risk.

Table 7-6: Summary of high and medium risks for Raupo Drainage District

Description		Potential impact	Risk exposure	Controls/action plan
Asset group	Risk			
Infrastructure				
Stopbanks	Sea level risk as a result of global warming.	Sea level rise causes stopbanks to be overtopped in spring tides and/or when river in flood.	High	Programme in place to increase the heights of all stopbanks over next 20 years.
Floodgates, drains and canals.	Sea level risk as a result of global warming.	Sea level rise results in floodgates, drains and canals behind below low tide mark and therefore unable to drain.	High	Land Drainage Co-ordinator to investigate difference in level between floodgate and low tide and available fall to determine whether sea level rise is a threat.
Regulation changes.	Change in regulations inhibit the ability to manage and control undesirable vegetation.	Build up of vegetation in outlets/drains/canals resulting in loss of hydraulics and inability to efficiently drain the network.	High	Resource consent obtained that allows for the clearing of nuisance vegetation in CMA.

Description		Potential impact	Risk exposure	Controls/action plan
Asset group	**Risk**			
Stopbanks - spall material.	Cheap spall material not available results in significant increase in maintenance costs.	Increase in rates to ensure current LOS maintained in relation to stopbank protection.	Medium	Alternatives for spall materials are frequently re-assessed.
Infrastructure				
Drains - local spraying contractors.	Loss of local spraying contractors results in significant increase in maintenance costs.	Increase in rates to ensure current LOS maintained in relation to spraying and network capacity.	Medium	Contracts for other districts are grouped to increase workload to contractor. Alternative contractors are available.
Floodgates - Local engineer.	Loss of local engineer to repair/replace floodgates.	Increased costs to maintain/replace floodgates.	Medium	
Events				
Earthquake	Earthquake causes widespread soil displacement and lateral movement.	Damage to stopbanks results in prolonged flood damage to low-lying areas.	Medium	Develop emergency response plan.
Power failure / pump failure.	Pump inoperable during time of flooding.	Upstream drains over top and flood private property.	Medium	Portable pump available
Cyclone/spring tide	Cyclone at time of spring tides causes overtopping of stopbanks and network capacity exceeded.	Extensive and prolonged flooding in drainage district.	Medium	
Flooding	Excessive flooding on land side of stopbanks unable to be drained in two tides	Prolonged inundation of private property by floodwaters (possibly saltwater) resulting in extensive damage to pastures/crops.	Medium	Access available to other pumps.

Description		Potential impact	Risk exposure	Controls/action plan
Asset group	**Risk**			
Floodgate failure.	Failure of one or more floodgates over prolonged period allowing entry of seawater.	Canals fill up with incoming tide.	Medium	Drain floodgates are shut to prevent saltwater entering drainage network.
Product				
Biological resistance.	Weeds in drainage network become resistant to Roundup/	Drain cleaning methods need to be changed to more expensive methods to maintain hydraulics/	Medium	
		Drains no longer able to be kept weed free and capacity of network is adversely affected/	Medium	

8 Continuous improvement

Council recognises the need to improve on its current AM practices and has committed to lifting its current level of AM. The development of this AMP is an indication of this commitment.

With regards to land drainage assets, there will always be a balance between the level of sophistication and investment in asset management planning versus the willingness of drainage district landowners to pay for planning tasks. Given the nature and extent of the land drainage assets the level of planning established by this AMP is deemed to be of a suitable level by Council and the Raupo Drainage Committee members.

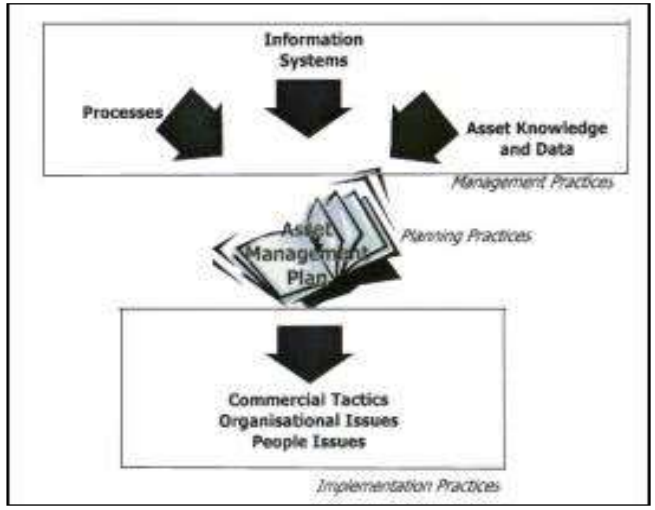
Ensuring that the fundamental requirements for AM are in place gives Council a solid foundation on which to progress future improvements.

Sound AM planning requires the following key AM inputs:

- **Processes:** The necessary processes, analysis and evaluation techniques needed for lifecycle asset management;
- **Information systems:** The information support systems, which support the above processes and which store and manipulate asset data;
- **Data:** Data available for manipulation by information systems to support AM decision-making.

Council recognises the importance of these key inputs and this is reflected in the AMIP detailed in this section.

Figure 8-1: AM planning



8.1 Asset Management Improvement Plan (AMIP)

In considering tasks for the AMIP it was felt that fundamental issues such as asset knowledge be addressed in the first instance. Addressing these issues will then enable relative tasks to be completed at a later date.

The following priority improvement tasks have been identified after consideration of priorities identified in the indicative AM assessment and gap chart analysis:

8.1.1 Asset knowledge

1. ***Asset capacity***. *Investigation of stopbank levels and relative increase in high tide levels from design levels and assessment of potential overtopping during high rainfall events.*

2. ***Asset Lives***. *Start collecting installation dates for all future renewals and where possible determine installation dates for existing assets.*

8.1.2 Strategic planning

3. ***Asset protection***. *Investigate options to retain creeping/slumping banks in problem drains.*

4. ***Resource consents***. *Determine impact of WASP on floodgate outlet maintenance and reflect impact in this AMP.*

5. ***Culvert replacement***. *Determine required culvert sizes in roadside drains to ensure drain capacity preserved.*

6. ***Ponding areas***. *Identify and map extent of ponding areas during flooding for different rainfall events.*

8.1.3 Information systems

7. ***Asset lifecycle costing***. *Collect operation, maintenance and renewal costs at component level to enable a better understanding of maintenance and renewal trends to be developed and reflected in future AMPs.*

8.1.4 Asset Management Plan (AMP)

8. ***Plan update***. *Update the relevant information in the AMP following the completion of the above tasks.*

The 3 year improvement programme in Table 8-1 identifies priorities for the improvement tasks detailed above.

Table 8-1: 3 Year Improvement Plan

Task ID	Task description	Priority	Measurement of achievement	Budget	Resources
i	Asset lifecycle costing	1	Operational, maintenance and renewal costs collected at an asset component level.	Nil	Land Drainage Co-ordinator
ii	Resource consents	1	Impact of WASP on maintenance activities known and reflected in AMP.		
iii	Asset protection	2	Option for bank stability identified and capital budget identified for implementation.	$39,750 annually	Contractor
iv	Culvert replacement	2	Culverts sizes for all roadside drains defined and available to public.	Nil	Land Drainage Co-ordinator
v	Asset lives	2	New assets will have install date assigned in asset register.	Nil	Land Drainage Co-ordinator
vi	Asset capacity	3	Ability of stopbanks to prevent flooding during high rainfall events and king tide known and further actions identified (if required).	Included in iii	Contractor
vii	Ponding areas	3	Ponding areas during flooding mapped and available to landowners (or potential landowners).	Nil	Land Drainage Co-ordinator

8.2 Monitoring and review

The AMP is a living document that is relevant and integral to daily AM activities. To ensure the AMP remains useful and relevant the following ongoing AMP monitoring and review tasks will be undertaken:

- **AMP revision –** The AMP will be revised and updated on a three-yearly basis to coincide with the LTP process, and will incorporate the outcome of service level reviews and any new knowledge resulting from the AMIP;
- **Quality assurance audit –** Audits will be undertaken to ensure that the integrity and cost-effectiveness of data collected for use in the AMP is maintained;
- **External audit –** An external audit of each review of the AMP is to be undertaken prior to presentation to Council, to provide Council with the confidence that the AMP has been prepared and is being managed competently;
- **Annual Plan –** The Annual Plan and Annual Report will be monitored for consistency with this AMP; and
- **Capital expenditure review –** Annual review of the capital expenditure programmes will continue to be undertaken to ensure that the programmes developed reflect the best needs of the asset.

Appendices

Appendix A: Detailed financial tables

For the year ended:	Annual Plan	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget
30 June	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028
	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000
Operating funding											
Sources of operating funding											
General rates	0	0	0	0	0	0	0	0	0	0	0
Targeted rates	349	395	389	296	296	351	351	358	365	372	379
Subsidies and grants - operational	0	0	0	0	0	0	0	0	0	0	0
User fees and charges	8	8	8	8	9	9	9	9	10	10	10
Internal recoveries	0	0	0	0	0	0	0	0	0	0	0
Investments and other income	0	0	0	0	0	0	0	0	0	0	0
Total sources of operating funding	**357**	**403**	**398**	**305**	**305**	**360**	**360**	**367**	**374**	**381**	**389**
Application of operating funding											
Contractors costs	0	0	0	0	0	0	0	0	0	0	0
Professional services	0	55	57	0	0	6	0	0	0	0	0
Repairs and maintenance	178	183	188	193	197	203	208	214	220	227	234
Other operating costs	10	10	10	10	10	11	11	11	11	12	12
Employee benefits	0	0	0	0	0	0	0	0	0	0	0
Internal charges	33	44	45	39	40	42	42	43	45	46	47
Finance costs	0	0	2	2	2	2	2	2	2	2	2
Total applications of operating funding	**221**	**292**	**301**	**244**	**250**	**263**	**264**	**271**	**278**	**286**	**295**
Surplus (deficit) of operating funding	**136**	**111**	**96**	**60**	**54**	**97**	**97**	**96**	**96**	**95**	**94**

For the year ended:	Annual Plan	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget
30 June	2017-2018 $'000	2018-2019 $'000	2019-2020 $'000	2020-2021 $'000	2021-2022 $'000	2022-2023 $'000	2023-2024 $'000	2024-2025 $'000	2025-2026 $'000	2026-2027 $'000	2027-2028 $'000
Capital funding											
Sources of capital funding											
Subsidies and grants - capital	0	0	0	0	0	0	0	0	0	0	0
Development contributions	0	0	0	0	0	0	0	0	0	0	0
Financial contributions	0	0	0	0	0	0	0	0	0	0	0
Increase(decrease) in debt	0	32	16	-2	-2	-2	-2	-2	-2	-2	-3
Sale of assets	0	0	0	0	0	0	0	0	0	0	0
Total sources of capital funding	**0**	**32**	**16**	**-2**	**-2**	**-2**	**-2**	**-2**	**-2**	**-2**	**-3**
Applications of capital funding											
Capital Expenditure - Growth	0	0	0	0	0	0	0	0	0	0	0
Capital Expenditure - LoS	170	0	0	0	0	0	0	0	0	0	0
Capital Expenditure - Renewal	202	129	102	26	21	66	67	69	70	72	74
Increase (decrease) in reserves	-236	15	10	33	31	29	28	26	23	20	18
Total applications of capital funding	**136**	**143**	**112**	**59**	**52**	**95**	**95**	**94**	**94**	**93**	**91**
Surplus (deficit) of capital funding	**-136**	**-111**	**-96**	**-60**	**-54**	**-97**	**-97**	**-96**	**-96**	**-95**	**-94**
Funding Balance	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Appendix B: Asset Management Improvement Plan (AMIP)

Executive summary

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

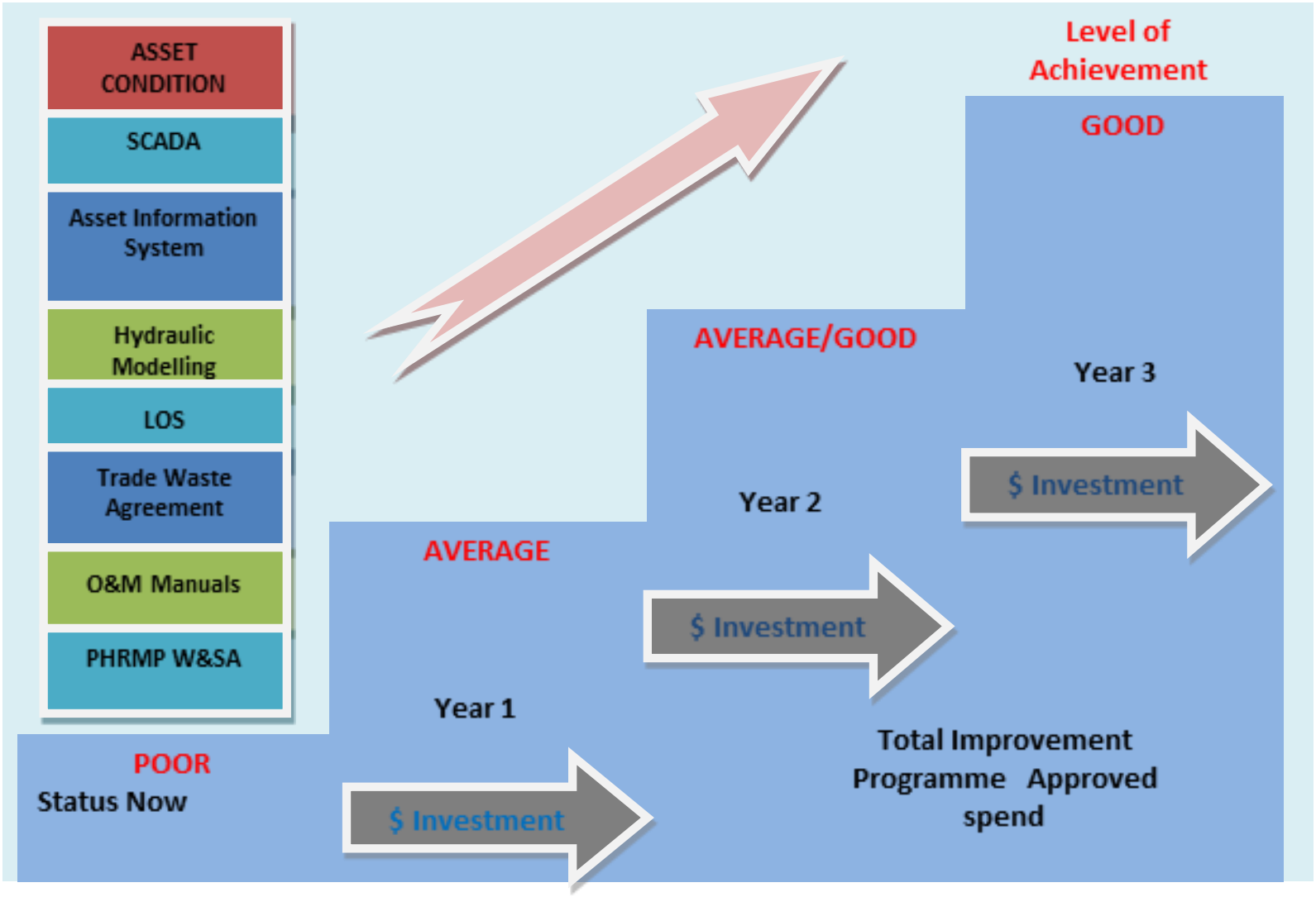
The AMIP has been developed, identifying the highest priority activities to undertake in next 1-3 years to improve level of AM practice in three waters as follows:

- Review Stormwater LOS;
- Investigate the condition of existing floodgates;
- Investigate current capacity of the drainage network;
- Survey current stopbank levels;
- Geotechnical analysis of stopbanks to better understand strength and durability;
- Possibly undertake the development of a Stormwater Catchment Management Plan (SWCMP) for Raupo;
- Undertake Dargaville Flood study;
- Fully clarify asset ownership;
- Review asset register to ensure all known assets are properly recorded, including stopbanks, floodgates and detention ponds;
- Review the current status of resource consents for water discharge to the receiving environment;
- Understand and fully realise climate change impacts in conjunction with Northland Regional Council (NRC) reports; and
- Update 2021 AMP.

This AMIP was compared with the available funding in the budget to identify any significant funding gaps. Funding gaps were identified in across the four waters in 2013/2014 though we have worked to identify these in the current proposed budgets; however they are not significant and also some excess funding is available in subsequent years. As the cost estimates were only an approximation i.e. 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 programme 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



Appendix C Risk Register

Drain Type	Criticality Rating
Hill Cut Off Drain	Very High
Collectors	High
Minor Collectors	Medium
Individual Drains	Low

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	

Drain No.	Drain Description	Length (m)	Criticality
1	Muddy Mouth floodgate - Access Road/Dunn Road intersection	1400	High
2	Old Muddy Mouth No.2 south from Galvin Road	2375	Medium
3	Access Road from Edwards boundary to school **– Above drain 22**	4750	Medium
3	Access Road from Edwards boundary to school **– Below drain 22**		High
4	Hodgson Road and Te Kowhai Road west side to Simpson Road	4110	Low
5	Wallace Road east side to Access Road and south side Access Road also south of flood pump to floodgate	4890	High
6	Tramline north side - K Canal - (14) G Canal (49) **Above drain 16**	6725	Medium
6	Tramline north side - K Canal - (14) G Canal (49) **below drain 16**		High
7	Dunn Road, west side from K Canal (14) - Molloy Road	720	Low
8	Donovan's outlet - State Highway 12 - River	320	Low
9	Naumai Wharf Road - Drain No.20 outlet	1100	Low
10	North along State Highway 12 to K Canal	890	Low
11	G Canal (49) north along Te Kowhai Road	1640	Medium
12	K Canal (14) to Whitcombe Road north to Raupo boundary	1080	Low

13	Whitcombe Road, north side - from K Canal (14)	2150	Low
14	Northern Wairoa River - Quarry (K Canal) – **Above Dunn Road**	6320	Medium
14	Northern Wairoa River - Quarry (K Canal) – **Below Dunn Road**		High
15	K Canal (14) to marker	1330	Low
16	Dunn Road, east side, from Tramline Road to marker	950	Low
17	Robertson Road, west side, from Crosbie to Tramline	740	Low
18	K Canal (14) - State Highway 12	380	Low
19	Williams Road, west side from Drain No.20	1400	Low
20	Floodgate Wairoa River **– Above junction with Drain 58**	5550	Medium
20	Floodgate Wairoa River - **Below junction with Drain 58**		High
21	Drain No.20 - marker	100	Low
22	Access Road (3) north	1735	Low
23	Drain No.22 - Wallace Road	1520	Low
24	North side Galvin Road from Wairoa river to Dunn Road	3560	High
25	McKinley Road - Drain No.20 outlet	1880	Low
26	Dunn Road, west side from Drain No.20 to school and north side Silich Road	3450	High
27	Whiteheads Drain north of Access Road	2100	Low
28	Dunn Road creek (Robinson/Currie outlet north of school)	180	Low
29	Northern Wairoa River west side State Highway 12	1430	Low
30	K Canal (14) north to marker (Quarry Road)	180	Low
31	North along McKinley Road from Raupo floodgate	280	Low
32	Raupo Wharf Road north side McKinley Road - State Highway 12	400	Low
33	North side Mitchell Road from Raupo Floodgate	1190	Low
35	From No.1 to marker	2090	Low
36	From G Canal (49) east towards Greenhill Road	330	Low

37	Ruawai Boat Marina - north to Jellicoe Road	1010	Low
38	North side Freyberg Road - open drain to marker	330	Low
39	Wairoa River - Simpson Road west side to Robertson Road east side	4610	High
40	Drain No.39 Simpson Road east	1060	Low
40a	Drain No 40-south	20	Low
41	Hewletts borrowpit, east side of G Canal (49)	360	Low
42	State Highway 12 north side of G Canal (49)	880	Low
43	State Highway north side along G Smith's boundary	665	Low
44	G Canal (49) east side opposite Wallace Road	920	Low
45	Wairoa River north side Wilson Landing Road - west side Simpson Road	2130	Medium
46	Outlet south Wilson Landing Road	120	Low
47	Mapua Outlet from Frosts to Floodgate - west side Simpson Road	1520	Low
48	Mapua Road - G Canal (49)	700	Low
49	Awaroa River G Canal (49) to Whenuanui Domain	13975	V.High
50	Smiths Canal (G Canal (49) to State Highway 12)	3920	High
51	West side Mapua Road to G Canal (49)	360	Low
52	From Armstrong Road to Smiths Canal (50)	560	Low
53	Floodgate Te Kowhai Floodgate Road - west Greenhill Road	6300	V.High
53a	Detention Dam A - Drain No.53	150	V.High
53b	Detention Dam B - Drain No.53	300	V.High
54	Te Kowhai Road north side (G Canal to Drain No. 53)	3020	Medium
55	G Canal (49) - Drain No.53 behind stopbank	4600	Low
56	Drain No.53 - east	420	Low
56a	Drain No 53 - east	240	Low

57	From G Canal (49) - Greenhill Road	540	Low
58	Dunn Road west side - Drain No.20	280	Low
59	Quarry Road - K Canal (14)	550	Low
60	Quarry Road north side from Blong Road then north	930	Low
61	South past Primary School to Drain No.1	140	Low
62	North Tramline Road Drain No.6	820	Low
65	State Highway 12 east side - Drain No.18 to Drain No.20	880	Low
66	Village Road north side - Drain No.65	800	Low
68	Drain No.23 north	500	Low
71	Drain No.39 east Simpson Road	640	Low
72	Drain No.9 north	650	Low
73	Drain No.29 - eastern side State Highway 12	80	Low
76	East along south side State Highway 12 to Drain No.2	400	Low
77	State Highway 12, northeast side from Drain No.35	240	Low
78	State Highway 12, east along north side from Drain No.2	460	Low
79	Drain No.1 - west along south side State Highway 12	350	Low
80	Jellicoe Road, north east side from Ruawai town to Drain No.1	900	Low
81	State Highway 12 north side Robertson Road to old Dairy Factory	830	Low
82	State Highway 12 north side, old Dairy Factory to Hodgson Road	620	Low
83	State Highway 12 north side, Hodgson Road to Williams Creek	560	Low
84	State Highway 12 north side Wallace Road towards G Canal	585	Low
85	State Highway 12 south side from Te Kowhai Road east	560	Low
86	State Highway 12 south side east from Wallace Road	670	Low
87	From Drain No.50 west along south side State Highway 12	80	Low
88	Drain No.37 behind Jellicoe Road houses	160	Low

89	Drain No.37 behind Jellicoe Road houses	410	Low
90	Drain No.37 behind Porrit Street houses	240	Low
91	Drain No.37 - old Dairy Factory	190	Low
92	Reeves Road, north side from Drain No.37	120	Low
93	Off Drain No.60 towards Blong Road	250	Low
94	Clarks Outlet	470	Low
95	Behind Freyberg Road houses - Drain No.39	1005	Low
96	Judd Drain	355	Low
97	Northern Wairoa Floodgate east - Drain No.95	80	Low
98	Drain No.50 - Smith Canal Road	90	Low
99	From Drain No.38 north	450	Low
100	Te Kowhai Road (Drain No.54) north	940	Low
102	Domain Road north side to Simpson Road (Drain No.45)	660	Low
103	Drain No.11 west side to Te Kowhai Road	200	Low
104	Drain No.37 - Well Street	100	Low
105	Rear of Vuletich subdivision - Westlake Road into Drain No.106	90	Low
106	BNZ to Matich/Bailey boundary then along sports ground boundary to memorial floodgate	605	Low
107	State Highway - south side west to Te Kowahi Road (4)	80	Low
108	Wallace Road (5) west along south side State Highway 12	380	Low
110	Drain No.33 north along State Highway 12 west side	240	Low

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 LOS

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.

LOS 2010 AMP – Quality

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 with the LOS (measured annually).	81%	75%	76%	77%	77%	78%
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%

LOS 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 2011 for design storm events.	New	New	100%	100%	100%	100%

Appendix F: List of acronyms and abbreviations

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
ARI	Average Recurrence Interval
CAPEX	Capital expenditure
CCTV	Closed Circuit Television
CDEM	Civil Defence Emergency Management
CMA	Costal Marine Area
SWCMP	Stormwater Catchment Management Plan
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

Term	Definition
LIM	Land Information Memoranda
LOS	Level of Service
LTP	Long Term Plan
NCS	Napier Computer System
NOVAF	Novaflex (trade name for a pipe type)
NRC	Northland Regional Council
NTA	Northland Transportation Alliance
OPEX	Operational expenditure
PIM	Project Information Memoranda
PVC	Polyvinylchloride (pipe type)
RCRRJ	Reinforced concrete rubber ring joint (pipe type)
RDD	Raupo Drainage District
RLD	Raupo Land Drainage
RMA	Resource Management Act 1991
SWCMP	Stormwater Catchment Management Plan
UPVC	Un-plasticised polyvinylchloride (pipe type)
URP	Usual Resident Population
WSSA	Water and Sanitary Services Assessment

Appendix G: Land Drainage Asset Revaluation 30 June 2016

1 Raupo

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 Apx G-1: Dargaville assets current replacement value

Component	Replacement costs	Average useful life (years)	Average remaining life (years)
Building	$ 228,208	100	5
Drains	$ 3,983,467	Non depreciable	Non depreciable
Earth stop bank	$ 2,354,758	Non depreciable	Non depreciable
Floodgates concrete	$ 115,560	50	5
Floodgates wooden	$ 2,873,945	80	5
Land	$ 139,671	20	10
Pumping structure	$ 160,584	80	5
Pumps	$ 159,586	100	5
Rip rap	$ 480,000	100	5
Total	$ 10,495,778	Non depreciable	Non depreciable

Kaipara District Council

Asset Management Plan 2018/2028

Community Activity:

Reserves and Open Space Part A and Part B

June 2017

This document has been prepared for the benefit of Kaipara District Council.

