Rev 2 | June | 2021

KAIPARA DISTRICT

Kaipara te Oranganui • Two Oceans Two Harbours

KAIPARA INFRASTRUCTURE STRATEGY

Contents

Significant Projects

Timeline

Programme

Projects

	Infrastucture Resilience & Renewals	Northland to Auckland Corridor	North Kaipara Agricultural Delta	Ancient Kauri Coast
2021 - 2023	Mangawhai Community Park	Maungaturoto & Kaiwaka water supply & wastewater upgrades	Township improvement plan Roads and bridges	Kaihu Rail Trail
	NRC & KDC service centre in Dargaville	Extend reticulation system	Extend reticulation system	Road safety upgrades Hokianga Road upgrade Kaipara wharves
	Dargaville Library	Extend reticulation system		
		Integrated catchment management plans for the key urban towns		
		Cove Road improvements		
		Mangawhai shared path		
2024 - 2026	Mangawhai Library	Drinking water supply	Te Kopuru water storage project	Dargaville Museum to Waterfront Trail Link
		Wood Street upgrade Maungaturoto intersection upgrades	Dargaville & Ruawai stopbank renewal	Ancient Kauri Coast Dargaville to Maungatoroto Heartland
		Mangawhai treatment plant upgrade Sludge reuse system		
2027 - 2030			Plastic Recycling	Ancient Kauri Coast Maungatoroto to Mangawhai
2030 - 2040				

KEY: ASSET TYPES

Transport | Water | Wastewater | Solid Waste | Community Facilities | Parks & Open spaces | Flood protection & Land drainage

Executive Summary

Since the previous census in 2013, Kaipara District has become New Zealand's fourth fastest growing District. This rapid growth has been driven primarily in the key urban towns of Dargaville, Maungatūroto, Kaiwaka and Mangawhai. This growth has prompted the Council to progress several Spatial Plans for these key urban areas and a Sub-regional Spatial Plan to stitch all of Kaipara's towns, villages and settlements together and show how they could sustainably develop and grow over the next 30 years. This Infrastructure Strategy is essentially all the structures, systems and Kaipara's infrastructure – its roads, water, wastewater, stormwater, solid waste, open spaces, and flood protection – are its backbone, making it easy to live in functional and connected communities, and support the vision to 'Grow a better Kaipara'.

Kaipara District has become New Zealand's fourth fastest growing District.

This infrastructure strategy provides a response to

- Kaipara's projected population growth over the next 30 years which is being accelerated in the east through its proximity to Auckland. Council's infrastructure will play a key role in facilitating the growth and aspirations identified in Ngā Wawata the Kaipara District Spatial Plan.
- Economic changes, particularly in agriculture and manufacturing are the main drivers of Kaipara's economy and have seen continual growth over recent years. Suitable infrastructure is needed to support the expansion of these industries, including flood protection, water supply and reliable transport links to get goods to market.
- Tourism is becoming increasingly important, particularly with increased focus on domestic tourism and the proximity of Auckland. The west coast only attracts 10% of Tai Tokerau tourism and there is an opportunity for the community to participate in the benefits of tourism whilst minimizing the impact on the environment.
- **Climate change** and sea level rise as this will increase the frequency and severity of extreme weather events in Kaipara, including flooding and coastal inundation, but also drought.
- **Regionally significant infrastructure projects** will have an influence on future development patterns in the Kaipara District and the local infrastructure needed to support this development.

The Infrastructure Strategy is targeted at key challenges faced in the District

- Aging infrastructure
- Meeting customer expectations and legislative requirements
- Providing for resilience
- Funding infrastructure for growth
- Minimising waste in a rural district

Four pillars have been established which direct and influence our strategy. The basis of these is in the four well-beings – social, cultural, environmental and economic. The third pillar (Te Aranga Principles) relates to how the Council seeks to fulfil its Treaty partnership obligations in its activity programmes and also its partnership / mana enhancing agreements with Iwi and Hapu.

Nga Pou e Wha – the four pillars of:

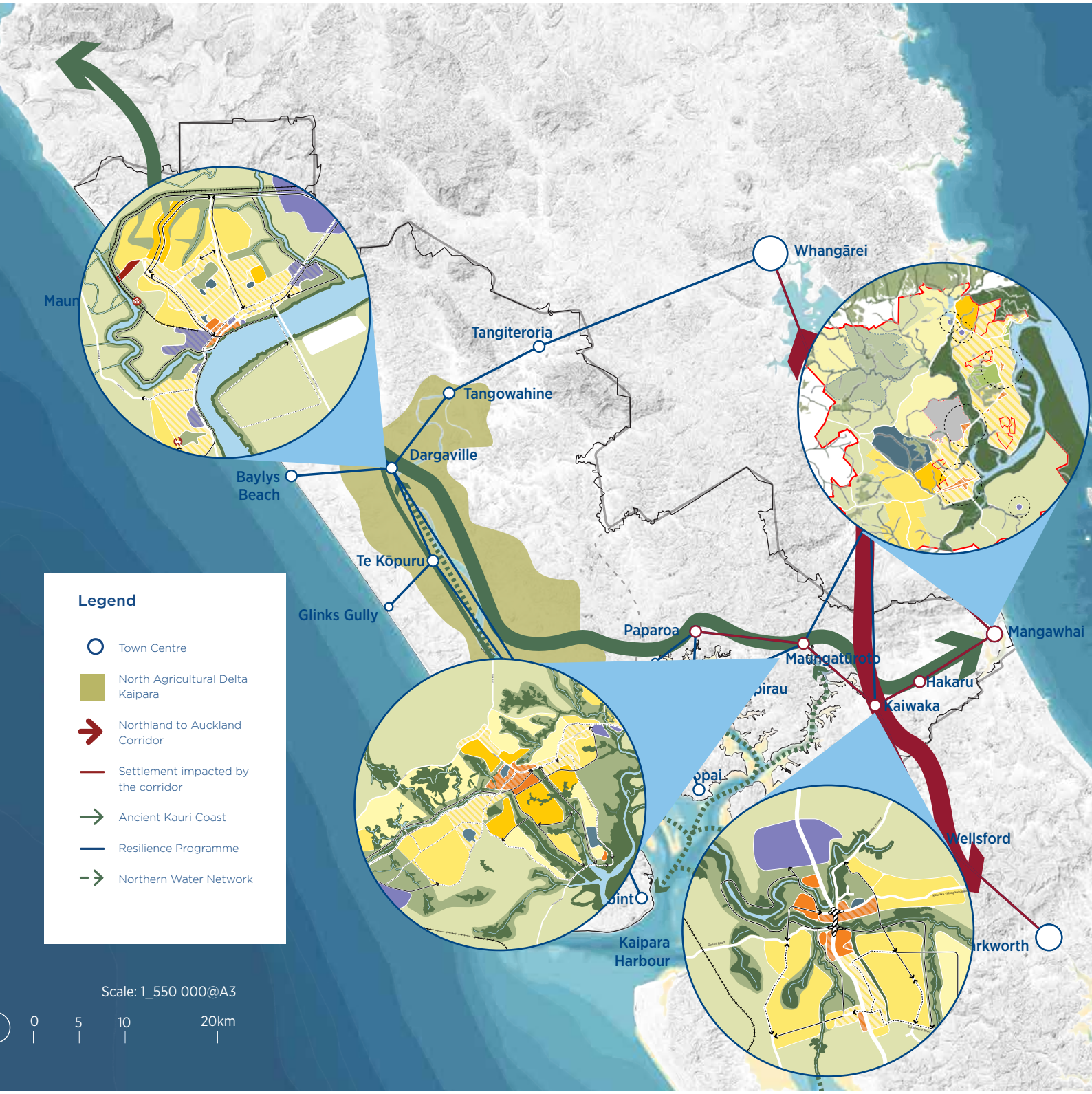
- Customer-centric design
- Circular economy
- Te Aranga design principles
- Managing demand