QUALITY STATEMENT

PROJECT MANAGER		PROJECT TECHNICAL LEAD
		Sue Hodge
PREPARED BY		
Sue Hodge	…….....	01/05/2017
CHECKED BY		
	…….....	
REVIEWED BY		
	…….....	xx/xx/2017
APPROVED FOR ISSUE BY		
	…….....	……/……/……

REVISION SCHEDULE

Rev No	Date	Description	Signature or Typed Name (documentation on file)		
			Prepared by	Checked by	Reviewed by
A	February 2014	Template developed	Stephen Soole	Alan Duxfield	John Burt
B	24 April 2014	Draft for review	Stephen Soole	Alan Duxfield	
C	15 June 2014	Draft - following changes	Stephen Soole	Alan Duxfield	Tracey Morgan, AM2 Solutions LTD
D	20 July 2014	Draft - final review			
E		Draft - approved for adoption			
F	01 August 2014	Approval of AMP			
V5	February 2016	Updated draft	Sue Hodge		
V6	June 2017	Updated draft	Sue Hodge		

Table of Contents

Part A

1 Executive summary

1.1 Introduction

This Asset Management Plan (AMP) is the first adopted Reserves and Open Space AMP developed for the Kaipara District Council (Council), it predicts the requirements for the next 10 years (2018/2028) and reflects and informs Council's activities in the Long Term Plan (LTP) along with a number of other plans and strategies. It recognises, throughout the lifespan of this AMP, ongoing development and amendments may be required to allow for communities' changing needs while ensuring best practice to make sure that the assets and service levels provided are as efficient and cost-effective as possible.

The purpose of the AMP is multiple; it provides discussion of the key elements affecting management of Council's Reserves and Open Space assets, including the legislative framework, links to Community Outcomes, Policies and Strategy, the proposed Levels of Service (LOS) and performance measures and demand, environmental and service management.

Asset performance, condition 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 AMP sets out to:

- demonstrate that asset management strategies support the core social, economic, environmental and cultural outcomes, identified through community consultation;
- outline how Council will meet its legal and regulatory obligations;
- provide a long term view on sustainable and cost-effective management of Reserves and Open Space demands;
- ensure that the Reserves and Open Space activity is managed in a cost-effective and sustainable manner ;
- provide financial forecasts and projections to meet Council's long term management approach for the Reserves and Open Space asset; and
- to summarise in one place Council's strategic and long term management approach for the provision and maintenance of its Reserves and Open Space Asset.

Management of Council's Reserves and Open Space asset has historically been to some extent reactive, largely based on a "business-as-usual" approach and a service level of maintaining the status quo.

The Reserves and Open Space activity is now driven by Council's vision of "**Thriving communities working together'** and the following outcomes:

- A district with welcoming and strong communities, with a continued focus on improving our parks infrastructure e.g. new walkways and sound renewal programme;
- A district with plenty of outdoor opportunities, with a focus on continuing to work in partnership to develop facilities e.g. Sportsville, Mangawhai Domain and providing facilities to protect our natural assets e.g. public toilets; and
- A trusted Council making good decisions for the future; engaging with our communities to improve their well-being.

1.2 Why have reserves and open space

Council has a responsibility to ensure the health and well-being of its communities. It does this though a number of ways, one of which is by providing open space areas that cater to an assortment of individual and group activities both formally and informally. Open space areas and facilities that support public use within these areas are vital to the social and physical well-being of its citizens. Council is a major provider of open space and provides a network of open spaces to cater for physical exercise, visual amenity and environmental protection across the district; this has been built up over time to become a central part of Council's business and a valuable community asset.

Council provides the reserves and open space activity to promote and advance community well-being throughout the Kaipara district and to have an open space network that provides community and recreational opportunities, cultural, landscape and ecological protection and enhancement.

1.3 The asset

The Reserves and Open Space AMP includes the following assets:

- Playgrounds;
- Outdoor furniture and fittings;
- Public toilets;
- Cemeteries;
- Walkways;
- Green space;
- Coastal structures; and
- Camp grounds

Assets outside the development of this AMP and dealt with under other AMPs and documents are:

- Libraries;
- Public facilities (halls);
- Community housing;
- Swimming pools; and
- Roadside berms.

1.4 Strategic environment

Council's vision and contribution to community outcomes is:

'Thriving communities working together'

Community Outcomes	Objectives
A district with welcoming and strong communities	• Assisting and supporting community involvement; • Maintaining and improving infrastructure; and • Recognising and supporting achievement.
A district with plenty of active outdoor opportunities	• Partnering with communities to develop sports and recreation facilities; and • Protecting and enhancing our natural assets and open spaces.
A trusted Council making good decisions for the future	• Making it simpler to work with us; • Open, transparent and engaged with communities and business; and • Intent on lifting Kaipara's well-being.

1.5 The services we provide

The Reserves and Open Space asset is managed and maintained in accordance with agreed LOS, as set out in Section 3.

Council manages and maintains a diverse range of Reserves and Open Space assets, including public open space for aesthetic, passive and active uses, public cemeteries, playgrounds, maritime structures to access the rivers or coast, as well as public toilets to meet the needs of visitors and the traveling public.

1.6 Activity management practices

The Local Government Act 2002 (Subpart 1) states that the purpose of local government is:

"to meet the current and future needs of communities for good-quality local infrastructure, local public services, and performance of regulatory functions in a way that is most cost-effective for households and businesses."

In this Act, **good-quality**, in relation to local infrastructure, local public services and performance of regulatory functions, means infrastructure, services and performances that are:

(a) efficient;

(b) effective; and

(c) appropriate to present and anticipated future circumstances.

Section 11A(e) of the LGA 2002 specifies that reserves, recreational facilities and other community infrastructure are core activities and Council must have particular regard to the contribution that these services make to the community.

The key drivers of good asset management planning are better accountability to the ratepayer, more sustainable decision-making, effective risk management, enhanced customer service and improved financial efficiency.

The activity management practices followed in the Parks and Community department are:

a) Provide a defined level of service and monitoring performance;
b) Manage the impact of growth through demand management and infrastructure investment;
c) Take a lifecycle approach to developing cost-effective management strategies for the long term that meet defined LOS;
d) Identifying, assessing and appropriately controlling risks; and
e) Having a long financial plan which identifies required expenditure and how it will be funded.

1.7 Key assumptions

In developing an AMP Council has to make decisions about how it will approach the future, in relation to both non-financial and financial matters. Given that assumptions are essentially about identifying possible significant events and trends, assumptions deal with matters of uncertainty and complexity. There is, therefore, a need for Council to take a position on matters that have been identified as likely to occur in the future and to assess the implication of these for the community and Council.

Key assumptions are:

- Auckland's growth will continue to overflow into the Kaipara affecting the east of the district around Mangawhai, Kaiwaka, Maungaturoto and Paparoa;
- The population in the remainder of the district is projected to remain stable or even decline in places;
- Kaipara has an aging population;
- However the above observation on population aging is not true of the district's Maori population which is comparatively youthful. Since 2006 the district's Maori population increased 7.6%. Kaipara's Maori population is increasing both in real terms and in terms of the proportion of the district's population which it comprises (currently 23.1%);
- The growth in the east will require an increase in reserves and open space infrastructure investment and development;
- Service levels are generally assumed to remain the same across the district with the exception of an increase in public toilet cleaning frequency during the peak summer period in the east;
- Community activities will be affected by growth in the east and changing age demographics in the district;
- The cost of new and replacement assets will rise in line with inflation;
- Risk assessment of risk events, and assessment of the probability of the occurrence of a risk event, evaluation of the consequence of the risk event and prioritisation will be undertaken; and
- Financial contributions (reserves) will continue to be required until April 2022 and then will be replaced by development contributions. The spending of development contributions will be targeted to the area where they are collected. This may affect the ability to fund district projects such as the three priority parks.

Risks

The draft Reserves Contribution Policy will impact the timeframes and funding of the proposed Opex and Capex Programmes. Due to the annual contestable nature of the proposed policy there will be no certainty to plan and implement works programmes. This will delay works on the Parks and Reserves as alternative funding sources may be required if the Reserves Financial Contributions within the respective project's catchment are insufficient to fund the proposed projects.

The Reserves and Open Space asset is subject to various risks in the ordinary course of business. The most significant of these are:

- If levels of funding are reduced the ability of the organisation to maintain and enhance current levels of service may be compromised;
- The frequency and severity of extreme weather events may result in greater damage to Council-administered public open space;

- Damage to assets and consequential health and safety risks to users, staff and Contractors; and
- Asset failure as a result of limited lifecycle data, meaning unexpected replacement timeframes and costs.

Managing risks

- The level of funding allocated to the Reserves and Open Space asset is determined by Council. In the event that funding is reduced reserves and open space will need to review its Business Plan and budgets, look for further efficiency gains and/or adjust levels of service in line with resources allocated; and
- Increased monitoring, inspection and maintenance procedures will be implemented to ensure reserves and open space areas can respond appropriately and in a timely fashion in the event of storm damage to Reserves and Open Space assets.

1.8 Financial summary

The Reserves and Open Space asset is funded through general rates; uniform annual general charges (UAGCs) and financial contributions (reserves) collected under the District Plan as condition of resource consent.

Renewal and replacement of assets are funded from Council's general rates.

Where possible, Capital improvements are funded through financial contributions (Reserves). Consistent with our Reserve Contribution Policy (use of) included in the LTP 2018/2028 Council intends to spend the contributions collected from the previous year on the following years capital works projects. This spend will be undertaken according to a 80:20 split.20% will be spent on reserves of district-wide significance; the further 80% will be spent local to the area from where they were collected.

The funds are collected for funding capital projects only, those that enhance or increase the network of reserves in the district to cater for increased demand for open space from growth. The fund cannot be used for maintenance or renewal projects. Council has a fund of $4.6 million as at June 2017.

Augmentation capital expenditure relates to the creation of new assets. Consequently, as new assets are created the overall asset base becomes larger and both the cost of capital and the value of depreciation increase. The impact of increased new assets also results in increased operational / maintenance costs.

Historically very little depreciation of Council's Reserves and Open Space asset has occurred and there are no deprecation reserves. In the LTP 2015/2025 Council started to progressively increase funding of depreciation and it will be fully funded the Reserves and Open Space activity by 2025.

Major CAPEX committed:

To implement the Mangawhai Community Plan the following reserves and open space projects have been included in the 10 year programme:

- Mangawhai Domain development;

- Mangawhai Heads carpark extension;
- Mangawhai Heads to Village – all-tide access;
- Mangawhai - esplanade development;
- Mangawhai Community Park; and
- Public Toilets - Lincoln Street, Mangawhai Heads Road, Wood Street

Other major capital projects include:

- Kai Iwi Lakes (Taharoa Domain);
- Pou Tu Te Rangi Harding Park;
- Implementation of Walking and Cycling Strategy; and
- Dargaville Revitalisation

Other planned Improvements include:

- Implement Dargaville rejuvenation projects (place holder only);
- Develop infrastructure to support visitors to our district;
- Improve maintenance and promotion of walkways;
- Implement a hard surface (car park/accessway) renewal programme;
- Ensure all wastewater systems (toilets and camp grounds) are compliant and fit-for-purpose;
- Implement the toilet renewal programme;
- Upgrade and/or renew one playground per year;
- Implement initiatives identified in Community Action Plans with a focus on Kaiwaka and Dargaville;
- Implement Reserve Management Plans (RMPs); and
- Ongoing review of service levels and consequential contract amendments.

1.9 Improvement Plan

Historically management and maintenance of Council's Reserves and Open Space asset has been carried out without much thought to current and future proofing, due in part to the lack of data to enable strategically sound decisions to be made. Much of the management of its asset being to replace "like with like" or retaining the status quo regarding the LOS provided.

Council now recognises the need to lift its performance across the organisation and has undertaken steps to achieve this. The development of the Reserves and Open Space AMP, along with the Improvement Plan which identifies and lists the main projects to enable continued improvement in the asset, is a clear indication of the importance of the asset to Council.

2 Introduction

This is the first adopted Reserves and Open Space AMP produced by Council and builds on a draft AMP completed 30 June 2016. The 2016 AMP focused on identifying and collecting data gaps and improving data confidence.

It brings together assets previously only broadly covered in other documents and plans, namely:

- Reserves and Open Space Strategy 2017;
- Reserve Management Plans; and
- Community Action Plans.

Schedule 10 of the Local Government Act 2002 (LGA 2002) requires Council to include in the LTP information that shows that Council's strategic assets are designed to serve a specific purpose and their size or scale is appropriate for the service they perform. This information is provided in Council's AMPs for long term planning.

The AMPs also include a defined methodology for planned maintenance and asset replacement as well as a forecast of the expected costs to maintain and replace the assets. The documents are reviewed cyclically (typically at least every three years) to ensure they remain relevant. They include forecasted population growth, the LOS expected by customers, the condition of the asset, planned maintenance, and replacement which ensures a complete and consistent approach to the long term planning of assets.

Section 11A(e) of the LGA 2002 specifies that reserves, recreational facilities and other community infrastructure are core activities and Council must have particular regard to the contribution that these services make to the community.

The Communitrak Survey / Customer Survey along with feedback from Council's Community Action Plans has been used to influence service levels and capital works programmes. Opportunities to work in partnership with the community will also influence work programmes.

All financial forecasts have been prepared from Council's historical budget allocations. The information contained within the AMP is substantially complete and up-to-date.

The Reserves and Open Space asset has responsibility for the provision of facilities that are fit-for-purpose, affordable and meet the community's current and future needs.

Council is not the only provider of community assets in the district, however it is the main provider. Some local schools provide facilities and sports fields which are available for community use and there are other sports clubs and organisations that provide facilities, including buildings, swimming pools and sports fields.

Council's Reserves and Open Space asset has been developed over time in response to community aspirations, needs and demands. The district's Reserves and Open Space asset ensures the whole community has opportunities to access a range of facilities and public open spaces for physical activities, leisure and recreation or simply for the enjoyment of their intrinsic values.

2.1 Goals and objectives

Council's Vision and the three outcomes it wants to achieve is contained in the LTP 2018/2028 and reads as follows:

'Thriving communities working together'

- A district with welcoming and strong communities;
- A district with plenty of outdoor opportunities; and
- A trusted Council making good decisions for the future.

Council's LTP 2018/2028 under the heading 'Community Activities' indicates the following:

What we want to see:

Well-planned, developed and implemented community activities that maintain, enhance and protect existing services which can be built on for future needs and requirements.

Council will gradually expand its reserves and open space network in growth areas. This will ensure that the levels of service do not decline as a result of growth.

Why we do it:

To promote and advance community well-being throughout the Kaipara district and to have an open space network that provides community and recreational opportunities, cultural, landscape and ecological protection and enhancement.

2.2 Relationship with other Plans

Amongst other things, this AMP articulates what and how the assets contribute toward community well-being and desired Community Outcomes, how they will be managed, improved and financial implications. The AMP relates to Council's LTP and other key Council Plans, documents, policies and processes. These are mainly driven by legislation and the powers and obligations that central government, through legislation, assigns to local authorities.

Other key Council Plans are: Reserves and Open Space Strategy 2017, Mangawhai Community Plan 2017, Reserve Management Plans, Master Plans, District Plan, Community Plans and Walking and Cycling Strategy 2017.

2.3 Customer's needs

Kaipara District Council is the main provider of Reserves and Open Space assets in the district. What services are provided by Council depends on what customers value or need. Our key customers and what they value are broadly defined below:

- Community: the community in general, visitors and neighbours of the facilities wanting an appealing environment and wanting to participate in various activities;
- Parks and reserves users: sports clubs, boat owners, beach and foreshore users e.g. families, picnickers, walkers/runners, dog walkers wanting a comfortable environment with appropriate amenities such as seating, parking;
- Businesses: businesses in general and concessionaires, tourist operators and event organisers wanting a visually appealing environment, access for tourists and opportunities to hold events;
- Elected Members: representing the interests of the community;
- Iwi: recognition of special status and consultation on cultural aspects or environmental impacts;
- Other Stakeholders: Department of Conservation (DoC), Regional Council, special interest groups wanting systems and procedures which meet statutory obligations or involvement in decision-making; and
- Internal Customers: such as roading, stormwater and land drainage wanting co-operation to manage areas of overlap and understanding of conflicting needs.

2.4 Rationale for service

Local government is the primary provider of public open space for recreational and cultural activities in communities. These have been developed over time in response to community aspirations, needs and demands.

Council contributes to the environmental and social well-being of the community through the maintenance and beautification of the district's parks, reserves, gardens and cemeteries, along with providing facilities such as boat launching facilities, playgrounds, car parks, furniture and public toilets to support positive community and visitor enjoyment.

2.5 Contribution to Community Outcomes

Amongst other things, this AMP articulates what and how the assets contribute toward community well-being and desired Community Outcomes, how they will be managed, improved and the financial implications. The AMP relates to the LTP and other key Council Plans, documents, polices and processes. These are mainly driven by legislation and the powers and obligations that central government, through legislation, assigns to local authorities.

The Community Outcomes guide both strategic and day-to-day decision-making for Council. Influencing all of this is community consultation and feedback to help ensure that the community is engaged and that the Plans reflect community preferences.

The table below sets out the Community Outcomes in Council's LTP 2018/2028 (part One) and how the Reserves and Open Space asset will contribute to the achievement of the outcomes:

Community Outcomes	Objectives	Reserves and Open Space
A district with welcoming and strong communities	• Assisting and supporting community involvement; • Maintaining and improving infrastructure; and • Recognising and supporting achievement.	✓ ✓
A district with plenty of active outdoor opportunities	• Partnering with communities to develop sports and recreation facilities; and • Protecting and enhancing our natural assets and open spaces.	✓ ✓
A trusted Council making good decisions for the future	• Making it simpler to work with us; • Open, transparent and engaged with communities and business; and • Intent on lifting Kaipara's well-being.	✓

2.6 Effects of activity

Reserves and Open Space assets make a positive contribution to community well-being. From time to time negative effects do arise and can include effects from such matters as traffic generation, parking congestion and noise from formal and informal activities within reserves and open space. These are managed to comply with Regulatory requirements of Council's District Plan rules and/or the conditions of approved resource consents for development projects. District-wide, most negative impacts are seasonal or limited to short time periods and are associated with holiday recreational activities, events or sporting codes.

2.7 Plan framework

The approach to developing the Reserves and Open Space AMP is oriented around a framework to:

- take into account a customer's interests and desired outcomes;
- effect identified priorities taking a sustainable development approach;
- ensure prudent stewardship through the efficient and effective use of resources; and
- conduct business in an open, transparent and accountable manner with sound business practices.

While the content in this AMP focuses upon the next 10 years, to facilitate and demonstrate alignment with the LTP, in practice asset management planning tends to consider much longer timeframes. The majority of Reserves and Open Space infrastructure assets have lifecycles far greater than 10 years. The major asset groups covered by this Plan are:

Asset Description		Quantity
Playgrounds		13
Outdoor furniture and signs	Seats	**54**
	Tables	**68**
	Signs	**29**
Public toilets / changing rooms		32
Cemeteries	Council managed	5
	Community managed	3
Walkways		5,654m
Open space	Gardens	92
	Gardens – area	13,043m^2
	Parks – maintained	103
	Parks – area mown	449,297m^2
Coastal structures	Boat ramps	5
	Groynes	4
	Impact piles	3
	Sea walls	25
	Wharf	3
Camp grounds	In-house	1
	Community	4

All assets above have been inspected as part of an asset data condition assessment review undertaken over 2014/2015 (coastal structures only) and 2015/2017 for the balance.

Green Space – Reserves and Open Space includes areas associated with townships, town centres, civic space, streetscape, coastal and beaches areas as well as parks. A total area of 118ha is actively managed, made up of 103 separate areas with 45ha mown.

2.8 Asset management maturity

In terms of AMP maturity continuum this AMP is between core and intermediate level. Due to the lack of complexity with Reserves and Open Space assets i.e. they are above ground, easy to assess and customer satisfaction is easy to measure this level of AMP is deemed to be an appropriate level of sophistication.

Over the last three years the AMP has advanced from basic for the following reasons:

- The development of an asset inventory setting out what assets Council owns and location;
- Understanding of LOS has improved and is more closely matched to expectations and willingness to pay; and
- Knowledge of physical condition of assets has improved which is predicting renewal requirements, costs liabilities and risks.

3 Levels of Service (LOS)

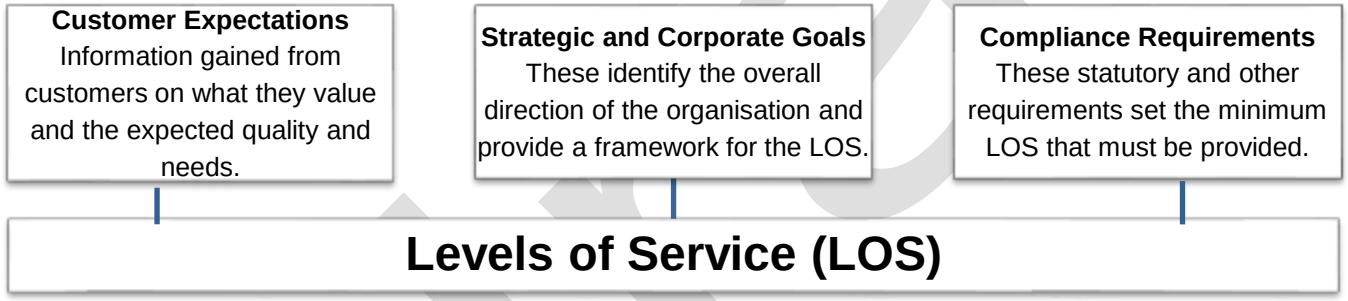
3.1 LOS

This section outlines the service levels and associated targets for the Reserves and Open Space asset, the main drivers for this, presents performance results and describes the consultation undertaken.

LOS are used to set the performance measures of Council; they define the service standard that the customer can expect from Council. Performance measure targets provide a basis for measuring Council's performance through the identified indicators.

LOS are the performance goals of the Council. This section of the AMP provides a review of LOS factors that influence the lifecycle management of the Reserves and Open Space asset.

LOS are based on the following three factors:



3.2 Customer research/expectations

The Plan has been prepared having regard to community feedback on what the community values and the desire for any changes in LOS (e.g. increased maintenance of community Reserves and Open Space areas).

Council uses a number of different tools to seek feedback such as:

Community consultation – Whilst there is a legislative duty to consult, there is a commitment to consultation that is more than simply satisfying legislation requirements. A programme of going out to the community and hearing what is said indicates how seriously Council considers community views and how important

feedback is for shaping Council's strategic direction, both now and in the long term. Information gathered as part of the Community Planning programme forms an important part of identifying the expectations and needs of customers. This information is collated into Community Action Plans. These plans are reviewed regularly with the community.

Long Term Plan Consultation Process – A programme of going out to the community and hearing what the community has to say shapes the formulation of the Annual Plan and LTP.

The LTP consultation and submissions process is utilised to collect valuable information about the expectations and aspirations of communities and customers. A range of consultation methods are used including public meetings, round table meetings, hui and surveys. Issues raised during this process are at a fairly high level but provide an indication of what community and customers value and the impact it has on the delivery of Reserves and Open Space services.

Advisory Groups – Advisory groups are set up where specific projects or issues have been identified, such as Mangawhai Community Plan, Dargaville Placemaking Vision Guide and Kaiwaka Improvement Plan (traffic speed issues). Other advisory groups are used in the review, development or implementation of RMPs e.g. Taharoa Domain and Pou Tu Te Rangi Harding Park.

Council Community Helpdesk System – Council has a Helpdesk system which captures customer concerns and complaints regarding issues relating to the Reserves and Open Space asset. These range from standards of mowing to levels of facilities maintenance and are used to determine where alterations to LOS may be required.

Annual Customer Surveys – Since 2000 Council has undertaken an annual survey of residents. This survey provides an insight into community perceptions and interpretations of Council services. It includes questions about three Reserves and Open Space services being satisfaction with parks, public toilets and litter and graffiti control. The survey also ranks Council against the performance of other local government organisations. Undertaking the annual survey also provides valuable historical information to determine whether Council is improving or not on the LOS being provided to customers.

Community aspirations and feedback from these sources is summarised below:

a) More reserves and open space facilities such as:
   - Additional public toilets to meet demand particular in the Mangawhai area and areas with high environmental values;
   - Improved pedestrian safety, increased car parking and development of public space particularly Mangawhai;
   - Upgrading toilets to ensure they are accessible, are safe to use, fit-for-purpose and meet consent conditions;
   - Car parking to support centralising sports facilities (Sportsville);

- Improved walkway and linkages to and along the Mangawhai harbour;
- Working with communities to develop their public places (Sense of Place in townships); and
- Encouraging and supporting communities to develop new facilities on Council land through Development Agreements and Licence to Occupy (LTO) arrangements and Capital Grants.

b) Increased wishes for improved LOS in terms of:

- Maintenance of reserves and open space;
- Consideration of Contract for Service arrangements with local communities;
- Improved cleaning and maintenance of high usage public toilet facilities; and
- Providing services and infrastructure for freedom campers.

c) Changing management and operating LOS in terms of:

- Opening and closing access to some reserves and open space facilities to reduce vandalism;
- Reviewing gardens, developing a hierarchy and town themes and re-focusing in key locations (town centres, key facilities and town entrances);
- Reducing or formalising vehicle access to certain reserves and open space areas;
- Formalising existing use of sports/open space areas and facilities with clubs or organisations through LTO/lease arrangements; and
- Introducing a booking system for formalised events.

3.3 Legislative requirement

Acts and Regulations state the minimum requirements for some LOS and objectives. The Reserves and Open Space asset is governed by many statutes, regulations, standards and Codes of Practice.

The Key Legislation relating to the management of the Reserves and Open Space asset is found in:

Legislation	Requirement
Local Government Act 2002 and Amendment Act 2010.	Section 3(d) "provides for local authorities to play a broad role in meeting the current and future needs of their communities for good-quality local infrastructure, local public services, and performance of regulatory functions." Section 11A specifies core services. In performing its role, a local authority must have particular regard to the contribution that core services make to the community. Section 11A(e) identifies libraries, museums, reserves, recreational facilities and other community infrastructure.
Reserves Act 1977	Provides the regulatory framework for controlling the use and effects of reserves and developing RMPs.
Resource Management Act 1991 (RMA)	The RMA is an effects-based piece of legislation that has the overarching purpose of promoting sustainable management of natural and physical resources.
Building Act 2004	The management, design and construction of any structures must comply with the building consent requirements.
Historic Places Act 1993	This Act requires sites to be registered with the New Zealand Historic Places Trust.
NZS Standards	SNZ HB 8630:2004 New Zealand Standards for tracks and outdoor visitor structures. SNZ 5828:2004 New Zealand Standard for Playground Equipment and Surfacing.
The Walking Access Act 2008	To provide the public with free, certain, enduring and practical walking access to the outdoors.
Burial and Cremation Act 1964	The Burial and Cremation Act 1964 gives local authorities the duty of providing cemeteries within their districts if these are not otherwise provided for by other parties e.g. churches and marae. The Act also includes provisions governing other aspects of cemetery management and operation.
Public Health Act 1956	This Act protects public health, including when dealing with human remains. Furthermore, under Section 25 of this Act the Minister of Public Health may require any local authority to provide for the benefit of its district, whether within or beyond the boundaries thereof, such sanitary works as the Minister may specify in the requisition or to alter or extend any sanitary works previously provided by the local authority. Section 25(1) defines sanitary works to include cemeteries and crematoria.

Regional Policies and Strategies:	
Northland Regional Water and Soil Plan	All cemeteries must comply with the Northland Regional Water and Soil Plan; crematoriums must also comply with the Northland Regional Air Quality Plan.
Northland Regional Air Quality Plan	Crematoriums must also comply with the Northland Regional Air Quality Plan.
Northland Regional Plan	Council is required to improve freshwater and seawater quality and this can be achieved by ensuring no untreated stormwater will flow directly into waterways and harbors and esplanade reserves are used for low impact biofiltration where possible.

Council Bylaws

Council currently has Bylaws covering the following aspects of relevance to Reserves and Open Space:

- The consumption of alcohol in public places;
- Control of dogs;
- Activities that can be carried out in public places;
- Trading in public places;
- Control of advertising signs;
- Fires in the open air;
- Management of cemeteries and crematoria;
- Management of Council-owned cultural and recreational facilities; and
- Control of skateboards.

Council Strategies
The Reserves and Open Space Strategy (ROSS) was adopted by Council in June 2006. ROSS outlines the approach for *"Addressing community outcomes for Kaipara District Reserves and Open Space"* resources over 10 years; the term of the previous Long Term Council Community Plan (LTCCP (now LTP)). ROSS has the "Desired Community Outcomes" of the previous LTCCP and provided the direction for the implementation for district reserves and open space to achieve; sustainable economy, strong communities, safety and a good quality of life, special character and a healthy environment. It provides an action plan for Council and communities to achieve the desired Reserves and Open Space within the district; guides Council policy for the general management and integration of the different types of reserves and open space; Implemented through the LTCCP (now LTP) / Annual Plan; guided the District Plan Review. ROSS is now 10 years old and will soon be reviewed.

3.4 Current LOS

A key objective of this AMP is to match the LOS Council provides with the LOS expectations of customers within legislation and financial constraints.

Below is a table of the current LOS and performance measures:

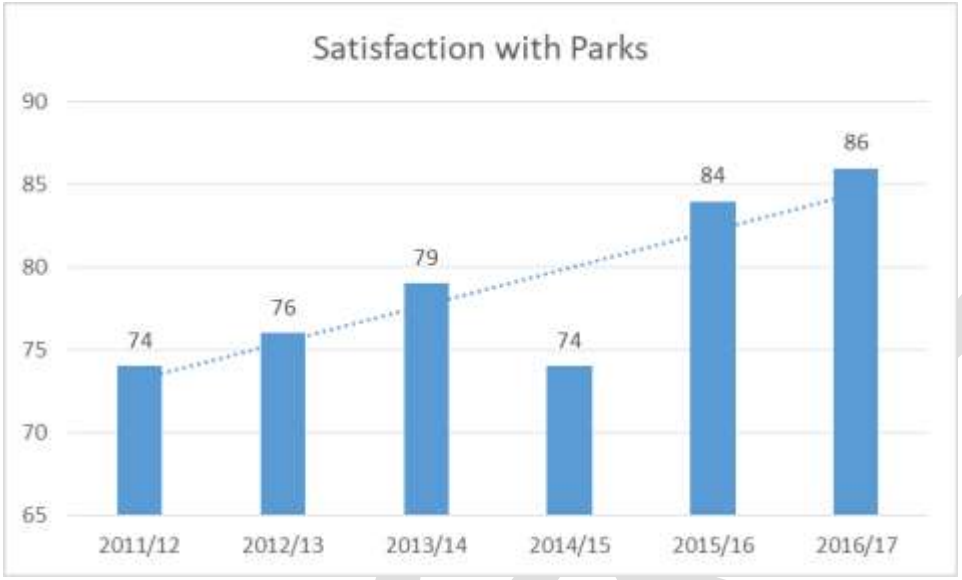
Performance indicator/ service level	Annual Plan 2014/2015	Annual Plan 2015/2016	Annual Plan 2016/2017	Annual Plan 2017/2018	LTP Years 4-10 Target 2018/2025
Percentage of residents who are very/fairly satisfied with their local parks and sports fields.	74%	84%	84%	85%	85%
Percentage of residents who are very/fairly satisfied with their public conveniences.	61%	72%	77%	65%	65%
User satisfaction with cleanliness and lack of litter and graffiti.	70%	70%	68%	70%	70%
Parks Maintenance Contract measures are met.	New measure from 2015/2016	Achieved	Achieved	Achieved	Achieved

Performance indicator/ service level	Annual Plan 2014/2015	Annual Plan 2015/2016	Annual Plan 2016/2017	Annual Plan 2017/2018	LTP Years 4-10 Target 2018/2025
An active sports park within a 40 minute drive of all residents (not all belonging to Council) with toilet and changing facilities.	New measure from 2015/2016	Achieved	Achieved	Achieved	Achieved
Coastal access and esplanade reserves in urban areas already developed or zoned for residential development in the District Plan, with carparking areas.	New measure from 2015/2016	Achieved	Achieved	Achieved	Achieved
A local purpose reserve within 15 minute walk of residents in urban areas already developed or zoned for residential development in the District Plan.	New measure from 2015/2016	Achieved*	Achieved*	Achieved*	Achieved*
A public toilet in shopping areas servicing an urban population over 2,000.	New measure from 2015/2016	Achieved	Achieved	Achieved	Achieved

* Although this performance indicator / service level was not reported as achieved in the Annual Report, once it was able to be measured it was determined that 99.7% of residents in the District Plan residential area are within a 15 minute walk of a reserve.

As can be seen above a number of new LOS and performance measures developed as part of the LTP 2015/2025 were not defined in a way which specified what needed to be measured and therefore it was difficult to set standards or targets e.g. Parks maintenance contract measures are met.

Fortunately, the customer performance measures that are included in the annual resident's survey have given a good indication of the public's perceptions and interpretations of Council services in terms of parks, public toilets and litter and graffiti which are areas of high interest to the public.



In terms of parks over the last six years there has been a steady improvement in satisfaction levels that have slightly exceeded the target of 85%. This is a reflection of a number of improvements such as a new Parks Maintenance contract developed in 2012 that contained improved bundles of work, improved mowing and maintenance specifications; as well as ongoing development of key parks.

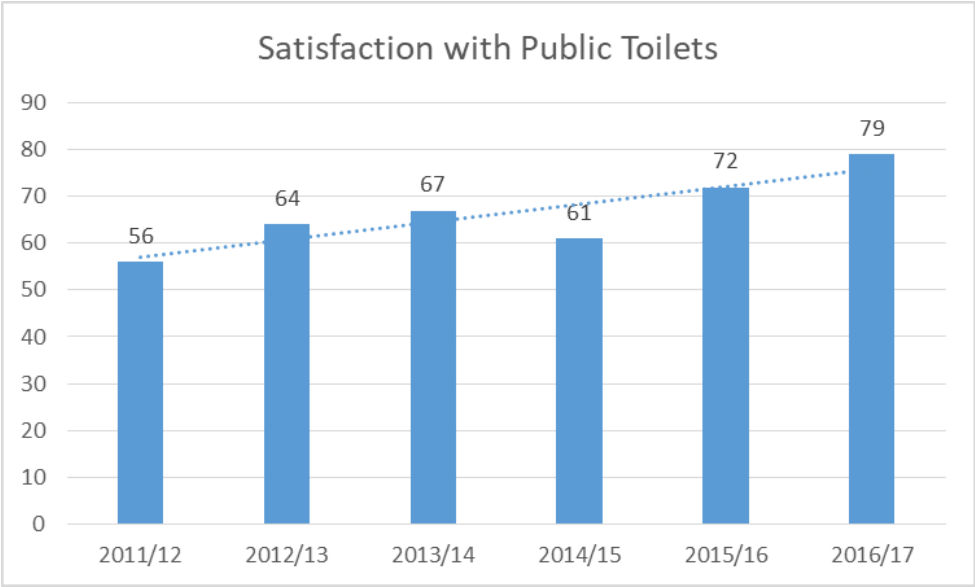
The main reasons residents were not satisfied with Council-controlled local parks or sports fields in the district were:

- Lack of/poor maintenance and/or untidy; and
- Need upgrading/improvements.

There were no notable differences between Wards and socio-economic groups in terms of those residents not very satisfied with Council-controlled parks or sports fields.

The percentage not very satisfied at 11% is higher than the Peer Group 4% and the National Averages 4%.

Council has slightly exceeded its target of 85% which is below our Peer groups 96% and it is planned to stretch the target but only with small incrementally increases over the next three years to 87%.



In terms of public toilets over the last six years there has been a steady improvement in satisfaction levels that have exceeded the target of 65%. This is a reflection of a number of improvements such as the development and implementation of a Public Toilet Strategy, a new Parks Maintenance contract developed in 2012 that contained improved bundles of work, improved cleaning frequency and maintenance specifications; as well as ongoing renewals and development of public toilets.

Residents more likely to be not very satisfied with public toilets are:

- West Coast/Central residents; and
- Women.

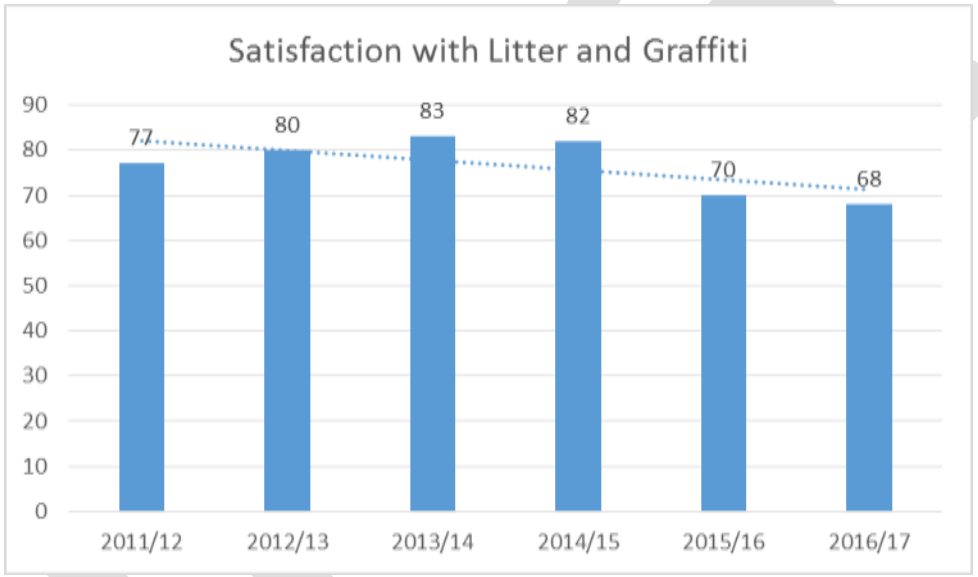
The main reasons residents were not satisfied with public toilets were:

- They need to be cleaned more;
- Need upgrading/improving/in poor condition; and

- Disgusting/dirty/need cleaning more often.

The percentage not very satisfied at 23% in Kaipara district is significantly higher than the Peer Group 15% and the National Averages 13%.

Although the target was reached and exceeded it was a low target and this will be increased in the LTP 2018/2028 to 75% increasing to 80% over the three years which is still lower than our Peer 85% and the national Average 87%.



In terms of litter and graffiti over the last two years there has been a steady decrease in satisfaction levels below the target of 70%. However, the percentage not very satisfied at 11% in Kaipara district is lower than the Peer Group 13% and the National Averages 19%.

Additionally customer comments in the survey related to over flowing rubbish bins which is not a service covered in this AMP.

There are no planned changes to the targets in the LTP 2018/2028 however the specifications in the Parks Maintenance contract will be changed to include the removal of graffiti from buildings that adjoin Council parks. This may improve the community's perceptions of Council's graffiti management.

3.5 LOS drivers

The main drivers for change in LOS are:

- Customer expectations collated from customer perception surveys for parks, public toilets and litter and graffiti and the need to lift the service to meet targets;
- The need to redefine some LOS and Performance Measures so that appropriate targets can be set and measured and service attributes developed (to be able to move from Minimum to Core on the AMP continuum);
- Legislative requirements which impose safety standards such as playground safety or to meet wastewater consent requirements for public toilets; and
- Council's Strategic objectives to deliver on Reserve Management Plans, Community Plans, Dargaville Placemaking, Kaiwaka Improvement Plan and Mangawhai Community Plan being plans developed in partnership with the community.

3.6 Identified LOS gaps

Based on these LOS drivers the following changes in LOS are proposed over the 10 years of this AMP:

Improve customer expectations:

a) Public toilets are provided to meet demand e.g. Wood Street, Mangawhai Community Park Pioneer Village, Lincoln Street, Mangawhai Heads Road or to protect our natural assets e.g. Lake Waikare and Pine Beach.
b) Toilets are accessible, safe to use and fit-for-purpose - Implement a toilet renewal programme.
c) Playgrounds are fit-for-purpose and safe.
d) Parks carpark/accessway are well maintained.
e) Walkways are well maintained.
f) Sports fields are fit-for-purpose e.g. adequate changing rooms, parking, drainage and toilets.
g) Gardens are focused in key locations (town centres, key facilities and town entrances).
h) Communities work in partnership with Council to develop their public places.

Legislative requirements

a) Ensure all wastewater and water systems (toilets and camp grounds) are compliant and fit-for-purpose.
b) Implement an Asset Management Improvement Plan (AMIP).
c) Ensure playgrounds met the playground standards; upgrade and/or renew one playground per year.

Council's strategic objectives

a) Implement initiatives identified in Kaiwaka Improvement Plan.
b) Implement RMPs for the three priority parks Kai Iwi Lakes (Taharoa Domain), Pou Tu Te Rangi Harding Park, Mangawhai Community Park.

c) Progress projects identified in the Mangawhai Harbour and Coastal Reserves, Memorial Park and Omnibus RMPs.
d) Develop infrastructure to support visitors to our district such as freedom campers.
e) Implement the Mangawhai Town Plan:
    i Improved walkway and linkages to and along the Mangawhai harbour including an all-tide track from Heads to Village;
    ii Develop and implement a Landscape Amenity Plan for the township including a review of the maintenance of main reserves;
    iii Prepare and implement development plans for Lincoln Street, Robert Street, Kainui and Pearson Street esplanade reserve areas;
    iv Review Mangawhai walkways and develop and implement an agreed hierarchy and maintenance levels;
    v Develop and implement a town signage plan including town entrances, parks and walkways;
    vi Undertake car parking improvements at Mangawhai Heads Recreation Reserve;
    vii Develop public space, car parking and public toilets at end of Mangawhai Heads Road;
    viii Investigate relocating Sellars Reserve boat ramp;
    ix Monitor and support demand for future sports fields at Mangawhai Domain; and
    x Redevelop Wood Street shopping precinct.
f) Implement the Walking and Cycling Strategy
    i Develop an iconic cycleway project Dargaville to Donnelly's Crossing);
    ii Dargaville Heritage walkway;
    iii Support community-led projects that align with the Strategy; and
    iv Improve maintenance of Council owned walkways and promotion of the district's walkways.
g) Encouraging and supporting communities to develop new facilities on Council land through Development Agreements and Licence to Occupy (LTO) arrangements and Capital Grants.
h) Implement Dargaville Town Plan projects (yet to be defined).

Future changes to LOS

Future LOS are based on the above LOS drivers balanced against the ability/willingness to pay for the improved services. Consideration has been given to changes in demand such as from population growth, the influx of holidaymakers over peak holiday periods, demand from tourists and changing demographics, such as population aging or increasing Maori youth.

Council is proposing in its LTP 2018/2028 the following LOS:

Performance indicator/ service level	LTP Year 1 Target 2018/2019	LTP Year 2 Target 2019/2020	LTP Year 3 Target 2020/2021	LTP Years 4-10 Target 2018/2028
Percentage of residents who are very/fairly satisfied with their local parks and sports fields.	85%	86%	87%	87%
Percentage of residents who are very/fairly satisfied with their public conveniences.	75%	77%	80%	80%
User satisfaction with cleanliness and lack of litter and graffiti.	70%	70%	70%	70%
Compliance with Parks Maintenance Contract specifications – audits of contract specification > 90%.	90%	90%	90%	90%
Parks Maintenance Contract – a safe working environment is provided for people providing the service – Number of health and safety audits per month.	Contractor 4 Council 1	Contractor 4 Council 1	Contractor 4 Council 1	Contractor 4 Council 1
Partnering with communities to provide recreation facilities that are fit-for-purpose e.g. parking, drainage, toilets.	1 recreation facility improvement/annum	1 recreation facility improvement/annum	1 recreation facility improvement/annum	1 recreation facility improvement/annum
Protecting and enhancing access to our natural assets and open space e.g. car parking, ramps.	2 reserves upgraded to protect or enhance accessibility per annum	2 reserves upgraded to protect or enhance accessibility per annum	2 reserves upgraded to protect or enhance accessibility per annum	2 reserves upgraded to protect or enhance accessibility per annum
A local purpose reserve within 15 minute walk of residents in residentially zoned areas.	99% achieved	99% achieved	99% achieved	99% achieved
Provision of toilets in areas of high demand and / or sensitive natural assets e.g. boat ramps, playgrounds.	1 new toilet per annum	1 new toilet per annum	1 new toilet per annum	1 new toilet per annum

4 Future demand

4.1 Facing the challenges – demand drivers

The ability to predict future demand for services enables Council to plan ahead and identify the best way of meeting that demand. Council recognises the importance of providing assets that are fit-for-purpose and affordable over time.

Over the lifespan of the LTP Council faces a variety of demand issues and challenges. The factors influencing demand, or demand drivers, for the Reserves and Open Space assets are:

Government Policy and Regulation:

Changing legislation and compliance requirements will continue to impact upon the development and management of the Reserves and Open Space asset.

The AMP has been prepared having regard to meeting known and anticipated legislative requirements.

- Increasing compliance standards for public facilities e.g. national standards for water supply, higher standards for wastewater discharge, changes to accessibility standards;
- Changes to Health and Safety legislation;
- Changes to the Burial and Cremation Act requiring Council to be responsible for community-run cemeteries, and
- Age friendly strategies.

Population - demographic changes

Kaipara has an aging population, the result of the large 'babyboomer' cohort reaching retirement age and the social trend towards couples having fewer children. This trend is being exacerbated by the tendency of young adults to leave the district, coupled with the attractiveness of the district as a retirement destination.

The resident population in the district is projected to continue to age. Statistics New Zealand predicts that by 2043 Kaipara will have the fourth highest percentage of the population aged over 65 out of New Zealand's districts. This will have implications for the district socially and economically.

National studies into recreational trends show that an ageing, but increasingly active, person is moving towards more unstructured recreational activities with less formalised infrastructure (walking/cycling/swimming).

The above observation is not true of the district's Maori population which is growing and is comparatively youthful. Since 2006 the district's Maori population increased 7.6%. Kaipara's Maori population is increasing both in real terms and in terms of the proportion of the district's population which it comprises (currently 23.1%).

The Sport New Zealand *Sport and recreation in the lives of young New Zealanders 2011 report states:*

The top sports/activities for boys of all ages are swimming, athletics, rugby, football, running/ jogging/cross-country and skateboarding. The top sports for girls are swimming, athletics, netball, football, running / jogging/cross-country, cycling / biking and dance. Skateboarding and rugby league are more popular with Māori boys.

Over recent years concerns within the community regarding investment in youth activities have resulted in new projects for this age demographic culminating with the construction of Skate Parks and Activity Zones in Dargaville and Mangawhai and new ones planned in Tinopai, Paparoa and Te Kopuru.

Population - growth forecasts

The Kaipara district had an estimated population of 20,500 people as at 30 June 2013 (last census). This represents an average increase of 1.5% per annum. Statistics New Zealand's medium series projections for the district indicate growth will continue but slow to about 0.6% per annum over the period 2013 to 2028 before becoming stable. Population decline is projected to begin from 2033 at a rate of 0.2% per annum. There are however upside risks to these projections given the persistent growth of Auckland and the spill over of this growth into the east of the district.

Population trends have not been and will not be consistent across the district. As mentioned those areas of the district which are close to Auckland, such as Mangawhai, Kaiwaka, Maungaturoto and Paparoa, are anticipated to grow faster than western and northern parts of the district.

Mangawhai's population is anticipated to increase from 2,600 in 2013 to 3,530 in 2028 and 3,860 by 2043. The proportion of permanent residents in Mangawhai relative to absentee is now increasing and percentage of occupied dwellings is 47.1% in 2013. This will change demands on Council's infrastructure.

Mangawhai has experienced the typical challenges facing growing settlements like it, as they move from being small isolated clusters of holiday homes to the point where the scale of development and the growing resident and holiday community demand more and more sophisticated infrastructure and community services.

Increased usage may mean higher expectations for operational LOS (i.e. more frequent mowing/garden maintenance, walkway maintenance, toilet cleaning etcetera).

Increases in demand tend to either place additional wear on assets, which may reduce the remaining life or require new capacity which may raise the cost of service delivery beyond that which the community can afford or is willing to pay.

Three important issues for future demand are; the number of tourists visiting the district which puts pressure on services, population within the district which dictates the service requirements and the number of rateable properties from which revenue is collected.

Urban development

Council has developed the Mangawhai Community Plan to provide infrastructure planning and to co-ordinate long term urban development in the Mangawhai area in response to growth predictions. This plan requires a number of Reserves and Open Space projects to be included in the AMP to achieve the desired social, environmental and economic long term outcomes for this community.

Population - fluctuations

The resident population fluctuates during the year particularly in the east of the district, with a significant increase in the summer holiday period. Many visitors and absentee owners are in residence during weekends, public holidays and the summer period and bring with them increased demands on infrastructure.

It is expected that population fluctuations will continue into the future.

Population fluctuations have implications when planning for peak demand particularly for infrastructure and services which are under-used for much of the year. This can place pressure on capital and operating budgets.

It is expected that peak demand can be managed and funded for the foreseeable future.

Increasing visitor numbers associated with tourists, events and leisure activities, and demands from non-resident property owners will result in higher use of Council's Reserves and Open Space asset. The number of guest nights in the district has shown an increasing trend since 2012, growing from 92,039 in December 2012 to 135,822 in March 2016. However guest nights are still below their previous peak of 153,717 observed in June 2007.

This information does not include the growing AirBnB and BookaBach sector that is a significant proportion of the Mangawhai accommodation sector.