Spatial planning

An integrated spatial – infrastructure planning exercise has been undertaken across the entire Kaipara District. This includes spatial plans for key urban centres which identifies the key infrastructure requirements.

The Infrastructure Strategy incorporates this planning work and the investment signalled gives effect to the desired spatial outcomes.

Infrastructure Programme



Kaipara District Council, through this Strategy, is responding to these issues through four key programmes;

Northland to Auckland Corridor

The Northland to Auckland Corridor is a big picture spatial planning exercise which looks at how to manage the expected urban growth along the corridor from Northland to Auckland, including how housing and development will be located around core transport links. This project stems from significant upgrades to the North Auckland Rail line, the Puhoi to Warkworth motorway extension, four-laning of the State Highway from Whangārei south to the Port Marsden turnoff, the growing importance of NorthPort and the strong growth pressures being experienced in the Warkworth, Kaiwaka/Mangawhai, Maungatūroto and Waipu areas.

SIGNIFICANT PROJECTS:

1. **Maungatūroto Growth** (Spatial Plan)
2. **Kaiwaka Growth** (Spatial Plan)
3. **Mangawhai Growth** (Spatial Plan)
4. **Water reticulation** in Kaiwaka
5. **Water Supply** for Mangawhai and possible reticulation
6. **Wastewater** treatment plant upgrades at Mangawhai
7. **Tourism Infrastructure** Projects for select communities
8. **Waste minimisation** (washing, shredding, recycling)

North Kaipara Agricultural Delta

The North Kaipara Agricultural Delta programme seeks to protect highly productive land through increased stopbank protection. This would enable high value horticulture conversions where there is a reliable water source or via the Te Tai Tokerau Water Trust water storage project. This in turn creates demand for the creation of new zoning in Dargaville to allow for businesses associated with processing and value add products. This programme aligns with Council's Adaptive Pathways Planning for Climate Change, the Kaipara Kai project and the Te Tai Tokerau Water Trust.

SIGNIFICANT PROJECTS:

1. Implementing **climate change** adaptation programme
2. Improvements to **stopbanks** – Te Kopuru to Dargaville, Dargaville – Awakino Point East and Raupo
3. Upgrade and repair key **transport** structures to meet High productivity Vehicle requirements e.g. the Kaiwaka-Mangawhai Bridge
4. Work with NZTA to **upgrade detour routes** alongside the SH1 corridor
5. Improving **water security** for communities
6. Extension of **waste** scheme in Dargaville

Ancient Kauri Coast

The Ancient Kauri Coast route was developed to promote travelers to seek out an alternative to the established SH 1 tourism route. The extended Ancient Kauri Coast includes the Brynderwyns and Mangawhai and traverses through many of Kaipara's historic villages and settlements. The next stage is to develop more experiences and improve transport and visitor infrastructure.

The Ancient Kauri Coast programme includes development of a Tourism Plan/Strategy and Destination Management Planning. The programme also includes development of key tourism infrastructure projects, chiefly those stemming from the Kaipara Harbour, water transport and wharves. These wharves will also link in with new investment in cycle tourism projects. The Kaihu Valley Trail will create a multiday cycle experience connecting Waipoua Forest with Dargaville. In addition to these lead infrastructure projects, the necessary support facilities to cater for people utilising these places including toilets and parking will be provided.

SIGNIFICANT PROJECTS:

1. Develop and open the **Kaihu Valley Trail** alongside accommodation and tourism initiatives
2. **Premier Park** - Tahoroa Domain upgrades around Kai Iwi Lakes
3. Implement the first phase of the **Dargaville Township Improvement Plan**, including Hokianga Road, riverside cycle path and intersection improvements
4. **Premier Parks** - Pou tu te Rangi/Harding Park development plan
5. **Parks projects**
6. **Dargaville to Maungatūroto Heartland Trail**
7. **Dargaville Pontoon**
8. **New wharf at Pouto Point**
9. **Sealing the Pouto Road**
10. **Renewal of the Pahi Wharf**
11. Develop (in partnership with WDC) the **Brynderwyns Cycle Trail** and associated Mountain Bike Parks
12. Continue to implement the **Mangawhai Community Plan** including the shared path network and **Mangawhai Community Park**

Building Resilience

Increasing resilience in the asset network recognizes the Council's core responsibilities in managing its assets efficiently and effectively but also in how it plans for climate change events and how these assets could be impacted.

The programme of work is broken down under targeted Strategic Asset Management Plans (SAMPs) for each of the core activities of water, wastewater, stormwater, flood protection and land drainage, waste minimisation, parks and recreational facilities and transportation.