4.2 Key demand forecasts

Based on the demand drivers above the key demand trends influencing the Reserves and Open Space activity are:

- higher compliance standards;
- the ageing, but active, person is moving towards more unstructured recreational activities with less formalised infrastructure (walking/cycling and swimming);

- the district's Maori population which is growing and is comparatively youthful and popular activities are organised sports such as rugby, rugby league, netball and recreational pursuits such as skateboarding and swimming;
- Mangawhai and, to a lesser extent, Kaiwaka, Maungaturoto and Paparoa are anticipated to grow faster than western and northern parts of the district;
- the population will fluctuate with higher numbers predicted over the summer period from increasing visitor numbers associated with tourism, events and leisure activities, and demands from non-resident property owners; and
- Dargaville has a declining population and reducing economic growth. Investment in Reserves and Open Space is seen as a way of stopping this decline.

Council continues to look at these trends along with changes in customer expectations, technology and legislation and will continue to consult and plan with its communities regarding Reserves and Open Space needs to ensure sufficient and affordable assets are being provided that match expectations.

4.3 Demand management plan

The objective of demand management planning is to actively seek to modify customer demands for services, in order to maximise utilisation of existing assets or to reduce or defer the need for new assets or services, including non-asset solutions. Future scenarios need to be investigated. Examples of new and improved services to meet customer demand include:

- Maximising the use of existing facilities and monitoring when events are on so that they do not interfere with each other;
- Tracking change in trends to modify facilities as appropriate; and
- Actively seek collaboration with the community to maximise activities and support the well-being of the community.

Management strategies

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

Demand management is practiced continuously to maintain the total demand at reasonable and sustainable levels. The five key components of demand management when promoted as a package or strategy rather than in isolation can dramatically reduce the demand on the network.

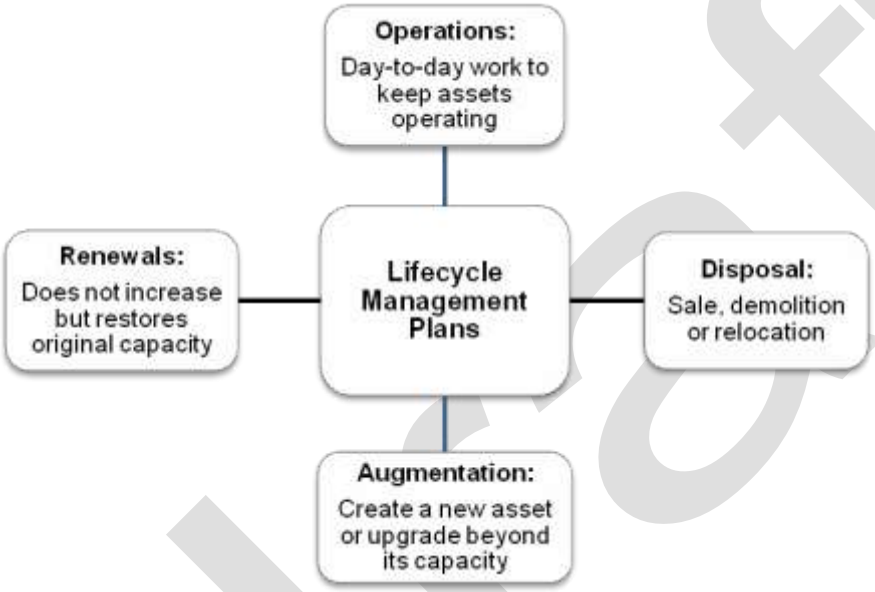
The key components with examples are provided in the following table:

Demand Component	Recreation example
Legislation/Regulation	Manage facilities in line with legislation e.g. having qualified lifeguards at aquatic centres.
Education	Educating the community around the activities that are available as alternatives to mainstream activities (i.e. baseball compared with rugby)
Incentives	Provide incentives for new clubs, sports, less used time slots etc.
Operation	Maximise use of existing facilities, including shared facilities
Demand Substitution	Promote alternative sports codes, provide maps for alternative less used reserves and walkways

5 Lifecycle management plan

Lifecycle asset management encompasses all management options and strategies, from initial planning through to disposal in order to meet the required levels of service in the most cost-effective way to provide for existing and future customers, as shown in the diagram below:

Lifecycle management plans diagram



While the content in this AMP focuses upon the next 10 years, to facilitate and demonstrate alignment with the LTP, in practice asset management planning tends to consider much longer timeframes. The majority of Reserves and Open Space infrastructure assets have lifecycles far greater than 10 years.

5.1 Operations and maintenance plans

Operations covers the day to day running of the Reserves and Open Space activity to achieve the agreed level of service e.g. mowing, edge control, weeding, cleaning of toilets, playground inspection, burials, litter removal.

Maintenance is what is required to keep the Reserves and Open Space assets in good working order such as replacing damaged equipment or repairing minor structures such as furniture, signs.

Maintenance falls into two broad categories as follows:

- Proactive - Proactive inspection and maintenance works planned to prevent asset failure; and
- Reactive - Reactive action to correct asset malfunctions and failures on an as-required basis and particularly includes repairs and maintenance in response to vandalism activities.

Service delivery arrangements

Council's Parks Maintenance contractor undertakes operational strategies to programme and carrying out reactive and preventative maintenance. The contract is a mix of routine works, ordered and day works. Council also has two Parks Officers that oversee the maintenance and operations contract, provide field support, monitor the contractor's activities, undertake formal auditing and provide community liaison across the district.

Community groups maintain some assets or provide services under a Contract for Service framework such as Pahi Toilets, Kelly's Bay camp ground, Baylys Beach walkways, Maungaturoto town gardens.

Recreational Services Limited is the operations and maintenance contractor. They are responsible for delivery of maintenance of parks, reserves, cemeteries and mowing of street berms, litter control, burials, maintenance and cleaning of public toilets/changing sheds, the inspection and repair of playgrounds, maintenance of gardens, hedges and trees. Council has a contract with them consisting of a range of schedules that provide specifications for services.

Reactive and preventative maintenance

Operations and maintenance on Council's assets are completed to the specified LOS. This includes the maintenance of parks, reserves, cemeteries and mowing of street berms, litter control in parks and reserves, burials, maintenance and cleaning of public toilets and changing sheds, the inspection and repair of recreation facilities, maintenance of gardens, hedges and trees. Council's operational actions for Reserves and Open Space activity include:

Purpose	Asset operations and maintenance	Description
Reactive Response	Unplanned operations	Unplanned operations provide services in response to customer or service faults. This includes additional cleans toilets, illegal dumping.
Preventative Response	Planned operations (day-to-day operations)	Planned operations on Reserves and Open Space assets to ensure their continued service and maximised functionality. This includes weekly inspections of parks and playgrounds.
Preventative Response	Peak period operations	With a large influx of visitors over the peak summer period, Council's contractor must ensure public toilets are coping with the demand by increasing frequency of visits.

Purpose	Asset operations and maintenance	Description
	Ongoing monitoring	Continuous monitoring of the Reserves and Open Space assets is critical for ensuring the contract specifications are delivered, there no public risks from faults or hazards and damaged assets are identified.
	Resource consents monitoring	The operations of some Reserves and Open Space assets require compliance with resource consents. This requires conditions to be audited and date collected and provided to the consent authority annually.
	Wastewater compliance	Regular auditing of wastewater systems ensures their continuous operations and the risk to the environment is minimised. Auditing is carried out annually.
	Condition surveys	Planned condition surveys on a three yearly basis are undertaken to understand the deterioration of assets and plan for any works to address defects found.
	Weed management	A programme of weed control is undertaken based on focus on areas of high use, public concerns and where opportunities exist to collaborate.
	Tenancy management	A number of community groups have developed assets on Council land. Communication and consultation with these groups is required to ensure they comply with conditions of their tenure.

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

- Routine maintenance;
- Responsive maintenance based on observation/condition;
- Planning of a preventative maintenance response based on a prediction of failure; and
- Reporting for upgrading or renewal to KDC.

Maintenance activities

Assets	Description
Reactive	Reactive maintenance is typically initiated by RFS or a failure of asset as in public toilet fault.
Cyclical	Cyclical maintenance is initiated through planned inspections such as weekly playground inspections.
Routine	Routine maintenance is initiated through contractor inspections or Council audits. This includes activities such as top-up of cushion fall or wash down of buildings.

5.2 Renewal plan

This includes:

- The renewal or rehabilitation of existing assets to near their original size, condition and capacity; and
- The replacement component of augmentation works which restore the asset to original size and capacity.

General renewal strategies

Renewals are works where the whole asset or component of an asset is renewed or replaced, to enable the life of the asset to be maintained at the same level of service e.g. public toilet, playground.

In most cases replacements are not able to be made on an identical basis, for example playgrounds change style, construction materials for public toilets change and, where possible (or practical) to make identical replacements, the aim is to select materials that provide the same LOS. In most cases the asset will be replaced with exactly the same item. There are occasions where an item with a different specification is used.

Strategy

In the Reserves and Open Space area the strategy for replacement has historically been based upon a working knowledge of the assets and a professional judgement on the viability and integrity of the asset to be either maintained or replaced by Council. Decisions to replace assets have historically been made by the need to retain the status quo LOS.

Part of Council's Reserves and Open Space staff work involves looking at numbers, age and location of its different asset groups and determining the need for renewal of the asset before replacement is required.

A move to a Reserves and Open Space asset management database inventory system for assets combining location, condition, materials and lifecycle information has seen a more comprehensive planning and decision-making process evolve, meaning more robust decisions being made and a more systematic approach as asset knowledge improves, being employed by and allow for depreciation planning in renewal of assets.

5.3 Prioritisation

All identified works, whether renewals, replacements or improvements, need a basis for determining which should be completed first. Historically the basis has been made on retaining the status quo and not on best value for community. A number of criteria should be considered to evaluate its value, these are as follows:

- Statutory compliance (mandatory requirements);
- Public good or community benefit including health and safety considerations;
- Urgency (likelihood of failure);
- LOS Review (will project maintain current or create new LOS); and
- Asset lifecycle (renewal is based on asset condition and whole of life asset management principles).

Additionally, Council has developed and adopted a number of Reserve Management Plans (RMPs). These RMPs all contain criteria for the prioritisation of individual projects set within them along with, in many cases, considerable costs for the projects identified. These projects are considered when developing the future works programme.

5.4 Disposal strategy

As improvements are made to Council's asset management database inventory system a picture will develop of asset condition and age, along with replacement or disposal options. When considering disposal options many factors will need to be considered. These may include some or all of the following:

- Safety of the asset;
- Evaluation options (renew/replace/dispose);
- Cost of disposal versus cost of retaining;
- Demand for the asset;
- Community wishes/expectations (is consultation required);
- Impact on users;
- Maintaining LOS; and
- Residual value of asset (market likelihood of realising original value in the asset).

Key lifecycle considerations

The following are significant general asset management considerations which are addressed in Part B of this document.

Lifecycle activities

- Council's Reserves and Open Space asset contains many facilities and services that, from the time they are installed or developed, start to age with use and reduce in performance on delivering service;
- For Council to ensure its Reserves and Open Space asset is managed at the level expected by the community and legislation it is important to understand what asset Council has, its condition and lifecycle profile;
- All assets regardless of what they are, have a lifecycle. Council is improving the understanding of the lifecycle of its assets. This information is being used for forecasting of maintenance, budgets, and refurbishment of the asset and replacement timing;
- Council's Playground Audit undertaken in 2016 built on information collated in 2014 and there is now sound knowledge of this asset group;
- A Condition Assessment of toilets was carried out in 2015 and this has provided sound knowledge of this asset group;
- Collection of fixed assets in the Reserves and Open Space asset group began in early 2016 and is deemed to be 90% complete with knowledge of types of structures, materials, condition and location being collated;
- Coastal asset data was collected in 2014. This was reviewed in 2017 to confirm Council-owned assets. Forecasting of maintenance budgets does not include community-owned assets; and
- Collection of data will continue so as to improve management of the assets and this is recognised in the Asset Management Improvement Plan (AMIP).

Asset condition grading

National Parks and Recreation Assets Condition Grading Standards (PRAMS) is a nationally recognised standard condition grading schedule for Parks and Recreational Assets. The condition grading schedules have been developed from standards used by various local authorities and are intended to provide a standard definition for condition grading assessments. The assessment of asset condition is an essential part of asset management planning. Asset condition assessments are undertaken to determine:

- Where the asset is in its lifecycle;
- The remaining effective life of the asset;
- The rate of deterioration of the asset;
- When asset replacement will be required;

- The risk of failure;
- Financial projects; and
- Frequently of inspections required to manage risk of failure.

Lifecycle management

- The Reserves and Open Space asset groups are addressed separately in Part B (Managing our assets) of this document. Individual assets are discussed. A generic section is included at the beginning which describes the strategies that are common to all asset groups;
- The first part of each section outlines background data including asset description and condition;
- The second part describes the management and work programmes planned (if known) to achieve the LOS and meet anticipated demands. This is divided into four main work categories (Operations and Maintenance, Renewals, Augmentation, Disposal); and
- At the end of each section a forecast of 10 year expenditure for each asset group is provided (if known).

Contractual setting

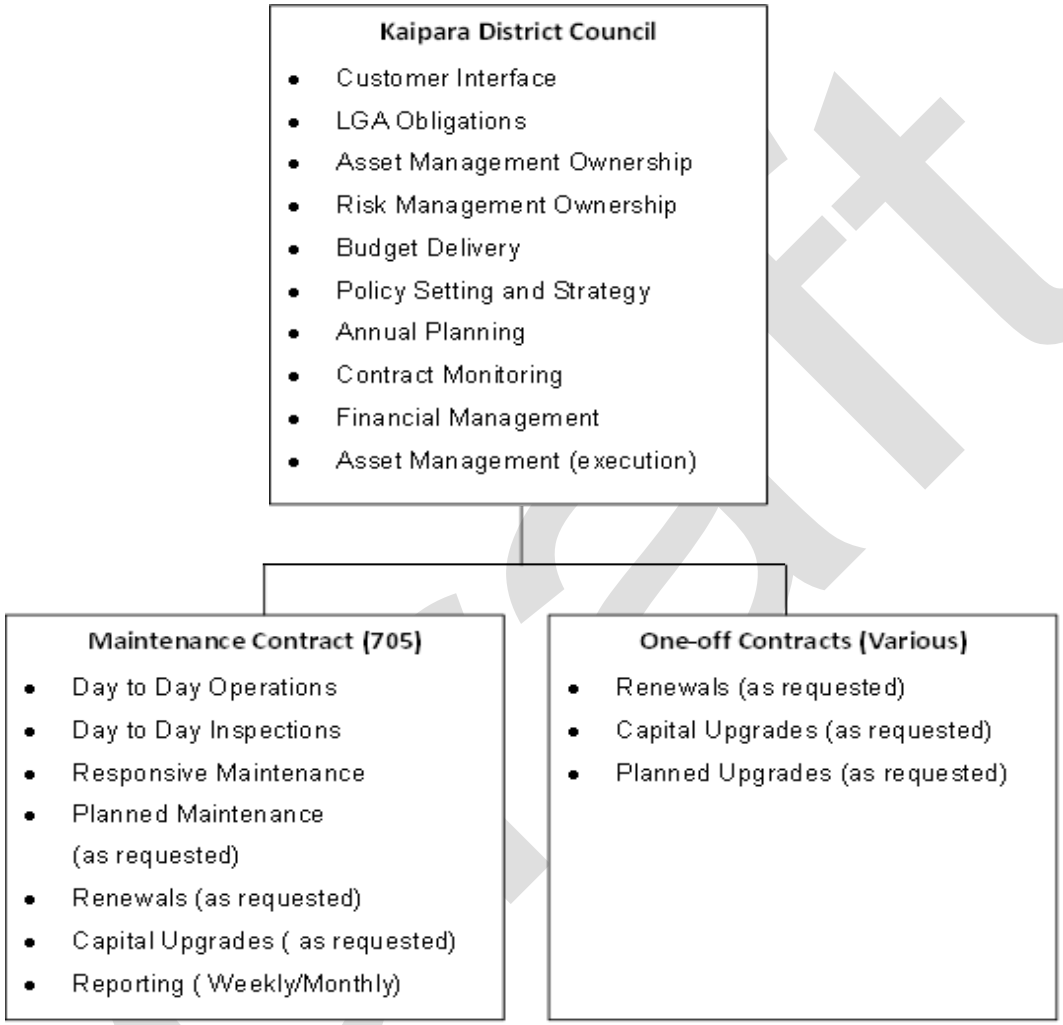
Council procures its asset management functions through one key contract, whilst maintaining core asset management responsibility in-house. The various functions are noted in the table on the next page. The Maintenance Contract provides a reporting channel to ensure Council understands its asset and its condition and to ensure Council maintains control of the asset management functions. The contract structure allows Council to monitor and assess the supplier's performance.

The maintenance contract delivers the lifecycle management outcomes on a day-to-day basis. The specification of the Maintenance Contract incorporates the various inspections that monitor asset condition and provide the basis for programmed maintenance. The frequency of the programmed inspections regime is established in the specification of the Maintenance Contract. This is supplemented as required by inspections generated from Council's customer Helpdesk system.

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

- Routine maintenance;
- Responsive maintenance based on observation/condition;
- Planning of a preventative maintenance response based on a prediction of failure; and
- Reporting for upgrading or renewal to KDC.

Asset management functions



6 Risk management

The draft Reserves Contribution Policy will impact the timeframes and funding of the proposed Opex and Capex Programmes. Due to the annual contestable nature of the proposed policy there will be no certainty to plan and implement works programmes. This will delay works on the Parks and Reserves as alternative funding sources may be required if the Reserves Financial Contributions within the respective project's catchment are insufficient to fund the proposed project,

Risk management identifies potential risks to the Reserves and Open Space assets, analyses the consequences and likelihood of those risks occurring and discusses the treatments used to manage those risks. The responsibility of each of the identified risks is also allocated.

The following priority risk events relate to Council's reserves and open space:

- Natural events (wind, water, heatwave) causing damage to hard and soft assets;
- Accidents (chemical spill, Council and contractor workers, personal injury, damage from third party and fire) on all land managed by Council;
- Process (regulatory, organisational, capability, management, operations, financial, design, construction) impact on costs, budgets, materials;
- Equipment (computer hardware and software, tools) quality and capability present a risk to the ongoing maintenance of the Reserves and Open Space asset;
- Communications (telephone, personal computer, verbal) failure, quality and capability present a risk to ongoing maintenance of the Reserves and Open Space asset; and
- People (vandalism and infections) damage to hard and soft assets and consequential health and safety risks to users, staff and contractors.

6.1 Risk Management Policy

Council has adopted a Risk Management Policy and Framework (December 2012). Risk management is undertaken to identify the specific business risks associated with the ownership and management of Reserves and Open Space assets and determine the direct and indirect costs associated with these risks.

Critical/important assets within the Reserves and Open Space asset include cemeteries, toilet facilities, reserves and open space areas.

It is acknowledged that a formal risk assessment/evaluation needs to be carried out, this has been included in the Improvement Plan section of the AMP (project list).

6.2 Risk management scope

The scope of risk management is to ensure that:

- Risk is understood and identified;

- Hazards and practices that could cause financial loss, disruption to business goals, injuries to people or damage to the environment are controlled as far as practicable; and
- Insurance or other financial arrangements are made to protect the community's interests should a loss damaging to finances of Council occur.

6.3 Risk management objectives

The risk management process is designed to ensure that:

- All significant operational and organisational risks are understood and identified;
- The risks with the biggest impacts, highest likelihood of occurring and all risks that should be addressed in the short to medium term are identified;
- Risk reduction treatments which best meet business needs are applied; and
- Responsibilities for managing risk are allocated to specific staff within Council.

6.4 Sources of risk

To provide a framework for risk identification and analysis, the sources of risk and areas of impact were identified. Potential risk events identified and categorised into the following areas:

- **External risk events** – events largely beyond the control of the organisation such as the effects of natural disasters. Examples of external events and risks with a probability of occurring and with a possible consequence for Reserves and Open Space assets are extreme weather events, vandalism, regulatory changes and change in legislation.
- **Physical risk events** – events mainly associated with the failure of the assets due to material and equipment failure. Examples of physical risks include asset material failure, asset systems failure and sub-standard current assets.
- **Operational risk events** – events largely caused by breakdown of operational processes such as inadequate inspections, accidents or loss of key information. Examples of possible risks include training, impact of current agreements, poor network management, poor construction, health and safety inspections, environmental practice and damage to utilities.
- **Asset management risk events** – events associated with incomplete planning information and processes, such as data capture and demand analysis. Examples of asset management risks include; change of strategies, change of design criteria, capacity and demand planning deficiencies, cultural and political restraints, emergency response planning, consultation deficiencies, inadequate risk planning.

6.5 Reserves and open space risk evaluation

A risk evaluation exercise across the whole of the Reserves and Open Space asset to determine the types of risk events and then evaluation of the risks against the probability and consequences for each event, should that event occur, has not been conducted. It is identified as part of the AMIP.

In some cases with Reserves and Open Space assets the treatment may simply be a change to operational procedures or, in other cases, may involve major improvement works or changes to infrastructural construction standards. The treatment for a risk either involves reducing or mitigating the likelihood of the event occurring or otherwise mitigating the consequences should it occur. In many cases the occurrence of the risk event cannot be mitigated. This is particularly true for naturally occurring events, for example a flood. The consequences of an event of this type can be evaluated and mitigation measures adopted.

6.6 Risk analysis

Risk analysis is unable to be undertaken until sources of risk and areas of impact have been identified. This will happen when a condition assessment is carried out on the asset groups.

A risk assessment has been identified as a priority project in the Improvement Plan section of the AMP. While no process has been developed to assess the level of risk, the following indicates the general process used:

- Identification of the risk events relevant to each asset group;
- Assessment of the probability of risk event occurrence;
- Evaluation of the consequence of risk event; and
- Prioritisation of the risk.

6.7 Key assumptions

The key assumptions for Council are described below:

Forecasting assumption	Risk	Level of Uncertainly	Mitigation Measures
Activities: Council will not exit any of the activities covered by this AMP during the term of the AMP.	Council may choose to exit activities due to: • changing trends; and • constrained finances.	Low	Council has recognised the assets covered by this AMP as strategically important, demonstrating its intention to continue with them.

Forecasting assumption	Risk	Level of Uncertainly	Mitigation Measures
Lives of assets: Predictions contained in the AMPs are realistic.	Asset lives (data) are unknown and assets fail to deliver LOS required.	Medium	Asset lives are reviewed as part of Council's condition assessment process.
LOS: Predictions of demand trends form a sound basis for the upgrading of assets.	Council continues to provide services at the current level which do not meet user needs.	Low	Council keeps abreast with national and international trends.

7 Financial projections

7.1 Introduction

This section of the Reserves and Open Space AMP will summarise the financial details, explain the budgeting process, describe different funding mechanisms and highlight economic drivers, overall affordability and impacts regarding rates. Operational and Capital expenditure will not go into any detail as it is covered in Part B of the AMP.

7.1 Budgeting process

Consistent with the Local Government Act 2002 (LGA) the budgeting process is iterative. Initial budgets are set with consultation between senior management and managers which then goes to Council (Mayor and Councillors) briefing meetings. At the end of the briefing meetings, Council (Mayor and Councillors) has a budget it feels is in line with community expectations and is prepared to send out for public consultation via the LTP. Based on submissions received from members of the community, feedback is sent back to the Council for final ratification before being formally adopted by Kaipara District Council Mayor and Councillors.

7.2 Financial statements and forecasts

The 10 year funding forecasts for this Council's Community Activities, which includes its Reserves and Open Space, are presented in the following operating and capital tables (over page):

Reserves and Open Space - Operating

For the year ended:	Annual Plan	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget
30 June	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028
	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000
Operating funding											
Sources of operating funding											
General rates	1,208	1,381	1,466	1,537	1,578	1,635	1,675	1,698	1,739	1,781	1,827
Targeted rates	0	0	0	0	0	0	0	0	0	0	0
Subsidies and grants - operational	0	0	0	0	0	0	0	0	0	0	0
User fees and charges	37	44	45	46	47	48	49	51	52	53	54
Internal recoveries	0	0	0	0	0	0	0	0	0	0	0
Investments and other income	0	0	0	0	0	0	0	0	0	0	0
Total sources of operating funding	**1,246**	**1,425**	**1,512**	**1,583**	**1,626**	**1,684**	**1,724**	**1,748**	**1,790**	**1,834**	**1,882**
Application of operating funding											
Contractors costs	20	20	21	23	23	24	25	26	27	28	28
Professional services	143	113	115	118	120	123	125	117	120	123	126
Repairs and maintenance	691	827	887	911	936	963	985	1,008	1,032	1,057	1,084
Other operating costs	132	127	130	132	135	138	141	145	148	152	156
Employee benefits	0	0	0	0	0	0	0	0	0	0	0
Internal charges	206	272	292	301	309	318	326	330	337	346	355
Finance costs	30	28	26	25	25	32	31	29	27	25	23
Total applications of operating funding	**1,221**	**1,387**	**1,471**	**1,509**	**1,549**	**1,598**	**1,635**	**1,654**	**1,691**	**1,729**	**1,772**
Surplus (deficit) of operating funding	**25**	**38**	**40**	**74**	**77**	**85**	**89**	**94**	**99**	**104**	**110**

Reserves and Open Space - Capital

For the year ended:	Annual Plan	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget
30 June	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028
	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000
Capital funding											
Sources of capital funding											
Subsidies and grants - capital	0	0	0	0	0	0	0	0	0	0	0
Development contributions	0	0	0	0	0	0	0	0	0	0	0
Financial contributions	500	500	510	521	532	543	445	341	233	119	0
Increase(decrease) in debt	-16	-29	-32	-34	123	-43	-46	-50	-54	-58	-63
Sale of assets	0	0	0	0	0	0	0	0	0	0	0
Total sources of capital funding	**484**	**471**	**478**	**487**	**655**	**500**	**398**	**291**	**179**	**61**	**-63**
Applications of capital funding											
Capital Expenditure - Growth	350	150	153	156	159	163	167	171	175	179	184
Capital Expenditure - LoS	915	370	377	385	553	337	256	262	151	155	159
Capital Expenditure - Renewal	25	75	77	78	80	82	0	0	0	0	0
Increase (decrease) in reserves	-781	-86	-88	-59	-60	4	65	-47	-48	-169	-295
Total applications of capital funding	**509**	**509**	**519**	**561**	**732**	**585**	**488**	**385**	**278**	**165**	**47**
Surplus (deficit) of capital funding	**-25**	**-38**	**-40**	**-74**	**-77**	**-85**	**-89**	**-94**	**-99**	**-104**	**-110**
Funding Balance	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

7.3 Major assumptions

The key assumptions of Council are described below. The following are the key risks that underlie the forecast financial assumptions:

- On the whole, Kaipara's community open spaces are adequate to meet the levels of growth forecast for the district;
- Service levels are generally assumed to remain the same;
- The cost of new and replacement assets will rise in line with inflation;
- The south-eastern area is prone to population fluctuations with increasing demand for services over the summer holiday period;
- Community activities will be affected by changing age demographics in the district; and
- The rating base will continue to remain static.