BUILDING RESILIENCE INTO OUR ASSET NETWORK

1. Improved **Water Security** in Dargaville an Mangawhai
2. **Wastewater, Drinking water** and **stormwater** renewals
3. Improvements to the **unsealed road network**
4. **Bridge** renewals and replacements
5. Implement **speed management** plans across network
6. **Carpark sealing** programme
7. Dargaville **Civic Precinct**
8. **SCADA** – Improving resilience of water and waste systems
9. Closed **landfill** remediation works

PART 1

Strategic Context

1.0 | Introduction

The strategic context sets out the internal strategic context – the Council strategic documents and the challenges specific to the Council's infrastructure and the external strategic context.

The strategic context for this strategy contained in Part 1 aims to show the inter-relationships of the various Council strategic documents including the new vision, mission and community priorities for the Council. The creation of this Infrastructure Strategy has been driven from a bottom-up approach – the draft Strategic Activity Management Plans (SAMPs) and from a top-down Spatial Plans and vision/community documents. The approach is very different from previous infrastructure strategies and seeks to provide the Council with a clear and transparent infrastructure prospectus, which it can use for future discussions with the community and its funding and infrastructure partners.

Kaipara District nestled between Northland's biggest urban centre of Whangarei and New Zealand's largest city Auckland, presents multiple opportunities and challenges the Council and community need to grapple with to plan for the future. Part 1 covers the primary external trends affecting Kaipara of population growth, economic changes, climate change and sea level rise and regionally significant projects. Moving down another level of detail are five of the biggest infrastructure challenges that Council has in the District. Many of these challenges are also opportunities for the Council to do things differently, such as how it deals with and recycles its waste products.

This strategic context is intended to set the scene for how the Council responds to these external trends and challenges, covered in Part 2.

"Kaipara District nestled between Northland's biggest urban centre of Whangarei and New Zealand's largest city Auckland, presents multiple opportunities and challenges."

1.1 | Purpose and Scope

Why do we need an Infrastructure Strategy?

The Local Government Act (2002) stipulates that a local authority must, as part of its long term plan, prepare and adopt an infrastructure strategy for a period of at least 30 consecutive financial years.

The Purpose

The purpose of this document is to identify the significant infrastructure issues for Kaipara District Council (KDC or 'Council') over a 30 year period. This includes identification of principal options for managing those issues and the implications of those options.

In a way that contributes to the long term sustainable management of the Council's infrastructure.

So that financial and implementation consequences of the Council's vision, community priorities and strategies are analysed, understood and integrated into the Council's primary forward planning document – the Long Term Plan.

1.2 | Kaipara District Infrastructure Strategic Framework

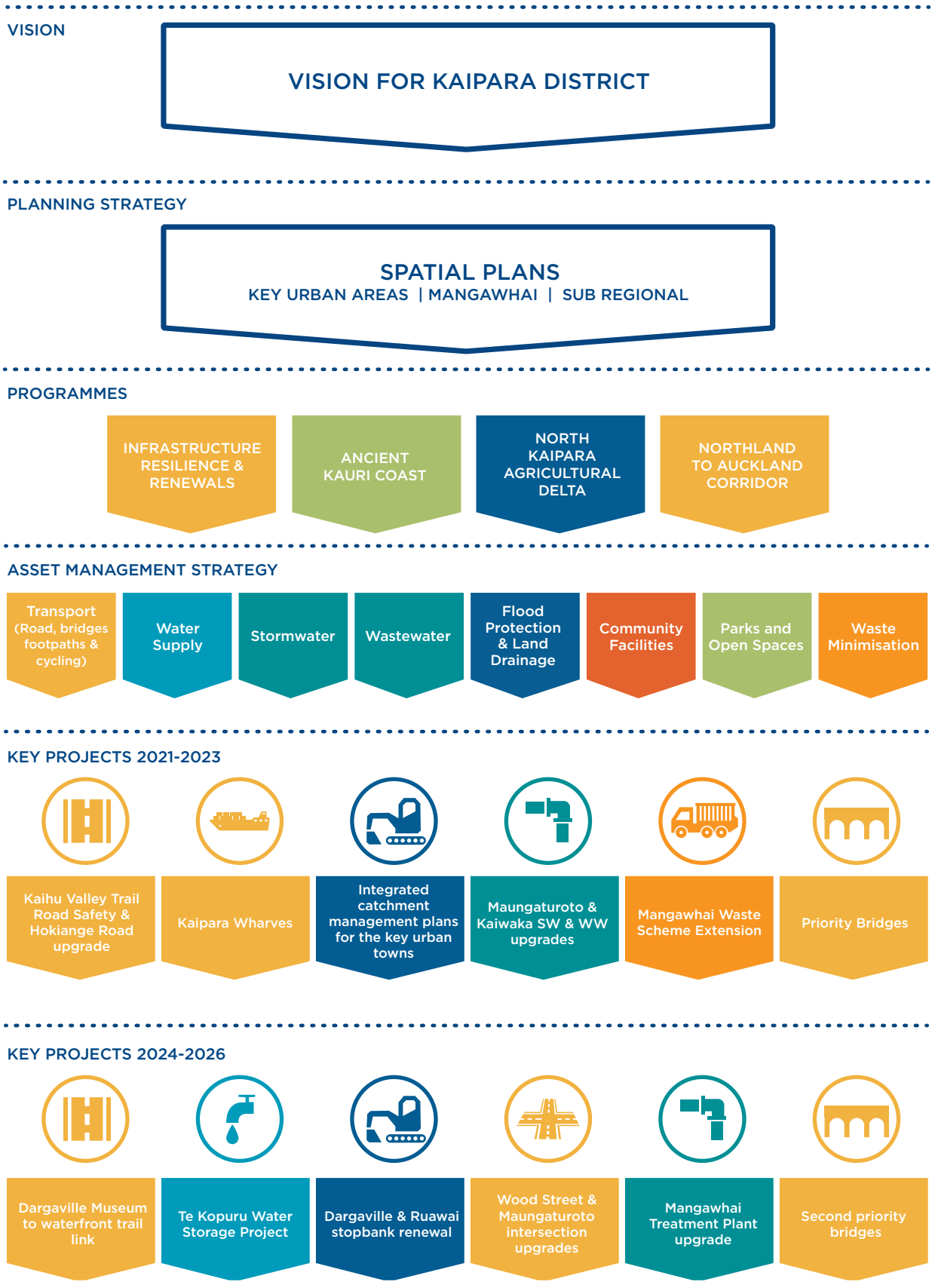
The strategic framework diagram over page shows the inter-relationships between the Council's key strategy documents as they relate to the infrastructure area. The highest level is the vision and community priorities. The next level is the Spatial Plans and District Plan that guide development and signal the infrastructure required in the future. To service the infrastructure requirements from the spatial plans and to keep maintaining the core assets, four large programmes are proposed within this strategy. The Activity Management Strategy outlines the individual activity plans that provide the detail on the infrastructure activities including condition, Level of Service, valuation, forecast expenditure and issues.

The two bottom levels show the significant projects currently proposed within the programmes and activity plans. These projects are not an exhaustive list but show some of the more significant and diverse range of projects the Council is proposing over the upcoming two Long Term Plan (LTP) cycles.

"To service the infrastructure requirements from the spatial plans and to keep maintaining the core assets, four large programmes are proposed within this strategy."

1.2 | Kaipara District Infrastructure Strategic Framework

The Strategic Framework

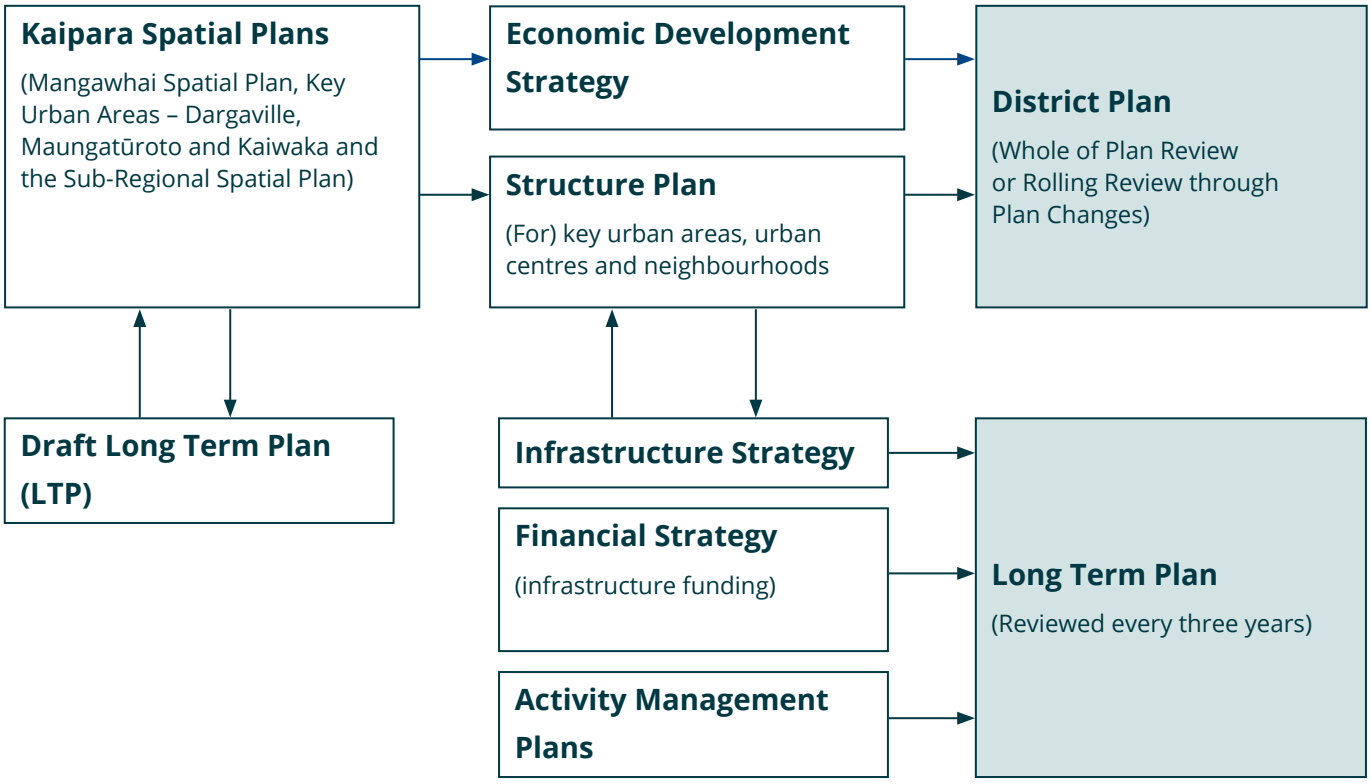


1.2 Kaipara District Infrastructure Strategic Framework

This diagram shows the relationships between Council's Spatial Plans, future Economic Development, Structure Plans and other key planning documents. It also shows how the Infrastructure Strategy will play an important role in determining future infrastructure investments for Kaipara's Key Urban Areas (Dargaville, Maungatūroto and Kaiwaka) by the Council to enable sustainable development and renewal of it's existing asset network.

The Kaipara spatial plans, as well as the strategy documents (economic development, infrastructure and financial) operate on a 30 year planning horizon. The LTP and District Plan operate on a 10 year horizon, while the Annual Plan is based on a one year horizon.

Relationships Between Strategic Documents:



1.3 | Audience

The information contained within this Infrastructure Strategy may be of interest to many different individuals and groups – in particular, partner organisations. Shown in the adjacent table are potential stakeholders that will be most interested in the Council's decisions towards infrastructure investment.

External Organisations	Partners	Co-Funding Agencies
Fire and Emergency organisations (reticulated water supply for fire fighting)	Kaipara residents and ratepayers	Ministry of Business, Innovation and Employment (administers of the Provincial Growth Fund and other grant programmes)
Infrastructure Providers such as a joint Councils and NZTA transportation shared service, Northpower and Chorus	Elected members	NZ Transport Agency (transport subsidy and project funding)
Council auditors and credit agencies	Land developers and landowners wishing to develop	Taumata Arowai
Government ministries such as the Ministry of Health (potable water supply), Education and Transport.	Mana Whenua. Northland Inc. and other territorial authorities	

1.4 | Vision and Mission

Vision

Growing a better Kaipara

This builds on the promise of our district's abundant wellbeing in our "Kaipara te Oranganui – Two Oceans, Two Harbour's. It's our social, economic, cultural and environmental wellbeing that will enable our district and our communities to thrive.