7.4 Key asset assumptions

Council currently has limited data regarding lifestyle assumptions for its Reserves and Open Space assets. Data collection has been noted as a priority in the AMIP. Once a condition assessment of assets has been undertaken and data collection systems implemented Council will be in a better position to know where the assets are in there lifecycle and plan renewal/replacement. The current assumptions are illustrated in the following table.

Reserves and Open Space asset life assumptions		
Asset type	**Expected life (years)**	**Average remaining life (years)**
Walkways		n/a
Play equipment	10	11
Outdoor furniture	5	n/a
Bins	5	n/a
Signs	5	n/a
Carparks	20	n/a

7.5 Asset valuations

Assets within Council's reserves and open space are costs or deemed costs as they are not revalued. Depreciation is determined on a straight line method and total costs of a capital project is divided by its useful like.

7.6 Funding mechanisms

Council utilises multiple funding mechanisms with the aim being to distribute the costs evenly to those that benefit most or directly from the service. This section briefly describes the various funding mechanisms available and used by Council.

Revenue

The basic forms of revenue utilised by Council are:

- Rates;
- Grants;
- Fees and Charges (includes rent/leases/licences); and
- Fines, infringement fees.

The Reserves and Open Space asset is funded by way of general rates and fees and charges as explained below.

Rates

Every year Council produces a Draft Annual Plan that details the proposed level of rates for the next financial year, along with details of how services will be funded and provided. The public are then invited to make submissions about the Plan. Council considers the submissions, the Mayor and Councillors make the final decision on the amount required by the Annual Plan and then formally set the rates. The rates are set in July of the rating year.

There are two types of rates charges that apply to Reserves and Open Space:

- General rates: general rates are based on a combination of the property's land value (as assessed by Quotable Value New Zealand QVNZ) and the characteristics of the property.
- Uniform annual general charge (UAGC): the UAGC is a part of the general rate that is assessed on every Separately Used or Inhabited Property (SUIP) in the district.

Fees and charges

This is the purest form of the user paying directly for the benefit or service they receive. An example of user pays within the Reserves and Open Space business are cemeteries. Cemeteries have a set plot and interment fee. The Reserves and Open Space asset receives most of its revenue from Fees and Charges in the form of rents, leases and concessions.

Development contributions

Development contributions are fees collected for community and network infrastructure and Reserves and Open Space to service new developments. They also ensure that the costs of new development are shared by developers rather than funded entirely by ratepayers.

Financial contributions

Financial contributions are fees or land collected from developers to provide for new infrastructure which is needed to meet increased demands for services as a result of their development e.g. land given for a new park to service a new subdivision. They also ensure that the costs of new development are shared by developers rather than funded entirely by ratepayers.

7.7 Costs

Reserves and Open Space costs are divided into two categories: Operational expenditure (OPEX) and Capital expenditure (CAPEX).

Operating expenditure

Operational expenditure, or OPEX, relates to all of the costs associated with the operational function of the Council's Reserves and Open Space asset. Areas related to OPEX are; corporate, management, operations and maintenance. In addition, depreciation is considered Operational expenditure.

Capital expenditure

Capital expenditure, or CAPEX, consists of renewals and augmentation. The renewal of an asset means to replace or renew the asset so it performs the same function to the same LOS.

Augmentation is the creation of a new asset or to extend an existing asset beyond its current capacity.

Depreciation

The fundamental purpose of accounting for depreciation is to reflect the cost of use of fixed assets in each financial year, measured by the amount of economic benefit consumed. Although renewals should be depreciation funded, historically this has not happened across much of the individual asset groups within the Reserves and Open Space asset and there are no depreciation reserves.

In the LTP 2015/2025 Council recognised the need for the requirement to fund depreciation and are progressively increasing the funding from 2015 to be fully funding by 2025. This is consistent with Council's depreciation policy.

7.8 CAPEX Validation and Confidence Levels

Council has a standardised Project Information sheet for proposed CAPEX expenditure projects. These are be used on Reserves and Open Space projects that are undertaken directly by Council. Major capital projects will be undertaken through Council's normal contracting process which has its own project information and reporting sheets.

7.9 Budget Overview

Council's 10 year Capital Expenditure Programme for Reserves and Open Space assets (LTP 2018/2028) community activities, community spaces) is as follows (overpage):

For the year ended:	Annual Plan	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget
30 June	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028
	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000
Operating funding											
Sources of operating funding											
General rates	1,208	1,451	1,772	1,641	1,578	1,635	1,675	1,698	1,739	1,781	1,827
Targeted rates	0	0	0	0	0	0	0	0	0	0	0
Subsidies and grants - operational	0	0	0	0	0	0	0	0	0	0	0
User fees and charges	37	44	45	46	47	48	49	51	52	53	54
Internal recoveries	0	0	0	0	0	0	0	0	0	0	0
Investments and other income	0	0	0	0	0	0	0	0	0	0	0
Total sources of operating funding	**1,246**	**1,495**	**1,818**	**1,687**	**1,626**	**1,684**	**1,724**	**1,748**	**1,790**	**1,834**	**1,882**
Application of operating funding											
Contractors costs	20	20	21	23	23	24	25	26	27	28	28
Professional services	143	113	115	118	120	123	125	117	120	123	126
Repairs and maintenance	691	827	887	911	936	963	985	1,008	1,032	1,057	1,084
Other operating costs	132	127	130	132	135	138	141	145	148	152	156
Employee benefits	0	0	0	0	0	0	0	0	0	0	0
Internal charges	206	272	292	301	309	318	326	330	337	346	355
Finance costs	30	28	26	25	25	32	31	29	27	25	23
Total applications of operating funding	**1,221**	**1,387**	**1,471**	**1,509**	**1,549**	**1,598**	**1,635**	**1,654**	**1,691**	**1,729**	**1,772**
Surplus (deficit) of operating funding	**25**	**108**	**346**	**178**	**77**	**85**	**89**	**94**	**99**	**104**	**110**

For the year ended:	Annual Plan	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget
30 June	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028
	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000	$'000
Capital funding											
Sources of capital funding											
Subsidies and grants - capital	0	0	0	0	0	0	0	0	0	0	0
Development contributions	0	0	0	0	0	0	0	0	0	0	0
Financial contributions	500	500	510	521	532	543	445	341	233	119	0
Increase(decrease) in debt	-16	-29	-32	-34	123	-43	-46	-50	-54	-58	-63
Sale of assets	0	0	0	0	0	0	0	0	0	0	0
Total sources of capital funding	**484**	**471**	**478**	**487**	**655**	**500**	**398**	**291**	**179**	**61**	**-63**
Applications of capital funding											
Capital Expenditure - Growth	350	1,067	751	514	298	0	0	0	0	0	0
Capital Expenditure - LoS	915	440	683	489	553	337	256	262	151	155	159
Capital Expenditure - Renewal	25	75	77	78	80	82	0	0	0	0	0
Increase (decrease) in reserves	-781	-1,004	-686	-416	-198	167	232	124	127	10	-112
Total applications of capital funding	**509**	**579**	**825**	**665**	**732**	**585**	**488**	**385**	**278**	**165**	**47**
Surplus (deficit) of capital funding	**-25**	**-108**	**-346**	**-178**	**-77**	**-85**	**-89**	**-94**	**-99**	**-104**	**-110**
Funding Balance	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

8 Plan improvement and monitoring

The focus for asset management practices is to provide robust input into the decision-making process.

The main objectives are to create and refine asset management frameworks to improve whole-of-life planning, to integrate and align approaches across asset groups, improve robustness and quality of the information, to continue to advance asset management practice toward best practice and to support clear communication and enable an informed community to balance aspirations for service against cost.

Key to asset management is knowledge and information of the asset, having systems to advance planning and performance management to enable and support the focus for driving sustainable delivery of value to customers. Council has a number of systems and processes that support these objectives.

8.1 Information and data

Historically Council has collected and stored information and data on Reserves and Open Space assets in isolation from one another which has resulted in unknown asset condition, age, location, type and number. This means fragmented and poor or no asset knowledge. Internally (Council), ownership for updating asset information within the Reserves and Open Space asset has not been clearly defined.

Externally (Contractors), some information is provided to Council through the main Maintenance Contract regarding inspections on facilities and infrastructure the Contractors are responsible for within the contract. Information from Council's Contractor is provided in the following ways:

- Verbally (weekly meeting Maintenance Contract);
- Monthly report (Maintenance Contract);
- Quarterly report (Maintenance Contract); and
- Annual report (Maintenance Contract).

Other data received by Council is the annual safety inspection carried out on Council-owned playgrounds, carried out independent of Council.

Asset data information, updating of information and collection of data specifically relating to Reserves and Open Space assets has not been developed. To date most information that is available is variable and of limited use in providing good asset management. Ownership of data collection, condition assessment systems and data storage is urgently needed. This has been noted as a project in the Improvement Plan.

8.2 Asset management systems and processes

Access to effective information systems is essential for Reserves and Open Space managers to help them store and analyse asset information to make good asset management decisions. Currently Council uses the support tools listed in the following table to manage the Reserves and Open Space asset:

System name	System purpose	Purpose
MapInfo (GIS)	Asset location	The location of assets are stored within tables and represented spatially.
Parks and Reserves Asset Management (Excel shared path)	Asset management	To collate all assets including location, group, name, component, material and condition.
Kaipara District Parks Register	Register	A register of all parks and reserves property
Hardcopy	Asset reports/files	Paper-based filing system, with reports, letters, and requests filed under individual Reserves and Open Space headings.

8.3 Improvement Plan

The purpose of the Improvement Plan is to:

- Identify and develop implementation of the asset management planning process;
- Identify and prioritise ways to cost-effectively improve the quality of the AMP; and
- Identify indicative timescales, priorities and human and financial resources required to achieve asset management planning objectives.

This section of the AMP provides an outline of future improvements to asset management information and processes related to Council's Reserves and Open Space asset.

8.4 Asset management process review

Key areas to achieve improved core asset management activities and delivery of Council's Reserves and Open Space are listed under six main themes as identified in the following table (these directly link to the Improvement Plan and Monitoring section of the AMP and the projects identified):

Asset knowledge	Strategic planning processes	Asset capital processes
• Asset Hierarchy/Identification; • Physical Data - Attributes and Location;	• Demand Analysis; • Failure Prediction;	• Project Identification/Prioritisation; • CAPEX Evaluation;

Asset knowledge	Strategic planning processes	Asset capital processes
• Operations and Maintenance Records; • Condition Assessment; • Performance/Capacity Monitoring; • Lifecycle Cost; • Asset Age/Lives; and • Valuations/Accounting.	• Risk Assessment; • Renewal Processes; • Customer Service Level Reviews; and • Long Term Financial Planning.	• Contract Monitoring and Control; • Construction/Design Standards; • Asset Handover; and • Asset Rationalisation/Disposal

Operations and maintenance processes	Information systems	Organisational and commercial
• Operations and Maintenance Policy Strategy; • Operations and Maintenance Manuals; • Emergency Response Plans; • Contract Monitoring and Control; and • OPEX Analysis/Review.	• Asset Register; • Plans and Records; • Financial System; • Maintenance Management Functions; • Capacity Modelling; • Spatial Information Systems (GIS); • Customer Management System; • Project Management; • System Integration; and • Availability/User Friendliness.	• Asset Management Review/Improvement; • Commercial Polices (Contracting); and • Corporate Commitment.

The priority areas are improving asset knowledge and information systems for storing this knowledge. Until this is complete it will be difficult to determine life cycle costs, valuations or renewal profiles.

8.5 Improvement Plan programme

The overall objectives for the AMIP programme are as follows:

- improve Council's asset management maturity for high value and high risk asset groups, in particular coastal structures and public toilet asset groups;
- build internal asset management capability with the Parks and Community team;
- achieve medium level of asset management practice for the 2018 Reserves and Open Space Asset Management Plan (AMP);

- enable the AMP to become a live document within Council;
- AMP adequately prepared with the underlying information for the community activity to support the LTP 2018/2028 process; and
- key information and projects / programmes are to be substantially completed or well underway by June 2017 to allow adequate time to analyse and internally debate Council's investment programmes and services.

8.6 Monitoring of Improvement Plan

Specialist guidance is provided by Morrison Low to ensure the Parks department is adequately positioned for the LTP 2018/2028 planning round. Quarterly support and coaching meetings are held to discuss the AMIP for the community activities.

These quarterly meetings provide mentoring, guidance and support to Council in a structured approach to implement asset management initiatives including:

- Independent review of the AMIP completeness;
- Facilitation of quarterly progress meetings;
- Training and officer support (onsite and off-site as required);
- Proactive monitoring and reporting of implementing the AMIP to ensure Council achieves its desired asset management goals and that these goals are achievable and realistic
- Access to strategic asset management specialist to provide capability as required and to act as a sounding board for Council officers; and
- Identifying the high priority projects and sequencing for Council to implement.

Monitoring of the Improvement Plan Project List will be ongoing and a continuing focus for the Parks and Community Manager.

8.7 Revised Asset Management Improvement Plan (AMIP) Project List

The current AMIP was developed as part of the 2015 Community Activity AMP. The AMIP was refined to reflect Council's latest thinking and priorities. The revised AMIP programme is detailed below including status (underway, not started or not programmed to start), priority (high or medium) and assigned responsibility.

AM Improvement Area	Project No.	Action	Asset group	Indicative timeframe	Priority	Responsibility	Status	Comments
Strategic Planning	1	Develop an understanding of infrastructure capacity required to support urban development in accordance with the NPS Urban Development Capacity.	All	2016/17 to 2017/18	High	Parks and Community Manager	To start (as new project added in)	Develop an understanding for community infrastructure capacity and Council's corporate requirements for the LTP 2018/2028.
	2	Formally adopt the public toilet strategy for consistent decision-making.	Public toilets	2017/18	High	Parks and Community Manager	Not programmed to start yet	Draft has been prepared. The strategy will enable decision-making district-wide and inform any investment programmes.
Levels of Service	3	Review the LOS as part of the 2018 Community AMP development.	All	April 2017	High	Parks and Community Manager	To start (as new project added in)	Use the LOS template developed by Morrison Low and performance measure examples provided in January 2017. Ensure LOS cover all asset groups.
	4	Develop LOS for each category in Omnibus RMP.	Green space	June 2017	High	Parks and Community Manager	Underway	Draft has been prepared. Ontrack as per the programme to finalise by June 2017.
Future Demand	5	Review the existing and future capacity of the community managed cemeteries.	Cemeteries	2018/19	Medium	Parks and Community Manager	Not programmed to start yet	There is adequate capacity of the Council-managed cemeteries. It is unclear if this is the case for the community managed cemeteries.
	6	Review the recommendations from the district-wide Walking and Cycling Strategy that has been adopted by Council.	Walkways, green space	2018/19	Medium	Parks and Community Manager	Not programmed to start yet	There is high demand for complete walking and cycling networks. The green space may require enhancements to complete these networks.
	7	New RMPs (Reserves and Open Space).	Green space	Ongoing	High	Parks and Community Manager	Underway	Development of Omnibus RMP to progress during 2017.

AM Improvement Area	Project No.	Action	Asset group	Indicative timeframe	Priority	Responsibility	Status	Comments
Asset Data	8	Clarify asset ownership of coastal structural assets (i.e. Council, private, community).	Coastal structures	2017/18	High	Parks and Community Manager	Complete	Important to understand asset ownership as impact O&M and renewal responsibilities.
	9	Collect the asset data for roads and carparks located in cemeteries.	Cemeteries	June 2017	High	Parks and Community Manager	Underway	This is important for completing cemetery asset inventory.
	10	Clarify asset ownership of walkways.	Walkways	2017/18	High	Parks and Community Manager	Not programmed to start yet	Important to understand asset ownership as impact O&M and renewal responsibilities.
	11	Collect the asset data including condition of the hard surfaces and formed walkways (excluding Mangawhai).	Walkways	June 2017	High	Parks and Community Manager	Underway	Asset data of walkways has been collected for Mangawhai. The existing asset condition of steps is variable.
	12	Undertake structural assessments of viewing platforms and walkways by suitably qualified Engineer.	Coastal structures and walkways	2017/18	High	Parks and Community Manager	Not programmed to start yet	Viewing platforms are high risk assets and need to be inspected on three yearly basis by Structural Engineer and annual inspections in the other years.
	13	Update the inventories with asset age progressively as assets are replaced or created.	Green space, playgrounds, public toilets, coastal structures, walkways	2016/17 (and ongoing)	Medium	Parks and Community Manager	To start (as new project added in)	For the major asset groups only. This will become a business as usual activity once established.
Asset performance	14	Assess the current state of the existing wastewater system and the ability to meet peak demand at Kai Iwi Lakes Camp Grounds.	Camp ground	July 2017	High	Parks and Community Manager	To start (as new project added in)	Review the existing Water and Sanitary Services Assessment as a starting point for the assessment.

AM Improvement Area	Project No.	Action	Asset group	Indicative timeframe	Priority	Responsibility	Status	Comments
Lifecycle Management Plans	15	Renew the wastewater discharge consents for the wastewater systems for the Tinopai and Pahi public toilets.	Public toilets	2017/18	High	Parks and Community Manager	Not programmed	15
	16	Develop formal Service Level Agreement for the service providers to maintain wastewater plant equipment at the Tinopai and Pahi public toilets.	Public toilets	2017/18	High	Parks and Community Manager	Complete	Service providers are currently undertaking this activity but there is no formal agreement in place.
	17	Review Tenancy Agreements as they expire.	Green space	Ongoing	Medium	Parks and Community Manager / Policy Manager	Underway	
	18	Review the Maintenance Contract.	All	2016/17	High	Parks and Community Manager	Underway	Final review with the new Council to tender mid-2017.
	19	Maintenance Contract options reviewed. Develop new contract.	All	2016/17	High	Parks and Community Manager	Underway	Options to be reviewed by March 2017.
	20	Review maintenance options for walkways.	Walkways	2016/17	High	Parks and Community Manager	Underway	Review the maintenance responsibilities after the data has been collected.

AM Improvement Area	Project No.	Action	Asset group	Indicative timeframe	Priority	Responsibility	Status	Comments
	21	Develop an annual weed management programme with priority on adopted RMP Taharoa Domain, Harding Park MCP, Mangawhai Harbours, Memorial Park or areas of collaboration.	Green space	2016/17	High	Parks and Community Manager	Underway	Expected to be completed by April 2017.
	22	Ensure all Council owned coastal structure assets have resource consents.	Coastal structures	2017/18	High	Parks and Community Manager	Not programmed to start yet	This will be undertaken after asset ownership has been completed (refer to separate project above). This is expected to be May 2017.
Renewal planning	23	Develop sound renewal programme for the viewing platforms and walkways based on the structural assessments to ensure that they are compliant with latest safety standards.	Coastal structures and walkways	2017/18	High	Parks and Community Manager	Not programmed to start yet	This will be based on any defects identified through the assessment as well as meeting modern legislative requirements, in particular landings.
	24	Develop condition based renewal programme for roads and carparks located in cemeteries based on the condition survey.	Cemeteries	2017/18	High	Parks and Community Manager	Not programmed to start yet	Renewal programme will be over a five year timeframe. This will feed into the LTP 2018/2028.
	25	Develop standard furniture that reflects local character, and replace all poor furniture as part of the renewal programme.	Green space	2017/18	Medium	Parks and Community Manager	Not programmed to start yet	Part of the existing programme.

AM Improvement Area	Project No.	Action	Asset group	Indicative timeframe	Priority	Responsibility	Status	Comments
	26	Develop a maintenance/renewal programme for coastal structures to ensure all assets are “Good” PRAMS 3.	Coastal structures	2016/17	High	Parks and Community Manager	To start	Condition was surveyed in 2014. Poor condition assets have been upgraded (e.g. Tinopai).
	26	Develop a maintenance/renewal programme for coastal structures to ensure all assets are “Good” PRAMS 3.	Coastal structures	2016/17	High	Parks and Community Manager	To start	Condition was surveyed in 2014. Poor condition assets have been upgraded (e.g. Tinopai).
Investment strategies	27	Develop a Reserves Management Plan Implementation Policy that prioritises projects within individual RMPs and funding.	Green space	June 2017	High	Parks and Community Manager	Underway	Still underway but expected to be completed by June 2017.
Risk Management	28	Develop an activity risk register as part of the 2018 Community AMP development.	All	March 2018	High	Parks and Community Manager	To start (as new project added in)	An activity risk register is required for the AMP as good practice. An asset register for the community activity is part of the corporate risk register and will be utilised as a starting point. Sample template was provided in January 2017.
System improvements	29	Consider moving the asset inventories to an Asset management system as more appropriate for asset management purposes.	All	2018/19	Medium	Parks and Community Manager	Not programmed to start yet	Spreadsheets are currently used as the asset inventory for the community activity. AssetFinda is used for managing Council’s four waters activities.

Part B Managing our Assets

9 Playgrounds

9.1 Background

This section covers all playgrounds provided and managed by Council within the Kaipara district. It does not cover playgrounds open to the public on privately owned or leased land such as Mangawhai Domain and Mangawhai Activity Zone (MAZ).

Historically, playgrounds have been positioned where there has been a perception of need and not necessarily the best or appropriate location.

In the past many playgrounds have been installed by community groups and organisations in partnership with Council and then handed over to Council to own and manage. Council has now removed all non-complying playgrounds built by the community on Council-owned land.

Many playgrounds have been installed without thought being given to age range or equipment placement.

Council's operational and maintenance requirements are managed internally and through Council's Maintenance Contract.

The condition and age of Council's Playground asset is varied as highlighted in the Kaipara District Council Playground Asset Audit Report 2016 produced by Commercial Play Systems Limited.

9.2 Overview of assets/service

The purpose of playgrounds is to provide:

- A range of play and motor skills development opportunities for children up to the age of 15 years, in locations where there is high usage or thoroughfare, or in areas where other activities happen and where a playground facility will enhance and encourage usage.

The key issues that relate to playground facilities:

- Health and safety of equipment, surface and playground layout;
- Balancing the cost to upgrade playground items to meet the required standard, when they are past their useful life, with removal and replacement;
- The financial resources to keep up with trends and community expectations in the provision of good quality play opportunities in public playgrounds;
- Extreme coastal settings and that impact on the life and wear of equipment;
- Legislation and standards changes and compliance issues (there are a range of standards to meet depending on the date of installation);

- Provision of new playgrounds to accommodate growth;
- Broader age range identification and opportunities to increase and enhance usage; and
- Using the independent audit to determine budget forecasting for renewal and replacement.