The vision seeks to enhance the aspects of Kaipara which our communities love, while addressing the more aspirational goals and future challenges we're set to face. Future consideration is needed for climate change, waste and recycling, tourism and population growth.

Kaipara District is an attractive place for more and more people who want to call this place home. A key part of our vision is to enable growth in a way that is sustainable, to retain what's special about everything between our two oceans and two harbours, and to improve on this.

Mission

Nurturing our people and place by inspiring a vibrant, healthy and caring community.

Climate Smart

Climate change and its impacts are reduced through community planning

Celebrating Diversity

Our local heritage and culture are valued and reflected in the community

Vibrant Communities

Kaipara communities offer an attractive place to live and visit

Healthy Environment

Our natural environment is protected and open to the community

Prosperous Economy

Development is encouraged, supported and sustainable

A Trusted Council

An open organisation working for our community

1.5 | Trends Affecting Kaipara

As part of the requirements for the Infrastructure Strategy, a summary of the trends that could affect Kaipara, and therefore the future provision of infrastructure has been provided under four themes as shown on the right.

The provision and maintenance of infrastructure in Kaipara is a continuous, long term effort to ensure the continuation of sustainable development and enabling people to thrive in Kaipara.

Understanding what the future holds for Kaipara, both within and outside district borders, is crucial to enable the Council
to make educated planning decisions for local infrastructure.

There are future external factors and trends which the Council cannot completely anticipate or control but will profoundly impact the District. It is important that the Council observes these trends, as it still retains influence over the development patterns laid out in the Spatial Plans and the way that future infrastructure is provided.

The four trends of population growth, economic changes, climate change and regionally significant infrastructure projects will affect Kaipara District in the future. Though we do not know the quantum of these effects in an uncertain future. We have contributed to numerous studies to help us understand these trends and how they could influence the district. These trends have the most impact on how we identify our future growth areas including how we provide the infrastructure to enable growth to occur.

Equally as important, in understanding these trends is how we adapt our vulnerable areas and seek to transform them to be more productive and resilient.

Population Growth

Kaipara's population growth from 2013-2019 has made it the fastest growing district in Northland.

Economic Changes

Agriculture and manufacturing are the main drivers of Kaipara's economy, and have seen continual growth over recent years. However, there remains uncertainty in the wake of the COVID-19 pandemic.

Climate Change and Sea Level Rise

Climate change will increase the frequency and severity of extreme weather events in Kaipara, including sea level rise, but also drought, as has been observed in 2019/2020.

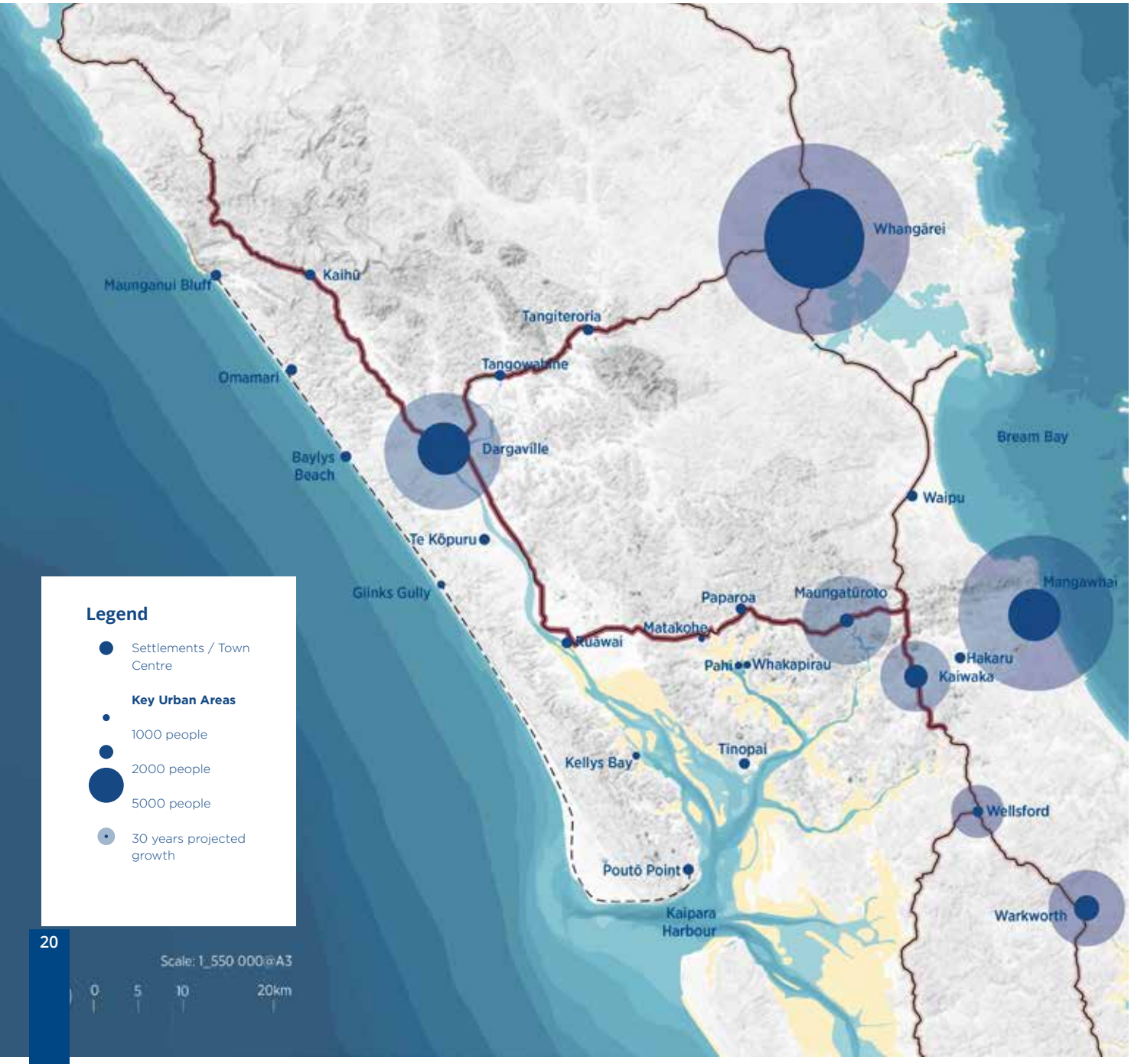
Regionally Significant Infrastructure Projects

Numerous significant regional level infrastructure projects will have an influence on future development patterns in the Kaipara District.