9.3 Equipment asset description

The playground equipment, condition and asset information taken from the Playground Asset Audit 2016 is summarised in the following table:

Playground Location	Average Remaining life (years)	*Overall Condition	**Age of Asset (years)	Age Group (years)	Estimated Current Value ($)	Estimated Replacement Cost ($)	Upgrade work required($)
Mangawhai Heads - Holiday Park	**10**	**Varies 1-3**	**Varies 3-4**	**5-12**	**40,000**	**45,000**	**0**
Mangawhai Heads - Fagan Place	3	2	6	5-12	40,000	30,000	0
Kaiwaka	10+	1	1	5-12	40,000	30,000	0
Maungaturoto	10	2	Varies 1-10	5-12	70,000	103,000	
Paparoa - Village Green	15	Varies 1-4	Varies	5-12	15,000	45,000	$10,250
Pahi Beach Reserve	12	3	5-10	5-12	15,000	31,500	unknown
Tinopai Reserve	1	Varies 3-4	Varies 5-30	3-7	1,000	32,000	replacement
Ruawai Reserve	10+	2	5	5-12	40,000	25,000	0
Taha Awa gardens**	10+	3	10+	5-12		75,000	Safety
Dargaville - Selwyn Park skate park			4	All		250,000	
Pine Beach**	13	1	2	5-12		45,000	
Dargaville - Selwyn Park	11	1	4	5-12	40,000	35,000	0
Dargaville - Jaycee Park	2+	3	22	5-12	5,000	44,000	replacement
Glinks Gully	0	3	20-30	5-12	500	13,500	replacement
Totals	**9.25** (average)	**2.2 (average)**	**7**10 (average)	**5-12**	**$306,500**	**$804,000**	**$10,250**

* (Condition scores: 5 = very poor, 4 = poor, 3 = average, 2 = good, 1 = excellent) PRAMS Condition Grading Standards

** This is done as per spreadsheet showing ages of different items in playground

9.4 Condition assessment

Independent safety audits have been undertaken in 2012, 2014 and 2016 to assess the condition of the assets. The average overall condition rating in 2012 was 3.9 which improved slightly in 2014 to an average condition rating of 3.7 with a big improvement for 2016 with an average of 2.2.

The methodology involves:

- Inspecting all equipment against NZS 5828 and list areas of non-compliance;
- Evaluate any equipment installed post 1996/1997 against ASNZ 4422:1996 and ASNZ 4486; or NZS 5828:2004 and list areas of non-compliance; and
- Evaluate condition of play equipment specifically.

In 2016 the audit covered 51 items of equipment and 14 areas of safety surfacing. 20 items and 1 safety surface did not comply with standards. This is a compliance rate of 68% and is average compared to other Council such as Whakatane (89%), Waitomo (86%), Matamata-Piako (78%).

The report found that the majority of playgrounds were in good condition. However, many of the playgrounds were in coastal settings which influenced the life and wear of equipment.

The installed asset replacement value was estimated to be $804,000; this includes the Dargaville skate park.

9.5 Operations and maintenance plan

Planned operations and maintenance

Scheduled maintenance is identified by inspections of play equipment and facilities. A full condition assessment of all play equipment (11 playgrounds) was undertaken by an independent audit consultant in 2016 (Park Central Park and Playground Solutions Ltd). This audit identified maintenance required to bring the playground up to compliance with NZ Standard 5828:2004.

The outstanding maintenance value was estimated to be $20,985 with 9 items maintenance priority 2 and 29 items maintenance priority 3. No items were maintenance priority 1. This is 2% of the value of the asset and considered to be reasonable.

Additionally, monthly safety audits are undertaken by Council's Contractor (Recreational Services) and reported to Council.

The degree of maintenance for each individual playground will depend on the level of wear and tear. This includes the routine replacement of moving parts where failure could result in injury.

9.6 Equipment range

The 2012 Playground Safety Audit highlighted the limited age range of Council's current Playground asset. The age group catered for was between 3 and 7 years.

This highlights the need for further investigation when upgrading or replacing playground equipment and provides Council with opportunities to approach playground installation and upgrades differently than previously undertaken.

The recent construction of the Selwyn Park and MAZ skate parks has widened the age group being catered for. The MAZ skate park is not owned by Council but is available to the general public. The trend is further demonstrated by the Tinopai community wanting to replace their playground with a facility that caters for an older age group.

Reactive maintenance

Reactive maintenance most frequently follows vandalism activities or occasionally the failure of moving parts. These failures are identified through regular inspections or through tracked customer service requests.

Routine operations and maintenance

Routine maintenance includes regular inspections of playground equipment and facilities. Weekly inspections of playgrounds listed within the Maintenance Contract are undertaken by contracted staff (Recreational Services) and maintenance items are noted and addressed where possible through the Maintenance Contract. The activities involved are those that ensure that the playground is safe i.e. greasing moving parts and raking and loosening bark under surfacing to maintain its impact resistance.

General and Routine Work identified within the Maintenance Contract is as follows:

General:

- The Contractor shall allow to supply: Fresh bark under all playground areas annually to compliance standard or where Cushion-fall is already in use at a playground, then an annual renewal of Cushion-fall.

Routine:

- A weekly inspection and checklist;
- Removal of glass and litter from around playgrounds;
- Removal of graffiti;
- Securing loose materials on playgrounds;

- An annual detailed inspection and report on all playgrounds identified within the Maintenance Contract;
- A report detailing all major repairs required;
- Removal of substances that may cause damage to persons from playground equipment; and
- Maintenance of Cushion-fall material where it already exists.

Major maintenance

The need for major repairs is infrequent. Routine and planned maintenance activities ensure that structural integrity and safety of the playground equipment is maintained. The 2014 Audit provided information on the age and condition of Council's playground equipment and recommendations on any major maintenance requirements.

Contracted response time

Category	Priority work response time
Work required to correct a hazard or has a high public profile	6 hours
All other work	5 days

Key Performance Indicators (KPIs)

The following table highlights the performance measures within the Maintenance Contract:

Playgrounds	KPI	Method of monitoring	Target level (year 1)	Target level (year 2)	Target level (year 3)
All playgrounds listed within Contract.	All weekly playground check sheets provided in accordance with requirements of the Contract and specified timeframes.	Records of Principal's Representative.	100%	100%	100%

9.7 Renewals plan

The audit prioritises renewals based on age, condition, compliance and level of risk of equipment and surfacing. Priority 1 and 2 will be programmed as part of normal asset renewal programme.

Priority	Number of items	Replacement Value
1	0	0
2	7	$119,000
3	20	$230,400
4	27	$344,000
5	9	$55,300

The renewal plan for the next three to four years is:

- Tinopai swings and module;
- Jaycee Park; and
- Fagan Place.

A further independent audit will be completed in October 2018 and continue every two years. This audit will continue to inform the renewal programme.

9.8 Expenditure forecasts

The expenditure for playgrounds is not accounted for separately and is charged against the cost centres for Reserves District, Dargaville and Mangawhai.

9.9 Augmentation/disposal plan

There is augmentation expenditure forecast of $25,000 for a service level increase (upgrade/replacement) in the LTP budget forecast along with a forecast budget of $25,000 for renewals.

10 Outdoor Furniture and Fittings

10.1 Summary

This section covers all outdoor furniture and fittings provided and managed by Council within the Kaipara district. The Outdoor Furniture and Fittings asset group includes seats, tables, park signs, water fountains, bollards and fences and other similar assets.

Historically, outdoor furniture and fittings have been positioned where there has been a perception of need; through a community request, a submission to Council or a noted increase in usage within a Reserve or Open Space area.

Council's operational and maintenance requirements regarding outdoor furniture and fittings have been managed internally and through the Maintenance Contract. The condition of Council's outdoor furniture and fittings asset is Good to Excellent with most Poor and Very Poor assets replaced in the last two years.

Lack of Council-branded signs had been identified as an issue affecting the user experience. Without suitable signage visitors were not sure who maintained the space, what facilities were available and what the rules of use were.

10.2 Overview of asset/service

The purpose of the outdoor furniture and fittings asset is to enhance the user experience of Reserves and Open Space by providing appropriate seating, reducing the impact of litter on the Reserve or Open Space area by providing litterbins, clearly identified services and direction to facilities or features of the Reserve or Open Space.

The key issues that relate to outdoor furniture and fittings are:

- Data capture of what and where outdoor furniture and fittings are being provided;
- Provision of signage type/replacement specifications/standards;
- Replacement costs for seats, tables, bins and signs; and
- Condition assessment in accordance with PRAMS condition grading guidelines.

10.3 Asset description

Outdoor furniture and fittings, quantity, condition and asset information is highlighted in the following table:

Outdoor furniture and fittings Asset type	Quantity	Condition assessment				Age of asset	Estimated current value	Estimated replacement cost
		Excellent	Very Good	Good	Poor			
Seats	54	11	21	21	2	n/a	$63,500	$63,500
Tables	68	4	56	21	2		$107,500	$107,500
Signs	29	26		3	-	n/a	$41,600	$41,600
Miscellaneous	17	3	6	6	2	n/a	$40,400	$40,400
Drinking Fountain	6	4	2			n/a	$12,000	$12,000
Car Parks	6		2	2	2	n/a	tbd	tbd
Bollards [sites]	12		3	9		n/a	tbd	tbd
Fences [sites]	11		1	8	2	n/a	tbd	tbd
Totals							tbd	tbd

10.4 Condition assessment

Over 2015/2016 condition data for furniture was collected and this has feed into the Maintenance Contract schedules prior to re-tendering. Further work is required to better understand:

- Replacement values and depreciation values (expected or planned useful life); and
- Replacement and renewals costs to enable budget forecasting.

10.5 Operations and maintenance plan

Planned operations and maintenance

Scheduled maintenance is identified by inspections of outdoor furniture and fittings as specified within the Maintenance Contract.

The degree of maintenance for each outdoor furniture and fittings asset will depend on the level of wear and tear. Due to the cost of the asset replacement may be more cost-effective than maintenance.

Reactive maintenance

Reactive maintenance is generally in response to a customer enquiry, referrals and complaints and is recorded through Council's Service Helpdesk system which documents and tracks response times to the action identified. Much of the reactive maintenance undertaken is in response to vandalism and graffiti removal.

Routine operations and maintenance

Routine maintenance includes regular inspections of outdoor furniture and fittings as required through the Maintenance Contract by the Contractor's staff. This includes weekly inspections of outdoor furniture and fittings as listed within the Maintenance Contract. Maintenance items are noted and addressed where possible through the Maintenance Contract.

General and Routine Work identified within the Maintenance Contract is as follows:

General (as per Contract):

- All signage not covered by the NZ Transport Agency Signs Manual. This includes public information and district boundary signs on public roads together with signage within reserves, cemeteries, utility areas and other public places;
- Public seating, on roads and public land throughout the district;
- Recreation facilities such as playground equipment, picnic tables, barbecues and lookout structures; and
- Graffiti removal from all of the above facilities.

Routine Work (as per Contract):

The Contractor makes routine visits at the following frequencies for the purpose of maintaining the recreational facilities in a clean, tidy, functional and safe condition.

- Urban reserves and properties - a minimum of once a week; and
- Rural reserves and properties - a minimum of twice per month from Labour Weekend to Easter Weekend, otherwise once a month.

Major maintenance

The need for major repairs is unlikely.

Contractors are required to provide an annual report detailing all major repair defects with estimates to repair/replace together with a recommended list of works in priority by 31 July each year of the Contract term.

10.6 Renewal plan

Historically, outdoor furniture and fittings (seats, tables, bins and signs) have been renewed/replaced from within existing operational budgets. More recently a Park Improvement budget has funded the re-development programme. Replacement is based on the condition assessment of assets as identified in the asset register.

10.7 Expenditure forecasts

The expenditure for outdoor furniture and fittings is not accounted for separately and is charged against the cost centres for Reserves District, Dargaville and Mangawhai. No renewal expenditure is forecast in the next three years of this specific asset group. Operational and maintenance expenditure is undertaken within general maintenance of Reserves and Open Space areas specified within Council's Maintenance Contract.

10.8 Augmentation/disposal plan

There is no augmentation expenditure forecast for a service level increase (upgrade/replacement) in the LTP budget forecast to happen in 2018/2028 along with any forecast budget for renewals 2018/2028.

11 Public toilets

11.1 Background

This section covers all public toilet facilities provided and managed by Council within the Kaipara district.

Council provides 28 public toilet facilities (as well as 3 at Kai Iwi Lakes camp grounds) to be available in across the district to meet the needs of residents and visitors. This service maintains and encourages good appropriate standards of public health and also meets public and community expectations of both residents and visitors to the district.

Council developed a 10 year Public Toilet Strategy 2014 to guide the provision, rationalisation and feasibility of public toilet facilities and infrastructure across the Kaipara district.

11.2 Overview of assets/service

The purpose of the public toilet asset is to provide:

- facilities that meet the needs of communities, public, tourists and visitors to the district (minimum provision level equals 1 toilet per 2,000 people);
- accessible, safe to use, fit-for-purpose and meet consent conditions; and
- toilets in locations to meet demand and areas with high environmental values.

The key issues that relate to public toilet facilities are:

- Accessibility, public safety and general ambience can be improved, which will require replacement of longdrop facilities overtime;
- Costs of providing water to and pump outs of non-reticulated facilities is escalating to a point where more permanent solutions are cost-effective;
- Meeting the requirements of resource consents and the Wastewater Drainage 2016 Bylaw;
- Demand for additional facilities continues particular in Mangawhai;
- Replacement costs for public toilets are high; and
- Customer satisfaction rates are improving but are still below our peers.

To achieve Council's community outcome of "Protecting and enhancing our natural assets and open spaces" it is proposed to:

- Ensure all wastewater systems (toilets and camp grounds) are compliant and fit-for-purpose;
- Establish one new public toilet per year and implement the toilet renewal programme.

11.3 Asset description

Public toilet, quantity, condition and asset information is highlighted in the following table (based on 2015 Toilet Condition assessment):

Asset Name	Toilet	Ambience Rating	Engineering Rating	Toilet System	Water Supply	Primary Peak	Accesibility Access	Accessibility Facilities
Mangawhai - Alamar Crescent	Coastal	1	1	ST	T	Summer	No	Yes
Kaiwaka Toilets	General urban	1	2	ST	T	All year	Yes	Yes
Mangawhai Community Park - MAZ	General urban	1	1	Ret	P	All year	No	Yes
Taharoa Domain - Promenade Point	Coastal	1	1	ST	T	Summer	yes	Yes
Dargaville - Selwyn Park Toilets	General urban	1	Not applicable	Ret	Ret	All year	Yes	Yes 2 pans
Memorial Park Toilets	General urban	1	1	ST	Ret	Weekends	No	Yes
Band Rotunda Toilets	General urban	2	Not applicable	Ret	Ret	All year	Yes	Yes 1 unisex
Baylys Beach Toilets	Coastal	2	2	ST	T	Summer	No	No
Mangawhai Heads Carpark	Coastal	2	Not applicable	Ret	Ret	All year	yes	Yes
Pahi Toilets	Coastal	2	3	ST	T	Summer	No	Yes
Pine Beach Old changing rooms	Coastal	2	Not applicable	Not applicable	Not applicable	0	No	No
Pine Beach Small toilet	Coastal	2	1	drainage field	Lake	Summer	No	No
Pine Beach Shower/toilet	Coastal	2	1	drainage field	Lake	Summer	Yes	Yes
Pouto Hall Toilets	Coastal	2	1	ST	T	Holiday period	Not from carpark	No
Ruawai	General urban	2	2	ST	Ret	All year	yes	yes
Totara St Toilets	General urban	2	Not applicable	Ret	Ret	All year	yes	Yes
Wood Street Toilets	General urban	2	Not applicable	Ret	Ret	All year	yes	Yes
Moir St Toilets	General urban	2	2	Ret	Ret	All year	Yes	Yes
Jaycee Park Toilets	General urban	3	Not applicable	Ret	Ret	All year	Yes	Yes
Kelly's Bay Toilets	Coastal	3	Not applicable	v	T	Holiday period	No	No
Maunganui Bluff Toilets	Remote	3	Not applicable	V	T	Summer	No	No
Pouto Point Toilets	Remote	3	Not applicable	V	NA	Summer	yes	No
Te Kopuru Toilets	Coastal	3	1	Ret	T	Summer	No	Yes
Tinopai Toilets	Coastal	3	1	drainage field	t	Summer	No	No
Whakapirau Toilets	Coastal	3	3	ST	T	Summer	No	No
Paparoa Toilets	Destination Urban	3	0	0	0	All year	Yes	Yes
Glinks Gully Toilets	Coastal	4	2	ST	T	Summer	No	Yes
Harding Park Toilets	General urban	4	Not applicable	Ret	Ret	All year	No	No
Maungaturoto Toilets	General urban	4	0	0	0	All year	Yes	Yes
Omamari Toilets	Remote	4	0	0	0	Summer	0	0
Mt Wesley Toilets	Destination Urban	5	2	ST	Ret	All year	No	No
Batley Toilets	Remote	5	0	0	0	Summer	No	No

11.4 Condition assessment

A condition assessment was completed by Saphro in 2015. The report collected data on condition, ambience, accessibility of access and to the facility. The general ambience of toilets is improving and half of all toilets have an ambience rating of 1 or 2 and 26/32 have an ambience rating of 3 or better (1-highest and 5-lowest).

Since the completion of the 2015 report programmed repairs and renewals have been completed at Kaiwaka, Omamari, Maunganui Bluff, Whakapirau, Baylys Beach, Kelly's Bay, Ruawai, and Moir Street, Mangawhai.

Although the asset is of varying age, quality and condition over the last six years there has been a steady improvement in satisfaction levels that have exceeded the target of 65%.

Residents more likely to be not very satisfied with public toilets are Dargaville Ward residents and women.

The main reasons residents were not satisfied with public toilets were:

- Not enough/need more;
- Need upgrading/improving/in poor condition; and
- Disgusting/dirty/need cleaning more often.

Council has recognised the importance of maintaining its public toilets infrastructure and meeting demand and protecting areas with high environmental values and has budgeted for one renewal and one new toilet every year for 10 years from 2018 (see financial forecast).

11.5 Operations and maintenance plan

Planned operations and maintenance

Scheduled maintenance, such as painting or deep cleans, are either identified in the three yearly condition assessment audit or included in the maintenance contractor for the public toilets within Maintenance Contract.

The degree of maintenance for each individual public toilet will depend on a number of factors including age, materials, location, and frequency of use.

To meet resource consent conditions for maintenance of onsite systems S3 sewerage system services or Jet Waste undertake regular inspections and provide reports. There is a service level agreement that sets out how often inspections are undertaken or agreed charge out rates.

Reactive maintenance

Reactive maintenance is generally in response to a customer enquiry, referrals and complaints and is recorded through Council's Service Helpdesk system which documents and tracks response times to the action identified. Much of the reactive maintenance undertaken is in response to vandalism, graffiti removal or cleanliness.

Routine operations and maintenance

Routine maintenance is the regular ongoing day-to-day work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again. Day-to-day cleaning and security of the asset are managed by Contractors. They advise of any immediate repair requirements that arise.

Routine maintenance includes regular inspections of the toilets listed within the Maintenance Contract which is undertaken by contracted staff (Recreational Services Ltd). Maintenance items are noted and addressed where possible through the General and Routine Work identified within the Maintenance Contract.

To meet resource consent conditions for maintenance of onsite systems S3 sewerage system services or Jet Waste undertake regular inspections and provide reports. There is a service level agreement that sets out how often inspections are undertaken or agreed charge out rates.

11.6 Renewal plan

The 2015 condition assessment report was used to develop a forward renewal programme. Good progress has been made in delivering this programme and it is recommended a new condition assessment report is commissioned in 2018/2019.

The Public Toilet Strategy provides an analysis of the current public toilets availability across the district. Guided by the recommended key performance standards, a series of key opportunities are suggested to upgrade and improve existing facilities. The Strategy has proposed recommended key performance standards of safety, accessibility and demand for Council's toilet provision and policy details where toilets should be considered.

The following is the renewal programme for the next three years and $60,000 per annum has been provided for the following years. The details of the forward programme will be confirmed as part of the 2018/2019 condition assessment report.

Location	2018/2019	2019/2020	2020/2021
Baylys Beach Toilets	$10,000		$12,000
Maunganui Bluff Toilets	$15,000		
Moir Street Toilets			$15,000
Mt Wesley Toilets			$12,000
Pouto Hall Toilets			$10,000
Tinopai Toilets		$70,000	
Total	**$25,000**	**$70,000**	**$49,000**

11.7 Expenditure forecasts

The table below provides the expenditure for public toilets over the next 10 years as taken from the LTP 2018/2028 and Council's Public Toilet Operations, Maintenance and Capital budgets.

	2018/28 LTP Input 2018/19	2018/28 LTP Input 2019/20	2018/28 LTP Input 2020/21	2018/28 LTP Input 2021/22	2018/28 LTP Input 2022/23	2018/28 LTP Input 2023/24	2018/28 LTP Input 2024/25	2018/28 LTP Input 2025/26	2018/28 LTP Input 2026/27	2018/28 LTP Input 2027/28
Activity Costs	**161,154**	**161,154**	**190,404**	**190,404**	**185,837**	**185,837**	**185,837**	**185,837**	**185,837**	**185,837**
1222001 - Cleaning Costs:PT Mangawh	96,000	96,000	120,000	120,000	132,500	132,500	132,500	132,500	132,500	132,500
1222007 - Insurance Premiums:PT Mangawh	800	800	800	800	800	800	800	800	800	800
1222031 - R&M Buildings:PT Mangawh	32,500	32,500	35,750	35,750	37,537	37,537	37,537	37,537	37,537	37,537
1222043 - Water Supply:PT Mangawh	6,000	6,000	7,000	7,000	8,000	8,000	8,000	8,000	8,000	8,000
1222053 - Electricity Supply:PT Mangawh	5,000	5,000	6,000	6,000	7,000	7,000	7,000	7,000	7,000	7,000
1222064 - Operating Leases:PT Mangawh	20,854	20,854	20,854	20,854	0	0	0	0	0	0
Activity Costs	**178,706**	**178,706**	**178,706**	**178,706**	**178,706**	**178,706**	**178,706**	**178,706**	**178,706**	**178,706**
1722001 - Cleaning Costs:PT Distric	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000
1722007 - Insurance Premiums:PT Distric	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
1722028 - Planning Services:PT Distric	2,206	2,206	2,206	2,206	2,206	2,206	2,206	2,206	2,206	2,206
1722029 - Land Rates KDC:PT Distric	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000
1722031 - R&M Buildings:PT Distric	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000
172203170 - Mtce Bldg Planned:PT Distric	0	0	0	0	0	0	0	0	0	0
1722043 - Water Supply:PT Distric	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
1722048 - R&M Grounds Drains:PT Distric	0	0	0	0	0	0	0	0	0	0
1722053 - Electricity Supply:PT Distric	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Activity Costs	**182,346**	**182,346**	**182,346**	**182,346**	**182,346**	**182,346**	**182,346**	**182,346**	**182,346**	**182,346**
2142001 - Cleaning Costs:PT Dargav	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000	159,000
2142007 - Insurance Premiums:PT Dargav	600	600	600	600	600	600	600	600	600	600
2142031 - R&M Buildings:PT Dargav	17,546	17,546	17,546	17,546	17,546	17,546	17,546	17,546	17,546	17,546
2142043 - Water Supply:PT Dargav	700	700	700	700	700	700	700	700	700	700
2142048 - R&M Grounds Drains:PT Dargav	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
2142053 - Electricity Supply:PT Dargav	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Total Public Toilets	**$ 522,205.96**	**$ 522,206.00**	**$ 551,456.00**	**$ 551,456.00**	**$ 546,889.00**	**$ 546,889.00**	**$ 546,889.00**	**$ 546,889.00**	**$ 546,889.00**	**$ 546,889.00**

11.8 Augmentation/disposal plan

This Public Toilet Strategy draws together the demand side of toilet provision which up until now has been in an ad hoc manner in the number of toilets, locations based on perception of need or demand and the supply "side" issues of a growing recurrent cost base and contingent liability associated with a number of current toilets.

Demand is also influenced by other key strategic documents such as the Mangawhai Community Plan and Kai Iwi Lakes (Taharoa Domain) RMP.

Council has however identified the need to review its involvement in the management and maintenance of some of its public toilets such as Jaycee Park and also to consider decommissioning some public toilets because of location or lack of use. These are:

Review

Site	Location	Consideration
Wood Street toilet	Wood Street shopping centre Mangawhai (privately owned public toilets)	Review Council involvement

The following public toilet, location and timing of installation (new) list has been developed based on Council's Criteria and Community Feedback. It is an indicative list and, while in order of priority, is subject to change because of limitations.

Public Toilet, Location and Timing of Installation (New) List 2018/2028

Priority	Site	Location	Type	Timing / Date
1	Mangawhai Heads Road	Mangawhai Heads Road, Mangawhai	New	2018/2019
2	Lake Taharoa (boat ramp)	Kai Iwi Lakes	New	2018/2019
3	Lincoln Reserve	Lincoln Street, Mangawhai Heads	New	2020/2021
4	Pioneer Village	Molesworth Drive, Mangawhai	New	2021/2022
5	Wood Street	Mangawhai Heads	New	2022/2023
6	Kai Iwi Lakes (various see RMP)	Kai Iwi Lakes	New	2023/2024

12 Cemeteries

12.1 Background

This section covers all cemeteries provided and managed by Council within the Kaipara district.

Kaipara District Council has direct management of five cemeteries and associated facilities within the district on behalf of its communities. These are situated at Dargaville (2), Arapohue (1), Tokatoka (1) and Redhill (1). Council also provides a limited level of service at two other community-managed cemetery facilities located in Mangawhai (Tara Road) and Dargaville (Harding Park).

Council-managed cemeteries are all located in the north-western part of the district.

Council's management and maintenance requirements for its public cemeteries have been managed internally and through the Maintenance Contract.

Council manages bookings and general enquiries for all six cemeteries with the grounds maintenance and sexton duties included in the Maintenance Contract.