1.5 | Trends Affecting Kaipara

As identified in the Sub-Regional Spatial Plan, Kaipara will need to plan for the provision of appropriate infrastructure for the various towns and villages in the district. Infrastructure investment will be particularly required in the Key Urban Centres.

This map shows graphically the level of population change expected in Kaipara's key urban areas over the next 30 years.



1.5 | Trends Affecting Kaipara

Population Growth

The Kaipara District has been growing rapidly thanks to its proximity to Auckland, lifestyle opportunities and growing employment. According to the 2018 Census, Kaipara's population grew 20.6% from 18,963 in 2013 to 22,869 in 2018, making it the fastest growing district in Northland. Kaipara's population has grown strongly over the past 15 years to 2019, reaching a population of 24,100 in 2019. The district's population is projected to grow to 26,839 in 2026, 28,523 in 2031 and 32,551 in 2051.

"Population growth is projected to pick up from 2022 onwards, with the district growing steadily to reach a population of 32,600 in 2051.

Most of Kaipara's growth has been focused around Mangawhai and the southeast of the district; those parts which are closest to Auckland. This trend is expected to continue, with the Mangawhai population projected to increase from 6,086 in 2021 to 7,630 in 2026, 9,040 in 2031 and approx. 12,718 in 2051. The growth of Mangawhai and other areas of the Kaipara southeast have primarily been driven by migration from Auckland.