Cemetery assets are generally regarded as being in good condition. Exceptions are fences, gates and trees where some deferred maintenance is visible. To date no condition assessment has been carried out to identify specific requirements. This AMP provides for these issues to be identified and addressed through programming within the AMIP

On average 47 burials along with ash burials occur in Council-managed cemeteries each year. Based on this burial rate the district's needs for the next 10 years of this AMP will be adequately provided from the cemetery land currently held.

No acquisitions of further cemetery land are proposed in this AMP however the requirement for further development of existing land should not be lost sight of, particularly in the south-eastern area of the district (Mangawhai). This requirement might be carried forward as an item for consideration within a future LTP and would be based on growth and LOS.

Historically, there has been a high level of satisfaction with the overall service being provided within Council's cemeteries however this has not been formally accessed through any survey.

Council's present policy provides that burials are cost-neutral to the district with maintenance being met from Council's general rates.

Council, in 2012/2013, reviewed and increased its Cemetery Fees and Charges and these are adjusted by inflation each year. The fees will again be reviewed prior to the re-tendering of the Parks Maintenance contract.

12.2 Overview of assets/service

The purpose of cemeteries:

- To provide an area to facilitate the dignified placement of deceased persons;
- To provide areas of open space;
- To provide a link to the past and preserving cultural identity and heritage value;
- To provide a place where family and friends can visit and pay their respects; and
- Health and well-being of the community.

The key issues that relate to cemeteries:

- Provisions of new cemeteries were identified to accommodate reducing capacity and changing community demands (e.g. natural burials);
- Cemetery capacity of existing sites;
- Legislation and standards changes and compliance issues;
- Fees and charges for services provided;
- Information systems - capture, storage and use; and
- Public expectation that aged/old grave structures are Council's responsibility to maintain/renew (this cost is beyond maintenance and is not a Council asset).

12.3 Description

The five Council cemeteries that are actively managed:

Cemetery	Street/ Road	Location	Status
Mt Wesley	Mt Wesley Coast Road	Rural	Operational
Mt Wesley (Old)	Mt Wesley Coast Road	Rural	Closed
Redhill	Redhill Cemetery Road	Rural	Operational
Arapohue	Corner of Hoyle Road and Waller Road	Rural	Operational
Tokatoka	Tokatoka Road	Rural	Closed

Other Cemeteries that Council has some level of service/maintenance agreement.

Cemetery	Street/Road	Location	Status
Maungaturoto (RSA)	View Street	Maungaturoto	Operational
Mangawhai	Tara Road, Mangawhai	Rural	Operational
Kaiwaka	Kaiwaka-Mangawhai Road	Rural	Operational

12.4 Operations and maintenance plan

Cemetery bookings and interments

- Cemetery bookings are managed by the Parks department. The booking service includes sales of plots, funeral bookings and invoicing. Payment for reserving a plot and the issuing of a receipt is handled by the Customer Service Centre;
- Customer Service Centre members answer basic enquires about cemetery services throughout the district. Enquires of a more complex nature are passed on to the Parks department;
- Bookings and arrangements for interments at cemeteries not managed by Council are made directly with those responsible for their operations; and
- Interments at Council cemeteries are arranged between family and undertaker, with this information supplied to the Parks department and then Council's Contractor.

Cemetery records

Council maintains records for all six cemeteries which it directly manages. These records are currently paper-based. There is no online database presently available to the public. Council's LTP 2018/2028 does not indicate any funding for electronic capture and storage of its burial records or information. Council's LTP does not make any provision for the development of an online database available to the public.

Planned operations and maintenance

Scheduled maintenance is identified by inspections of cemeteries and facilities by both Contractor and Council staff. Full condition assessments of all assets within cemeteries has not been undertaken on any infrastructure, such as roads, carparks, buildings, fences etcetera. These should be carried out every three years by internal staff. These internal assessments and reports would then indicate items of maintenance to be programmed and scheduled into planned workflows.

The degree of maintenance for each individual cemetery will depend on the age of the cemetery and the level of wear and tear. As noted in financial forecasts, items of work have been identified but not programmed.

Reactive maintenance

Reactive maintenance most frequently follows vandalism activities (graffiti, broken glass, damaged berms, vehicle damage), vegetation clearance such as broken or damaged tree branches, or a weather event where heavy rain has resulted in damage to the turf area. These issues are identified through regular inspections or tracked customer service requests (Council's Helpdesk).

Routine maintenance

Grounds maintenance and sexton duties at each of the six cemeteries managed by Council are included within the Maintenance Contract. Routine operations and maintenance at cemeteries includes grave-digging and filling, ground reinstatement, mowing, tree trimming, garden presentation, toilet cleaning and rubbish removal (Free and Available Litter). Due to the sensitive nature of Council's cemeteries and their importance to cultural and social well-being of the community turf, gardens and trees are maintained to a generally higher presentation standard than many of its reserves and open space areas. Council pays an annual grant towards maintenance of the Kaiwaka Cemetery and provides grounds maintenance at the Tara Road Cemetery, Mangawhai and RSA Cemetery, Maungaturoto.

Major maintenance

The need for major repairs is infrequent. Routine and planned maintenance activities ensure that major maintenance issues are a rarity.

12.5 Renewal plan

In 2013 Council undertook a review of its cemeteries and their projected operational lifespans, based on existing plots available. This has found that across its cemetery asset in the north-western area of the district, Council has sufficient burial plot numbers and available land for the next 10 years before further renewals and expansion are required.

What has not been determined is; of the remaining land available for renewal how much is suitable, what infrastructure is required, when should this be undertaken, what is the likely cost and are there any other parcels of land that should be looked at.

Council's cemeteries are all based in the north-western area of the district. Currently the southern and south-eastern areas of the district are serviced by cemetery facilities outside of Council. It is currently unknown what capacity there is within these facilities and what, if anything, is being looked at regarding future requirements.

No acquisitions of further cemetery land are proposed in this AMP however the requirement for further provision should not be lost sight of. This requirement might be carried forward as an item for consideration within a future LTP.

Provision for new burial plot strips will be required within Council's Mt Wesley Cemetery within the timeframe of this AMP. This has not been programmed or budgeted within Council's LTP 2018/2028.

Within Council's LTP there are no KPI's associated with cemeteries.

12.6 Expenditure forecasts

The funding of cemeteries is set down in Council's Revenue and Funding Policy. The current policy is for maintenance of cemeteries to be funded from General rate. At the time of purchasing a burial plot a maintenance fee forms part of the plot purchase, this fee covers initial short to medium term maintenance requirements after which maintenance is funded from the general rate. With Closed Cemeteries all maintenance activities are funded from the general rate. The rationale for this is that while such facilities may no longer be open and operational, there is considerable importance to family and relatives of those buried in the cemetery and considerable district-wide benefit in having these places.

No Capital expenditure is forecast over the next 10 years within Council's cemeteries asset. Operational expenditure is expected to remain at current levels with all operational and maintenance undertaken through Council's Maintenance Contract.

	2018/28 LTP Input 2018/19	2018/28 LTP Input 2019/20	2018/28 LTP Input 2020/21	2018/28 LTP Input 2021/22	2018/28 LTP Input 2022/23	2018/28 LTP Input 2023/24	2018/28 LTP Input 2024/25	2018/28 LTP Input 2025/26	2018/28 LTP Input 2026/27	2018/28 LTP Input 2027/28
Activity Costs - Mangawhai	**3,643**	**3,643**	**3,643**	**3,643**	**3,643**	**3,643**	**3,643**	**3,643**	**3,643**	**3,643**
1162048 - R&M Grounds Drains:Ce Mangaw h	3,643	3,643	3,643	3,643	3,643	3,643	3,643	3,643	3,643	3,643
Activity Costs - Tokatoka	**2,894**	**2,894**	**2,894**	**2,894**	**2,894**	**2,894**	**2,894**	**2,894**	**2,894**	**2,894**
2472048 - R&M Grounds Drains:Ce Tokatok	2,894	2,894	2,894	2,894	2,894	2,894	2,894	2,894	2,894	2,894
Activity Costs - Redhill	**11,000**	**11,000**	**11,000**	**11,000**	**11,000**	**11,000**	**11,000**	**11,000**	**11,000**	**11,000**
1252048 - R&M Grounds Drains:Ce Redhill	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000
Activity Costs - Mt Wesley	**55,500**	**55,500**	**55,500**	**55,500**	**55,500**	**55,500**	**55,500**	**55,500**	**55,500**	**55,500**
1532031 - R&M Buildings:Ce Mt Wesl	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
1532048 - R&M Grounds Drains:Ce Mt Wesl	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Activity Costs - Mt Wesley Old	**6,415**	**6,415**	**6,415**	**6,415**	**6,415**	**6,415**	**6,415**	**6,415**	**6,415**	**6,415**
2222048 - R&M Grounds Drains:Ce MtWes O	6,146	6,146	6,146	6,146	6,146	6,146	6,146	6,146	6,146	6,146
Activity Costs - District	**5,000**	**5,000**	**5,000**	**5,000**	**5,000**	**5,000**	**5,000**	**5,000**	**5,000**	**5,000**
2352002 - Grants Subs Donat:Ce Distric	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
2352048 - R&M Grounds Drains:Ce Distric	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Total	**$ 84,452**	**$ 84,452**	**$ 84,452**	**$ 84,452**	**$ 84,452**	**$ 84,452**	**$ 84,452**	**$ 84,452**	**$ 84,452**	**$ 84,452**

Fees and charges

Fees and charges for cemeteries are set out in Council's Schedule of Fees and Charges. The schedule is adopted on an annual basis as part of the Annual Plan process. Generally fees and charges have been adjusted by the rate of inflation only, however a review of fees and charges was carried out in 2013 which resulted in a rise in fees and charges to better reflect the LOS being provided and to ensure fees and charges covered Contractor's sexton duties.

Fees and charges are the same for all six cemeteries managed by Council.

12.7 Augmentation/disposal plan

Augmentation plans that create a new asset that did not previously exist (new cemetery) or augmentation that upgrades or improves the existing asset (new areas within existing cemetery) beyond what is currently available are a result of either growth or a change in LOS.

Council undertook a review of its fees and charges regarding cemeteries in 2013; part of this review was to determine:

- Current number of burial plots available within the existing allocated areas of each cemetery;
- Number of burials on average across all Council cemeteries;
- Number of burials per cemetery;
- Projected life of each existing cemetery;
- Current fees and charges in comparison to other districts; and
- Proposed fees and charges for 2014.

Based on the current burial rate for the district there is enough land available within the existing Council-managed cemeteries to meet the district's historical average rate for the next 10 years. No new cemeteries are required during the period of this AMP.

Burials per annum:

	2013/2014	2014/2015	2015/2016	2016/2017
Burials/Ash	44	58	46	49

Following the review it was found that based on burials per year and burial plots available the following lifespans exist for each cemetery:

Redhill Cemetery:

Taking the average number of burials (5.5) held at Redhill Cemetery per year and dividing it by the number of plots currently available (40), indicates that there are seven years of burial and ash plots available before further development is needed.

Note: This does not take into consideration the fact that many plots are reserved and could form part of those used for burials or disposal of ashes.

Redhill cemetery itself, while having seven years of plots available for sale and use, has within its current footprint enough suitable area to continue operations for 7-10 years beyond the current available plots indicated. What has not been recognised is the capital costs required to develop the area.

Arapohue Cemetery:

Arapohue has 31 plots available for sale/use. It has only had one burial in the last two years. This cemetery is some distance from Dargaville and while there are a number of plots still available and some room for expansion, there is little justification for any further development work. The cemetery is used only by the surrounding local community.

Mt Wesley Cemetery (Dargaville):

Mt Wesley has 9-10 years of existing plots available for sale. It has a further 13-14 years of plots available for development within the existing footprint. Further to the existing footprint, there is further room for development with Council owning an adjoining piece of land.

Mt Wesley RSA Cemetery (Dargaville):

Mt Wesley RSA has 70 ash plots and 74 burial plots available. Based on the number of burials held between 2011 and 2014 (average of four) this area has 18-19 years of plots available. Mt Wesley Cemetery has capacity for 20-plus years. Any new development of either cemetery should be looked at collectively and at the same time to provide the best outcome.

Old Mt Wesley and Tokatoka cemeteries were not part of the review of available plots as both are closed cemeteries with no new plots available for sale.

Disposal plan:

Councils are the main provider of cemeteries for burials and interment. There are a number of other cemetery facilities providers such as private, iwi or community operated, however it is generally seen that providing areas such as cemeteries is a function of local government. Disposal of the cemeteries asset is difficult with many closed cemeteries across New Zealand still managed and maintained by councils on behalf of their communities.

13 Green space

13.1 Summary

This section covers all green space, including gardens and street trees provided and managed by Council within the Kaipara district.

Council has a number of green space areas throughout the district which are specifically treated as space available for public use and enjoyment. They are located within all the district's communities in one form or another; they comprise parks, reserves, civic space, vacant land and esplanade. These areas are held and managed by Council in trust for the benefit and enjoyment of the public wider community. They are used for a number of different activities from passive recreation, non-organised sports activities, organised activities, picnics etcetera.

Council also has a number of gardens which are spread throughout the district. Many are informal groupings of perennial plants that provide attractive structure to an otherwise hard landscaped area while others are formalised annual plantings which provide blocks of seasonal colour and brighten up areas where the public can appreciate them. All require regular and ongoing levels of maintenance and management to ensure optimum results. Unlike hard infrastructural assets, green spaces require a different level of knowledge and approach to their asset management.

Council also has a large number of street trees that create a sense of place, shade and improve street appearance. They contribute significantly to the quality of life in the district, the health of the community and the sense of place for local residents.

There are a number of buildings and facilities on Council parks that have been developed by community or sporting groups and to maximise the opportunity to access non-Council funds there is often a need to provide security of tenure for these groups.

Green space can be subject to pressure for development from the public, the community may have conflicting views about how they should be developed or a sporting group may wish to develop a particular recreational facility that benefits a specific group. Some clubs and organisations own and operate their buildings on Council's green space areas. Appropriate lease/licence to occupy arrangements are in place for those situations. This AMP does not provide for those (non-Council) activities.

Most of Council's green space asset data is currently held within a number of different documents; however the last major stocktake of green space assets was undertaken with the development of Council's Reserves and Open Space Strategy (ROSS) adopted in 2006.

In addition, Council has compiled a register of all its reserve and open space land and has collected data on the condition of assets on these properties.

Council has indicated within the LTP that it wants reserves, open spaces and facilities to be provided to meet the current and future needs of local and wider district communities.

13.2 Overview of assets/service

The purpose of green space and gardens areas are:

- To provide open space venues for passive and active recreation;
- To provide access to rivers, lakes, streams and the coast;
- To provide a network of amenities such as playgrounds, public toilets, park furniture, street trees and street gardens;
- To protect, maintain and enhance an open space network and ecological systems;
- To provide neighbourhood reserves, sports fields, walkways, historic reserves and specific heritage sites;
- Health and well-being of the community and a sense of place for local residents; and
- To provide attractive landscaped areas that can be enjoyed and appreciated by the public in an appropriate, sustainable and affordable level.

The key issues that relate to green space and gardens:

- Acquiring linkages particularly to and along the coast;
- Suitability for current and future needs of the community;
- Perception of surplus capacity in some areas and under provision in other growth areas;
- Changing demographics;
- Managing noxious weeds;
- Community expectations versus, Council's ability to lift LOS particularly in growth areas such as Mangawhai;
- Achieving community consensus to any reserve development;
- Developing a hierarchy of gardens to determine the most cost-effective maintenance regime;
- Maintenance, location and extent of gardens that are affordable; and
- Ensuring gardens provide distinctive and desirable local character.

13.3 Asset description

The Reserves and Open Space Strategy 2006 has provided Council with a detailed GIS based mapped resource, classified and catalogued reserves along with Crown assets and landscape resources within the Kaipara district. It has also provided Council with information for development opportunities along with

management actions and opportunities to guide both short term and long term direction. This Strategy is also the core basis for better understanding Council's green space.

The green space asset will be further categorised as set out below as part of developing an Omnibus RMP:

Category	Asset
Priority/Premier	Reserves with individual RMPs and eligible for greater funding.
Significant/Key	Second highest priority reserves with individual RMPs
Neighbourhood	Local and community reserves
Rural	Located in rural areas and do not fall into other categories
Camp ground	Site of campgrounds
Mangawhai Harbour	Adjoin Mangawhai Harbour
Ripiro Beach	Adjoin Ripiro Beach

Council also manages, on behalf of the Dargaville Gardens Trust, the day-to-day operations and maintenance of the Taha Awa Riverside Garden, located off Totara Street, Dargaville. This high profile area has its own section within the Maintenance Contract as it is seen as an important asset to Dargaville and the wider Kaipara community. Developed over many years by the community and placed in the hands of the Trust to manage on their behalf, this garden's operational maintenance expenses are met within existing Council budgets and through Council's Maintenance Contract.

Locations and areas currently maintained are:

LOCALITY	PARKS		GARDENS		MOWING AREAS		Length of Mowing Height Spec (m)		
	Area (m2)	Number of	Area (m2)	Number of	Area (m2)	Number of	130	200	300
ARAPOHUE	40,352	1							
BAYLYS BEACH	3,156	2	1,248	4	3,156	2		4,345	
DARGAVILLE	442,720	24	7,112	55	218,704	37	6,096		36,021
GLINKS GULLY	551	1			138	1			1,225
KAIWAKA	11,959	7			4,325	4	439		3,489
KELLYS BAY	13,671	1			8,064	2			1,377
MANGAWHAI	334,898	31	3,128	24	89,515	21	4,705		24,307
MAUNGANUI BLUFF	866	1							
MAUNGARAHO	140,403	2			2,764	1			
MAUNGATUROTO	10,025	9	1,013	2	2,188	3	413		6,177
OMAMARI	13,769	1			8,597	2		756	
PAHI			133	2					
PAPAROA	12,429	2	181	2	10,478	3			7,025
RED HILL	7,227	1							
RUAWAI	54,284	8	158	2	38,771	5			4,263
TE KOPURU	41,981	2			38,737	3		298	5,187
TINOPAI	16,315	7	70	1	14,012	7			3,049
TOKATOKA	33,294	2			3,091	2			
WHAKAPIRAU	1,142	1			6,755	4			2,173
TOTAL	**1,179,040**	**103**	**13,043**	**92**	**449,297**	**97**	**11,653**	**5,400**	**94,292**

13.4 Condition assessment

In 2015/2016 condition assessment surveys were carried out on all assets located in green space that is included in the Maintenance Contract. All of these assets are included in the cemetery, playground, outdoor furniture and fittings, walkway, gardens or public toilet section of the AMP.

Council is improving its asset knowledge. Developing a hierarchy of gardens is a first step in the identification of maintenance and management requirements to ensure appropriate levels of maintenance is being applied. Included in any formal assessment of this asset is the need for an assessment of the Dargaville Riverside Gardens (Taha Awa). Council leases this open space area from Dargaville Gardens Trust and is responsible for all day-to-day maintenance through the Maintenance Contract. As one of the district's high profile Open Space areas its development and management is important to the district.

13.5 Operations and maintenance plan

Planned operations and maintenance

Operations covers the day-to-day running of the green space asset to achieve the agreed level of service e.g. mowing, edge control, weeding and litter removal.

Maintenance is what is required to keep the Reserves and Open Space assets in good working order such as replacing damaged equipment or repairing minor structures such as furniture, signs.

Maintenance falls into two broad categories as follows:

- Proactive - Proactive inspection and maintenance works planned to prevent asset failure; and
- Reactive - Reactive action to correct asset malfunctions and failures on an as required basis and particularly includes repairs and maintenance in response to vandalism activities.

Planned maintenance is generally for maintaining the integrity of surfaces (grassed areas) and gardens for the life of the asset. Green space ranges from small areas which are infrequently used by the public to large areas which are frequently used for both passive and organised recreation.

Council has made good progress on developing a more accurate schedule of gardens in the district and has included this in the Maintenance Contract as a number of variations. This data has been reviewed to develop a hierarchy of gardens (high, medium and low) and this hierarchy determines the level of maintenance required.

Planned maintenance is for maintaining the integrity of garden areas for the life of the asset. Garden areas range from CBD streetscapes; rose gardens, Council office gardens, bedding and gardens that are maintained and replaced up to four times a year to low maintenance gardens that have a life from 3-20 years depending on species and location.

Reactive maintenance

Reactive maintenance is generally in response to a customer enquiry, referrals, Contractor queries, complaints or during programmed inspections. It is either recorded through Council's Helpdesk system, which documents and tracks response times to the action identified, or through direct contact between Contractor and Council staff. Much of the reactive maintenance undertaken is in response to weather events (flooding and wind damage) surface damage and general vandalism.

Routine operations and maintenance

Routine maintenance includes regular inspection of green space areas by Contractor's staff. Routine maintenance is generally undertaken in accordance with set and defined levels of service from within the Maintenance Contract. A programme of maintenance is undertaken that includes mowing, spraying, litter removal (glass, paper) trimming and pruning of vegetation and fertilising where indicated. Depending on the type of reserve or open space and its use, this will determine how frequently these activities are undertaken. Currently there are seven different mowing specifications in place within Council's maintenance Contract ranging from standards for high profile areas (Type A) e.g. band rotunda area Victoria Street, Dargaville to large areas of unused green space not used by members of the public (Type F) e.g. Kaiwaka River access strips.

Outside of the Maintenance Contract routine maintenance also includes weed management. Expenditure on weed management is prioritising with the following criteria:

- The level of use by the public - weed control efforts will be focused on areas which are frequented by the public;
- Public concern - priority will be given to those sites which Council has received public complaints about; and
- Collaboration - priority will be given to those sites where opportunities exist for Council to collaborate with other agencies, individuals or the community to undertake weed control.

Major maintenance

Major planned maintenance needs to be undertaken infrequently however generally occurs following some failure of the ground surface (flooding) or compacting issues. Major work is planned at Mangawhai Domain to improve drainage to facilitate all-year round use by the community.

13.6 Renewal plan

"Minor" renewals are budgeted for. These are carried out through the Maintenance Contract based on condition assessment of assets and are currently based on liaison between Council staff and Contractors.

13.7 Expenditure forecasts

Annual capital expenditure of $100,000 is forecasted for the Reserves (Open Space) for development of each of the three Priority/Premier Parks in the LTP 2018/2028 to implement RMPs. These parks are Kai Iwi Lakes (Taharoa Domain), Mangawhai Community Park and Pou Tu Te Rangi Harding Park. Other capital expenditure forecasted is for community infrastructure projects to respond to either increased demand or projects identified in the Mangawhai Community Plan, Community Action Plans or RMPs.

Operational expenditure is expected to remain at current levels with all operational and maintenance undertaken through Council's Maintenance Contract.

	2018/28 LTP Input 2018/19	2018/28 LTP Input 2019/20	2018/28 LTP Input 2020/21	2018/28 LTP Input 2021/22	2018/28 LTP Input 2022/23	2018/28 LTP Input 2023/24	2018/28 LTP Input 2024/25	2018/28 LTP Input 2025/26	2018/28 LTP Input 2026/27	2018/28 LTP Input 2027/28
Activity Costs	**408,878**	**408,878**	**408,878**	**408,878**	**408,878**	**408,878**	**398,878**	**398,878**	**398,878**	**398,878**
1662007 - Insurance Premiums:PR District	900	900	900	900	900	900	900	900	900	900
1662009 - Consent Fees:PR District	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
1662027 - Arborist Services:PR District	24,932	24,932	24,932	24,932	24,932	24,932	24,932	24,932	24,932	24,932
1662028 - Planning Services:PR District	70,000	70,000	70,000	70,000	70,000	70,000	60,000	60,000	60,000	60,000
1662029 - Land Rates KDC:PR District	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
1662031 - R&M Buildings:PR District	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
1662040 - Management Services:PR District	31,427	31,427	31,427	31,427	31,427	31,427	31,427	31,427	31,427	31,427
1662041 - R&M Plant Equipment:PR District	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
1662043 - Water Supply:PR District	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1662048 - R&M Grounds Drains:PR District	235,000	235,000	235,000	235,000	235,000	235,000	235,000	235,000	235,000	235,000
1662074 - R&M Roads F/paths:PR District	13,619	13,619	13,619	13,619	13,619	13,619	13,619	13,619	13,619	13,619
Activity Costs	**172,469**	**177,469**	**182,469**	**187,469**	**192,469**	**192,469**	**192,469**	**192,469**	**192,469**	**192,469**
2092007 - Insurance Premiums:PR Taharoa	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
2092009 - Consent Fees:PR Taharoa	838	838	838	838	838	838	838	838	838	838
2092023 - Fuel and Oil:PR Taharoa	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
2092029 - Land Rates KDC:PR Taharoa	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
2092031 - R&M Buildings:PR Taharoa	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
2092033 - Telephone and Data:PR Taharoa	577	577	577	577	577	577	577	577	577	577
2092038 - Staff Train Trvl Accom:PR Taharoa	1,579	1,579	1,579	1,579	1,579	1,579	1,579	1,579	1,579	1,579
2092040 - Management Services:PR Taharoa	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
2092041 - R&M Plant Equipment:PR Taharoa	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
2092044 - Advertising:PR Taharoa	3,561	3,561	3,561	3,561	3,561	3,561	3,561	3,561	3,561	3,561
2092048 - R&M Grounds Drains:PR Taharoa	125,000	130,000	135,000	140,000	145,000	145,000	145,000	145,000	145,000	145,000
2092055 - Legal Services:PR Taharoa	1,414	1,414	1,414	1,414	1,414	1,414	1,414	1,414	1,414	1,414
Activity Costs	**176,028**	**213,028**	**213,028**	**214,028**	**215,028**	**215,028**	**215,028**	**215,028**	**215,028**	**215,028**
1942007 - Insurance Premiums:PR Mangaw h	528	528	528	528	528	528	528	528	528	528
1942009 - Consent Fees:PR Mangaw h	500	500	500	500	500	500	500	500	500	500
1942029 - Land Rates KDC:PR Mangaw h	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000	21,000
1942031 - R&M Buildings:PR Mangaw h	7,000	8,000	8,000	9,000	10,000	10,000	10,000	10,000	10,000	10,000
1942048 - R&M Grounds Drains:PR Mangaw h	147,000	183,000	183,000	183,000	183,000	183,000	183,000	183,000	183,000	183,000
Activity Costs	**29,000**	**30,000**	**31,000**	**31,000**	**31,000**	**32,000**	**32,000**	**32,000**	**32,000**	**32,000**
2402048 - R&M Grounds Drains:PR Harding	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000
2402074 - R&M Roads F/paths:PR Harding	4,000	5,000	6,000	6,000	6,000	7,000	7,000	7,000	7,000	7,000
Activity Costs	**300,677**	**300,677**	**300,677**	**300,677**	**300,677**	**300,677**	**300,677**	**300,677**	**300,677**	**300,677**
2492007 - Insurance Premiums:PR Dargav	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000
2492029 - Land Rates KDC:PR Dargav	28,500	28,500	28,500	28,500	28,500	28,500	28,500	28,500	28,500	28,500
2492031 - R&M Buildings:PR Dargav	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
2492041 - R&M Plant Equipment:PR Dargav	8,381	8,381	8,381	8,381	8,381	8,381	8,381	8,381	8,381	8,381
2492043 - Water Supply:PR Dargav	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500
2492048 - R&M Grounds Drains:PR Dargav	230,000	230,000	230,000	230,000	230,000	230,000	230,000	230,000	230,000	230,000
2492053 - Electricity Supply:PR Dargav	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
2492074 - R&M Roads F/paths:PR Dargav	2,096	2,096	2,096	2,096	2,096	2,096	2,096	2,096	2,096	2,096
Total	**$ 1,087,052**	**$ 1,130,052**	**$ 1,136,052**	**$ 1,142,052**	**$ 1,148,052**	**$ 1,149,052**	**$ 1,139,052**	**$ 1,139,052**	**$ 1,139,052**	**$ 1,139,052**

13.8 Augmentation/disposal plan

Some green space areas are under-utilised or only used seasonally for organised events such as sports. This is particularly so in the Dargaville area, where there are two separate green space areas, each having been developed and maintained as sports fields historically.

Memorial/Rugby Park has been identified as the preferred location to develop a centrally located multi-sport precinct in Dargaville. This would require netball and tennis being relocated to Memorial Park and fit-for-purpose facilities being developed for new and current users. The Kauri Coast Recreation Society has developed Stage 1 of the sports precinct and Council is contributed towards the provision of changing rooms.

Council will continue to acquire reserve land to enhance linkages particularly to and along the coast. This may require negotiating access as part of development opportunities.

Council has a number of leases and Licences to Occupy for green space in place with various organisations and groups. Some groups occupy Council land “at Council’s pleasure”. These arrangements should be investigated and new management and tenancy agreements looked at to align with Council’s Community Assistance Policy.

14 Walkways

14.1 Summary

This section covers all walkways provided and managed by Council within its reserves and open space areas. Council owns and manages many reserves and esplanade reserves that have walkways on them and/or connect between them. These have historically been developed through subdivision requirements or through public interest with community groups undertaking informal development, while others have been developed or enhanced as a result of RMPs. The walkways are used to assess areas that otherwise the community and the public would not be able to get to, such as coastal areas or bush reserves. They are generally associated with points of interest.

Increasing demand nationally for quality walkways has led to many councils undertaking projects to improve and upgrade walkways which encourages and promotes more use by locals and visitors to the district, such as Mangawhai's Walking Weekend now a nationally known event. As demographics and lifestyles change, passive recreation such as walking is becoming increasing popular and areas with walkways that facilitate this activity are sought after. To manage this increased demand Council has adopted a Walking and Cycling Strategy.

Very few walkways have been captured for maintenance within Council's Maintenance Contract and the contract provides a minimum LOS and is generally reactive in nature. Improving routine maintenance has been included in the Improvement Plan.

The total number, type, length and condition of this asset is unknown. The detail on what community groups may have an interest in these walkways is unknown.

Data collection and asset condition assessments are vital to provide information that Council staff need to make asset maintenance and renewal decisions regarding the asset now and long term. Improving asset knowledge is included in the AMIP.

14.2 Overview of assets/service

The purpose of walkways is:

- to provide access to coastal foreshore areas, reserves and areas of interest;
- provide passive and active recreational opportunities; and
- for the health and well-being of the community.

The key issues facing Council in relation to walkways are:

- including Council owned and maintained walkways into a maintenance contract;
- inspections and condition assessments of walkway surfaces (PRAMS);

- standardisation of design and materials for walkway maintenance;
- safety standards (Tracks and Outdoor Visitor Structures SNZ HB 8630:2004);
- the challenges of maintaining a range of assets built within different environments;
- increasing demand by user groups versus service levels; and
- data information (location, type, length).

14.3 Asset description

Walkways will be classified in the following main categories based on SNZ HB 8630:2004 – Tracks and Outdoor Structures. The classification will generally set the standards for formation, maximum grade, surface and width, structures and vegetation clearance based on the needs of visitors.

Council has a number of walkways. The majority are located in the south-eastern area of the district (Mangawhai). The list below includes all Council maintained walkways.

Town	Location	Approximate length
Baylys Beach	Sunset Drive to Seaview Road *(Beach End)*	173.80
Baylys Beach	Sunset Drive to Seaview Road *(Top of Hill)*	62.90
Dargaville	Pou Tu Te Rangi/Harding Park *(Museum to Roadway)*	81.30
Dargaville	Pou Tu Te Rangi/Harding Park *(Section under Museum)*	145.50
Dargaville	Pou Tu Te Rangi/Harding Park *(Roadway to Cemetery)*	80.00
Dargaville	Pou Tu Te Rangi/Harding Park *(Through Cemetery to Pa)*	267.70
Dargaville	Pou Tu Te Rangi/Harding Park *(Through Pa to Roadway)*	200.20
Dargaville	Pou Tu Te Rangi/Harding Park *(Old Golf Course Road to Harding)*	36.70
Dargaville	Pou Tu Te Rangi/Harding Park *(Park Road to Harding Park)*	97.20
Dargaville	Memorial Park Bush Walk	186.00
Aropohue	Maungaraho Rock	835.80
Aropohue	Maungaraho Rock	242.50
Maungaturoto	Maungaturoto Community Hall to Bickerstaffe Road	75.00
Kaiwaka	Kaiwaka Rest Area to S.H 1	137.50
Kaiwaka	Kaiwaka Township East to Kaiwaka Township West *(Underpass)*	54.20
Kaiwaka	Marshall Road to State Highway 1	78.00

Town	Location	Approximate length
Mangawhai	Mangawhai Heads Reserve	86.20
Mangawhai	Mangawhai Heads Reserve	46.50
Mangawhai	Mangawhai Heads Reserve	24.20
Mangawhai	Mangawhai Heads Reserve	146.40
Mangawhai	Mangawhai Heads Reserve	53.10
Mangawhai	Mangawhai Heads Reserve	75.00
Mangawhai	Wintle Street Beach Access	69.40
Mangawhai	Wintle Street Beach Access	74.50
Mangawhai	Olsen to Alamar	54.20
Mangawhai	Harbourview to Alamar	200.50
Mangawhai	Wharfedale to Track 13	64.20
Mangawhai	Esplanade to Sellars Reserve	73.70
Mangawhai	Robert Street to Esplanade	92.90
Mangawhai	Robert Street to Esplanade	50.90
Mangawhai	Robert Street Esplanade to Beach	99.20
Mangawhai	Robert Street to Esplanade	198.00
Mangawhai	Track 19 to Beach	54.30
Mangawhai	Findlay Street to Track 18	69.10
Mangawhai	Awatea Street to Track 20	157.00
Mangawhai	Eveline Street to Beach	135.50
Mangawhai	Eveline Street to Heather Street	115.10
Mangawhai	Heather Street to Beach	126.50
Mangawhai	Breve Street to Beach	116.20
Mangawhai	Cheviot Street to Beach	173.20
Mangawhai	Devon Street to Cheviot Street	106.10
Mangawhai	Cheviot Street to Lincoln Street	133.00
Mangawhai	Cheviot Street to Lower Lincoln Street	149.70
Mangawhai	Lincoln Street to Esplanade	73.10
Mangawhai	Dune View Drive to Esplanade	82.30

Town	Location	Approximate length
Total Length		**5,654.30**

14.4 Condition assessment

Council has collected 99% of Walkways Condition data. Mangawhai data is 100% collected as it has been collected and is forming part of the Mangawhai Community Plan. Undertaking a condition assessment using PRAMS condition grading standards on the known asset stock is the first step in the identification of maintenance requirements.

14.5 Operations and maintenance plan

Planned operations and maintenance

Planned maintenance is generally for maintaining the integrity of the walkway surface (grass, gravel) for the life of the asset. Walkways range from frequently used high volume (Mangawhai foreshore) to infrequently used (Whenuanui Reserve) for mainly passive recreation, however as with Mangawhai, annual organised walking weekends add wear to an otherwise low level of service asset.

Maintenance of all walkways listed above will be included in the re-tendered parks maintenance contract including a specification for edge control and vegetation clearance.

Council has also entered into Contracts for Service with a number of community organisations e.g. the Baylys Beach Improvement Society to provide for maintenance of walkways. Council plans to negotiate a Memorandum of Understanding (MoU) with the Mangawhai Tracks Trust to agree what Council tracks they will be responsible for maintaining.

Reactive maintenance

Reactive maintenance is generally in response to a customer enquiry, referrals, Contractor queries, complaints or during programmed inspections and is either recorded through Council's Helpdesk system, which documents and tracks response times to the action identified, or through direct contact between Contractor and Council staff. Much of the reactive maintenance undertaken is in response to weather events (water damage) surface damage and vegetation control.

Routine operations and maintenance

Routine maintenance includes regular inspection of walkways by Contractor staff. Routine maintenance is generally undertaken in accordance with set and defined LOS from within the Maintenance Contract. A programme of maintenance needs to be developed by the contractor that includes mowing, spraying, trimming and pruning of vegetation where indicated. The frequency by which activities are undertaken depends on its location to open space areas.

Major maintenance

Major planned maintenance is undertaken infrequently. Generally maintenance occurs following some failure of the ground surface (storm event) or as a result of public concern for safety on the walkway.

14.6 Renewal plan

Renewals are not budgeted for. 'Minor works' are carried out through the Maintenance Contract and are currently based on liaison between Council staff and Contractors.

As the walkways asset continues to age, investment in renewal is required in order to maintain current levels. Council is undertaking a review of the asset to determine maintenance requirements for its existing walkways, this work will be undertaken as part of its Data Capture and Condition Assessment programme highlighted in the Improvement Plan and Monitoring section of the AMP.

14.7 Expenditure forecasts

There are a number of new walkways planned in the LTP 2018/2028.

Budgets for ongoing operations and maintenance are undertaken within general Reserves and Open Space budgets and carried out through Council's Maintenance Contract.

14.8 Augmentation/disposal plan

Council has signalled in the LTP 2018/2028 its intent to progress the projects identified in the RMP for Mangawhai Coastal and Harbour Reserves, Mangawhai Community Plan, Kai Iwi Lakes (Taharoa Domain) and Pou Tu Te Rangi Harding Park. This will include the development of a number of walkways.

15 Coastal structures

15.1 Summary

This section covers all coastal structures provided and managed by Council within the Kaipara district.

Due to the long coastline and two large harbour areas the Council has a significant number of coastal structures which are spread throughout the district. Having access to the coast and harbours is important to the residents of the district. Having safe and consented structures to facilitate this access is an issue for the district.

Some assets such as seawalls and groynes are provided for coastal protection reasons.

The key issues for the coastal structures activity over the coming years are:

- Growth throughout the district and the need to meet the demand for public access to and along the coast for recreational use;
- The demand for urban development along or near the coast;
- The likely increase of coastal erosion and the predicted adverse effects of climate change;
- Providing maintenance at a cost affordable to the community; and
- Ensuring coastal structures have resource consents which we consistently meet.

15.2 Overview of assets/service

This activity comprises the provision and maintenance of wharves and jetties as well as the navigational aids, boat ramps, road access and parking to provide safe access to significant parts of the district coastal facilities for recreation and commercial users. The provision of some of the structures for coastal protection also forms part of this activity.

15.3 Asset description

Council has improving knowledge of coastal structure assets that it is responsible for. In 2014 a condition assessment survey was undertaken of all coastal structures in the Kaipara district. Included in this survey were private, community-owned and Council assets.

This information has been further refined and in the table below are the coastal structures that Council is responsible for.

The condition assessment survey results are located here.

Summary of Coastal Structures						
Condition		**1**	**2**	**3**	**4**	**5**
Type						
Boat Ramp	5		3	2		
Groynes	4			3	1	
Impact Piles	1			1		
Wall	25	1	6	15	3	
Wharf	3	1		1		1
Total	**38**	**2**	**9**	**22**	**4**	**1**
1 - V.Good 5 - Unserviceable						

15.4 Condition assessment

Council is improving its asset knowledge and a review of the 2014 survey has been undertaken. The majority of assets area Condition 3 (22) with a few Condition 4 (4) and one Condition 5 (1) – Asset Unserviceable being Tikinui wharf. Although a wharf would normally be a high risk this one is no longer used by the public and public access is restricted. The condition assessment approach is core and no breakdown of the elements of the structure have been considered. It is considered that this approach is suitable.

Planned operations and maintenance

There is very little planned maintenance of coastal structures. Some work may be undertaken at the end of the financial year if there are some surplus funds. Community priorities are also identified as part of the Community Action Plans. Over the next five years the focus will be on improving knowledge and developing a programme for maintenance of seawalls.

Reactive maintenance

Reactive maintenance is generally in response to a customer enquiry, referrals, Contractor queries or complaints and is recorded through Council's Helpdesk system which documents and tracks response times to the action identified. Much of the reactive maintenance undertaken is in response to weather events (clearing of debris and reinstating damaged areas).

Routine operations and maintenance

There is no routine maintenance or regular inspection of coastal structures by Contractor's staff.

Major maintenance

Major planned maintenance needs to be undertaken infrequently but generally occurs in partnership with a community group who have indicated they wish to improve a facility. This approach means that Council needs to have some flexibility to be able to respond to a community partnership.

Funding is set aside in year 4 and year 5 of the LTP to undertake major maintenance.

Council does plan to improve the Dargaville wharf. Currently, this wharf is not suitable for disembarking passengers from a vessel at all tides. For this reason the installation of a pontoon and ramp is being investigated.

15.5 Renewal plan

There is no renewal expenditure forecast in the 10 year budget for the coastal structures asset.

15.6 Expenditure forecasts

Council's coastal structure asset does not have its own expenditure forecasts. Historically expenditure has been grouped within general maintenance and operational budgets for Reserves and Open Space. As a result Council does not fully know or understand what the asset is or what is spent on this asset group.

15.7 Augmentation/disposal plan

The improvements planned for the Dargaville Wharf are funded from the Community Development budget and is not a direct cost to the Reserves and Open Space activity.

There are plans to dispose of the Tikinui wharf.

16 Camp grounds

16.1 Summary

This section covers the Kai Iwi camp grounds of Pine Beach and Promenade Point only as this is the only camp ground actively managed by Council within the Kaipara district.

Council also has a number of community-run camp grounds on Council-owned land. The Improvement Plan includes a work stream to improve knowledge of these assets.

16.2 Overview of assets/service

The purpose of the camp ground asset is similar to green space:

To provide attractive landscaped areas that can be enjoyed and appreciated by the public in an appropriate, sustainable and affordable level and to enhance and consider ecological opportunities within the Reserves and Open Space environment.

16.3 Camp ground description

Camp ground data is currently being collated. Preliminary data is:

Town	Asset Group	Asset Group Name	Asset Component	Asset Description	Material	Condition	Notes	Quantity	Measure	Unit Rate	Total Price
Kai Iwi Lakes	Camp Ground	Pine Beach	Boardwalk	Boardwalks down to beach	Wooden	Excelent		4	each	4000	16000
Kai Iwi Lakes	Camp Ground	Pine Beach	Gates	Security gates	Steel	Excelent		1	each	2000	2000
Kai Iwi Lakes	Camp Ground	Pine Beach	Bollards	Bollards for car park	Wooden	Excelent		211	each	100	21100
Kai Iwi Lakes	Camp Ground	Pine Beach	Fencing	General fencing		Good					0
Kai Iwi Lakes	Camp Ground	Pine Beach	Water Supply	For camp ground supply	Timber	Good		1	each	5000	5000
Kai Iwi Lakes	Camp Ground	Pine Beach	Water Supply	For camp ground supply	Concrete	Good		1		5000	5000
Kai Iwi Lakes	Camp Ground	Pine Beach	Furniture	Picnic tables	Concrete	Good		5	each	1500	7500
Kai Iwi Lakes	Camp Ground	Pine Beach	Wastewater	Effluent chambers	Plastic	Very good		1	each	5000	5000
Kai Iwi Lakes	Camp Ground	Pine Beach	Wastewater	Pumps		Unknown		1	each	500	500
Kai Iwi Lakes	Camp Ground	Pine Beach	Wastewater	Controls	Electrical	Good		1	each	1000	1000
Kai Iwi Lakes	Camp Ground	Pine Beach	Wastewater	Electrical		Excelent		1	each	1000	1000
Kai Iwi Lakes	Camp Ground	Pine Beach	Wastewater	Pipework		Unknown		1	each	2000	2000
Kai Iwi Lakes	Camp Ground	Pine Beach	Water Supply	Pump		Very good		1	each	500	500
Kai Iwi Lakes	Camp Ground	Pine Beach	Water Supply	Electrical		Unknown		1	each	1000	1000
Kai Iwi Lakes	Camp Ground	Pine Beach	Water Supply	Pipework		Excelent		1	each	2000	2000
Kai Iwi Lakes	Camp Ground	Pine Beach	Hard Surface	Entrance road	Sealed	Very good		1200	m2	35	42000
Kai Iwi Lakes	Camp Ground	Pine Beach	Hard Surface	Internal roads	Metaled	Very good		500	m2	15	7500
Kai Iwi Lakes	Camp Ground	Pine Beach	Buildings	Office	Timber	poor		1	each	40000	40000
Kai Iwi Lakes	Camp Ground	Pine Beach	Wastewater	Pump Shed	Concrete Block	Excelent		1	each	1000	1000
Kai Iwi Lakes	Camp Ground	Pine Beach	Wastewater	Control Shed	Concrete Block	Excelent		1	each	2000	2000
Kai Iwi Lakes	Camp Ground	Pine Beach	Signs	Information Board				1	each	500	500
Kai Iwi Lakes	Camp Ground	Pine Beach	Stormwater	Pipes, cess pits, grates	concrete	Very good					20000
Kai Iwi Lakes	Camp Ground	Pine Beach	Signs	Information Board	Aluminion	Good		5	each	1200	6000
Kai Iwi Lakes	Camp Ground	Promanade Point	Water Supply	Tank	Concrete	Good		1	each	5000	5000
											$ 193,600

16.4 Condition assessment

Condition data is provided above.

16.5 Operations and maintenance plan

Planned maintenance is generally for maintaining the buildings, tracks, car parks, accessways, wastewater systems, water systems and boat ramps.

Maintenance of all walkways listed above will be included in the re-tendered parks maintenance contract including a specification for edge control and vegetation clearance.

Council has also entered into Contracts for Service with a number of community organisations e.g. the Baylys Beach Improvement Society to provide for maintenance of walkways. Council plans to negotiate an MoU with the Mangawhai Tracks Trust to agree what Council tracks they will be responsible for maintaining.

Reactive maintenance

Reactive maintenance is generally in response to a customer enquiry, referrals, Contractor queries, complaints or during programmed inspections and is either recorded through Council's Helpdesk system, which documents and tracks response times to the action identified, or through direct contact between Contractor and Council staff. Much of the reactive maintenance undertaken is in response to weather events (water damage) surface damage and vegetation control.

Routine operations and maintenance

Routine maintenance includes regular inspection of walkways by Contractor staff. Routine maintenance is generally undertaken in accordance with set and defined LOS from within the Maintenance Contract. A programme of maintenance needs to be developed by the contractor that includes mowing, spraying, trimming and pruning of vegetation where indicated. The frequency by which activities are undertaken depends on its location to green space areas.

Major maintenance

The need for major repairs is infrequent. Routine and planned maintenance activities ensure that major maintenance issues are a rarity.

16.6 Renewal plan

There is no renewals expenditure forecast in the budget for the camp ground asset.

16.7 Expenditure forecasts

Below are the expenditure forecasts for the next 10 years.

	2018/28 LTP Input 2018/19	2018/28 LTP Input 2019/20	2018/28 LTP Input 2020/21	2018/28 LTP Input 2021/22	2018/28 LTP Input 2022/23	2018/28 LTP Input 2023/24	2018/28 LTP Input 2024/25	2018/28 LTP Input 2025/26	2018/28 LTP Input 2026/27	2018/28 LTP Input 2027/28
Activity Costs - Kai Iwi	**213,981**	**214,481**	**214,481**	**214,481**	**214,481**	**214,377**	**214,377**	**214,377**	**214,377**	**214,377**
1002001 - Cleaning Costs:CG Kai	0	0	0	0	0	0	0	0	0	0
1002004 - Bank Fees Charges:CG Kai	14,155	14,155	14,155	14,155	14,155	14,155	14,155	14,155	14,155	14,155
1002007 - Insurance Premiums:CG Kai	2,881	2,881	2,881	2,881	2,881	2,881	2,881	2,881	2,881	2,881
1002023 - Fuel and Oil:CG Kai	7,859	7,859	7,859	7,859	7,859	7,859	7,859	7,859	7,859	7,859
1002031 - R&M Buildings:CG Kai	26,500	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000
1002033 - Telephone and Data:CG Kai	2,200	2,200	2,200	2,200	2,200	2,096	2,096	2,096	2,096	2,096
1002040 - Management Services:CG Kai	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000
1002041 - R&M Plant Equipment:CG Kai	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
1002044 - Advertising:CG Kai	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000
1002048 - R&M Grounds Drains:CG Kai	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000	42,000
1002053 - Electricity Supply:CG Kai	8,386	8,386	8,386	8,386	8,386	8,386	8,386	8,386	8,386	8,386
1002059 - Refuse Collect Cost:CG Kai	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
1002076 - Cost of Sales:CG Kai	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Activity Costs - Tinopai	**7,700**	**7,700**	**7,700**	**7,700**	**7,700**	**7,700**	**7,700**	**7,700**	**7,700**	**7,700**
1132007 - Insurance Premiums:CG Tinopai	300	300	300	300	300	300	300	300	300	300
1132009 - Consent Fees:CG Tinopai	400	400	400	400	400	400	400	400	400	400
1132048 - R&M Grounds Drains:CG Tinopai	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000
Activity Costs - Pahi	**6,143**	**6,143**	**6,143**	**6,143**	**6,143**	**6,143**	**6,143**	**6,143**	**6,143**	**6,143**
1152007 - Insurance Premiums:CG Pahi	0	0	0	0	0	0	0	0	0	0
1152009 - Consent Fees:CG Pahi	500	500	500	500	500	500	500	500	500	500
1152025 - R&M Sewage Disposal:CG Pahi	3,143	3,143	3,143	3,143	3,143	3,143	3,143	3,143	3,143	3,143
1152029 - Land Rates KDC:CG Pahi	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Activity Costs	**4,516**	**4,516**	**4,516**	**4,516**	**4,516**	**4,516**	**4,516**	**4,516**	**4,516**	**4,516**
2252007 - Insurance Premiums:CG Kopuru	500	500	500	500	500	500	500	500	500	500
2252009 - Consent Fees:CG Kopuru	500	500	500	500	500	500	500	500	500	500
2252029 - Land Rates KDC:CG Kopuru	900	900	900	900	900	900	900	900	900	900
2252031 - R&M Buildings:CG Kopuru	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
2252053 - Electricity Supply:CG Kopuru	1,616	1,616	1,616	1,616	1,616	1,616	1,616	1,616	1,616	1,616
Total	**$ 232,340**	**$ 232,840**	**$ 232,840**	**$ 232,840**	**$ 232,840**	**$ 232,736**	**$ 232,736**	**$ 232,736**	**$ 232,736**	**$ 232,736**

16.8 Augmentation/disposal plan

The Kai Iwi Lakes (Taharoa Domain) RMP proposes considerable development of the camp ground over the next 10 years that includes office upgrade, night manager's accommodation, additional toilets, water supply upgrade, power upgrade, cabins, and campervan dump station and waste disposal facilities.