1.5 | Trends Affecting Kaipara

Projected For Kaipara District 2013-2051

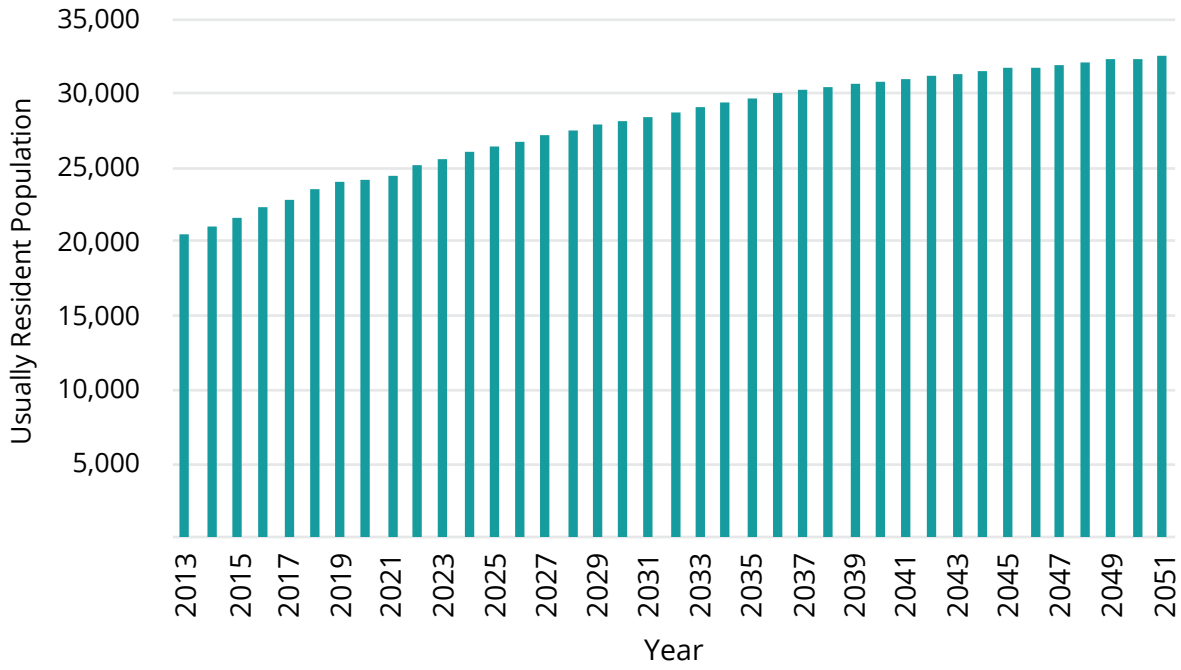


Figure 1. Usually Resident Population actual and forecast Kaipara District

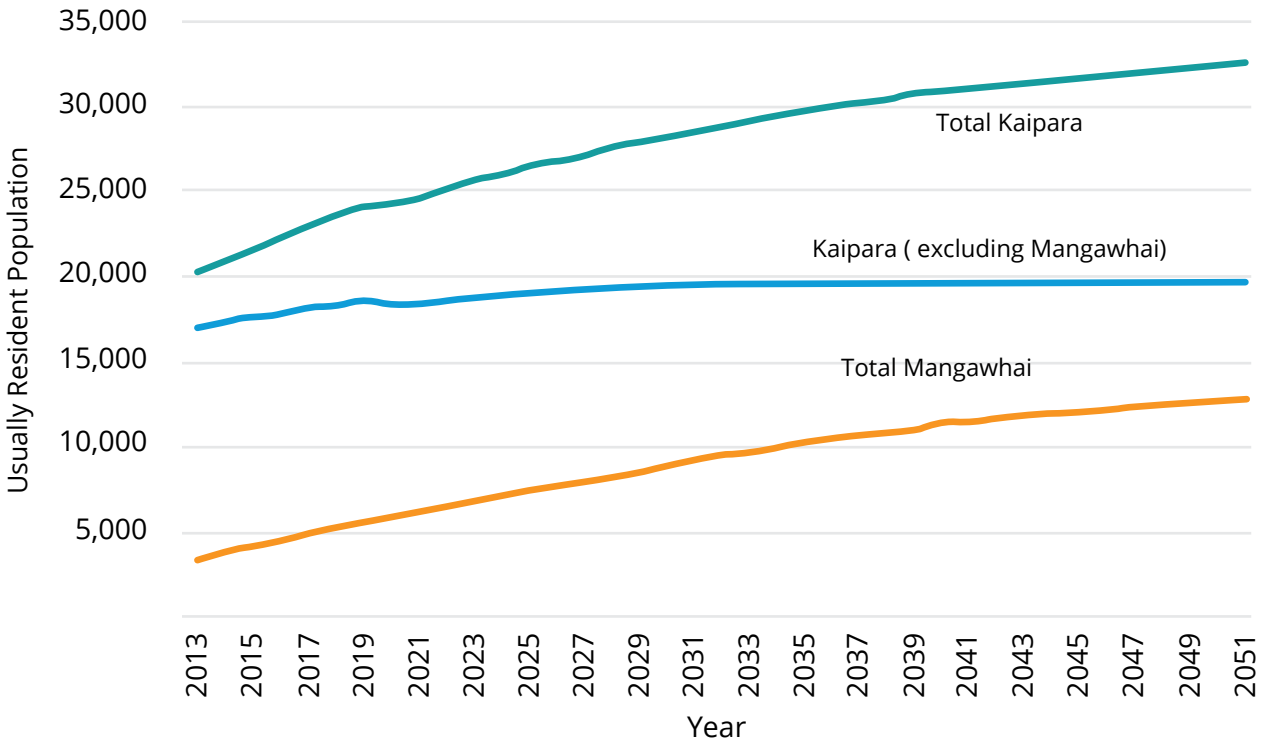


Figure 2. Usually Resident Population of total Kaipara, Kaipara (including Mangawhai) and total Mangawhai

1.5 | Trends Affecting Kaipara

In contrast to the southeast, population growth in northern and western parts of the district appear to be more closely aligned to employment growth, with more jobs attracting and retaining workers and their families.

Employment in Kaipara District grew steadily over the past decade, at nearly 2% per annum.

The strength of Kaipara's economy is therefore anticipated to result in continued population growth in northern and western areas as well as in the southeast. The figure to the right presents' population projections for the different areas of Kaipara from 2013 to 2051.

"During the 2030s, more stringent environmental regulation is expected to result in higher carbon prices and greater regulation related to freshwater quality."

1.5 | Trends Affecting Kaipara

What does this trend mean for the Council Infrastructure?

Anticipation of continual population growth provides the impetus for implementing the key urban areas spatial plans, specifically in southeast Kaipara by progressing structure plans and plan changes to align the land use activities with the infrastructure provision. For example, more people coming to live in an area means increased demand on our water supply infrastructure. This is a challenge which intersects with the Council's aging infrastructure. Understanding the trends in population growth is necessary for understanding Kaipara's future infrastructural requirements and how best to share the cost of these to both renew and upgrade our infrastructure.

Through analysing this trend and undertaking regular discussions and negotiations with interested developers, the Council will work to align infrastructure planning with development expectations. This assists the Council to be an enabler for quality development proposals that grow our towns and attract new jobs and industry.

"... more people coming to live in an area means increased demand on our water supply infrastructure."

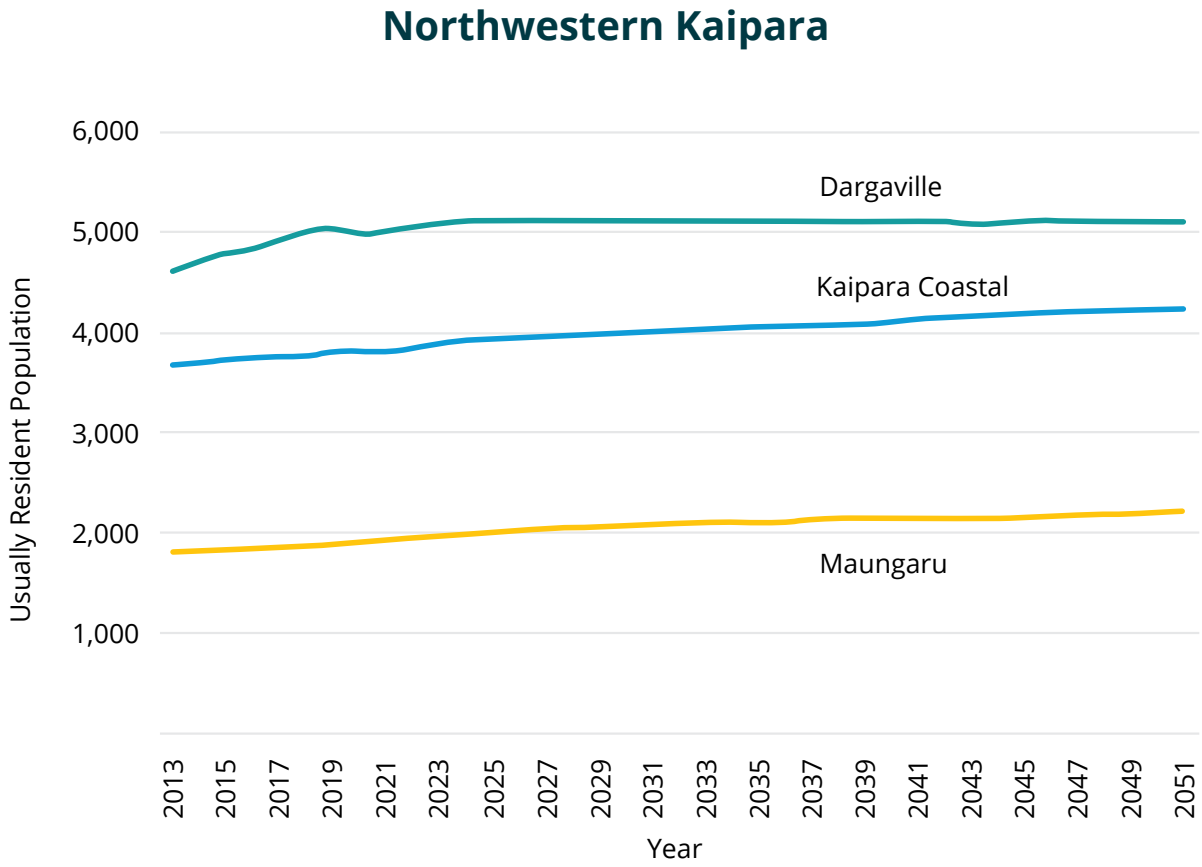


Figure 3. Usually Resident Population actual and forecast for the Northwestern Kaipara

1.5 | Trends Affecting Kaipara

Economic Changes

Kaipara's economy is founded on its primary industries (particularly dairy). The primary industries are supported by a strong manufacturing sector which includes processing of milk and meat and production of agricultural equipment and supplies.

Kaipara's economy has been expanding over the past decade with Gross Domestic Product (GDP) growth averaging 2.5% per annum between 2009 and 2019. Employment has also grown with an additional 1,186 jobs added between 2009 and 2019. Employment growth has largely been driven by the construction sector which added 299 jobs between 2009 and 2019. Strong job growth has also been experienced in the service sectors which support construction, such as resource consenting, engineering and architectural services.

Changes are afoot in Kaipara's primary sector. In particular, the dairy sector has seen 220 less jobs over the 2009-2019 decade, with less dairy cows and hectares in dairy production. This, however, has not reduced the amount of milk solids produced which has been relatively consistent, with the dairy payout increasing substantially from $137m in 2009 to $192m in 2019.

This ability to produce more with less follows a decade of research, development and innovation and has made more land available for environmental restoration, forestry and transitioning into new crops.

What does this trend mean for the Council infrastructure?

Council has been partnering with central government and the Northland Regional Council to understand the potential that its high quality soils, warm climate and proximity to Auckland has for land use connected with the primary sector This research is now available for landowners via the Kaipara Kai information hub. This research has assisted the Council and its partners to establish a programme to facilitate projects that explore the expansion of high value crops which create more jobs on the land and in processing facilities located in our towns. Also included is stop bank upgrades to protect productive land, improving water security and roading improvements to assist in getting goods to market. This programme is called the North Kaipara Agricultural Delta and is explained further in Part 2.

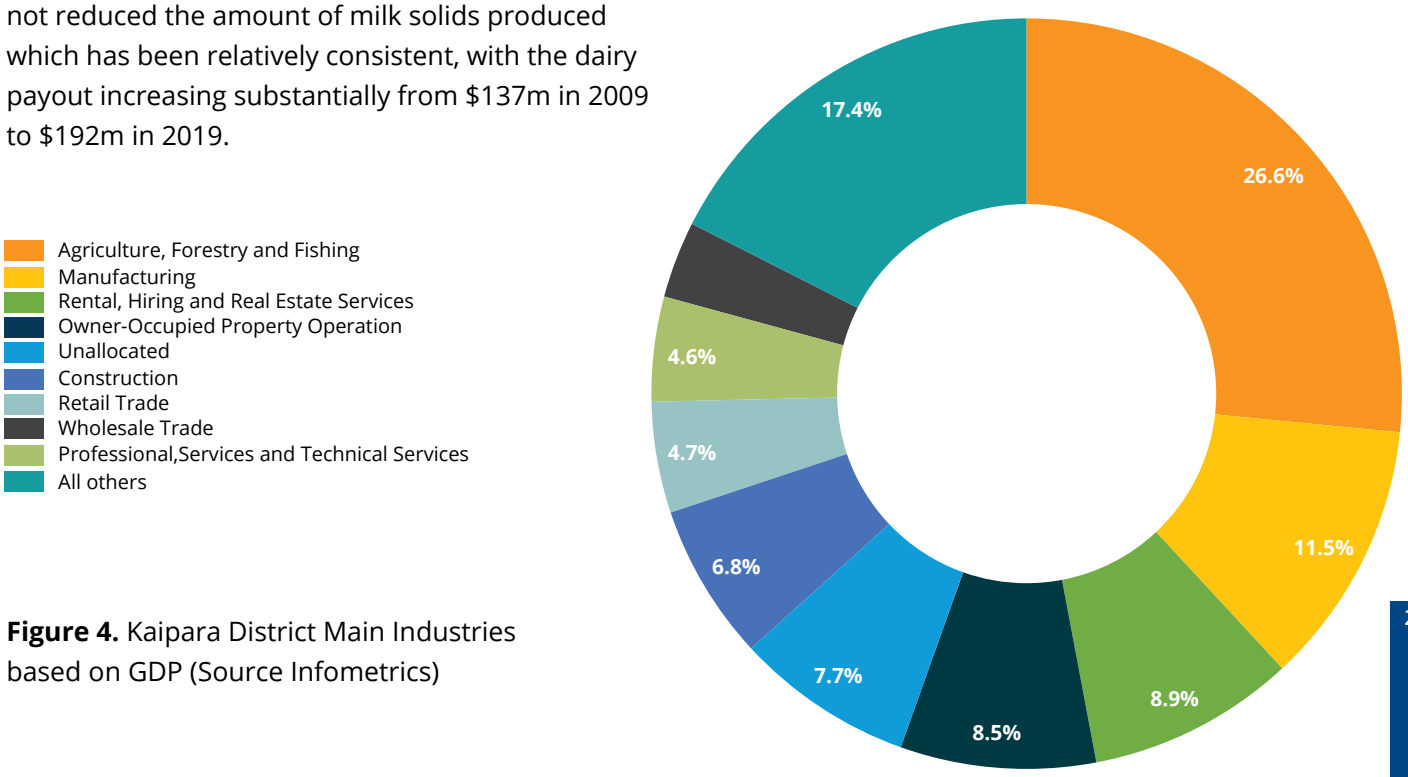


Figure 4. Kaipara District Main Industries based on GDP (Source Infometrics)

1.5 | Trends Affecting Kaipara

Tourism is an untapped opportunity for the Kaipara district – especially given our ready access to the Auckland market.

The Council is looking to develop Kaipara's unique offering to support and diversify our local economy. The focus on providing attractive and safe multi-day cycling trails and rejuvenating the historic Kaipara Harbour wharves network are the start of creating our distinctive point of difference. The research Council has conducted has shown that there is latent demand for visitors to engage with these activities and we hope to facilitate more events such as the Tour Aotearoa which takes cyclists through much of west Kaipara, including the whole Pouto Peninsula. This sees an influx of local activity, particularly at Pouto Point. Meanwhile, water transport and Kaipara's wharves network has historically played a significant role in the district's development; recent investigations indicate that the Kaipara Harbour offers a range of experiences which can be capitalised on in the future. However, to promote this offering of experiences, investment into the appropriate infrastructure is necessary.

To promote a variety of tourism opportunities, the Council has been partnering with central government to source external funding to upgrade and install the necessary infrastructure. The Ancient Kauri Coast programme is the collection of tourism based, open space and town centre projects that aims to enhance the tourism experiences and entice people to stay longer (see Part 2).

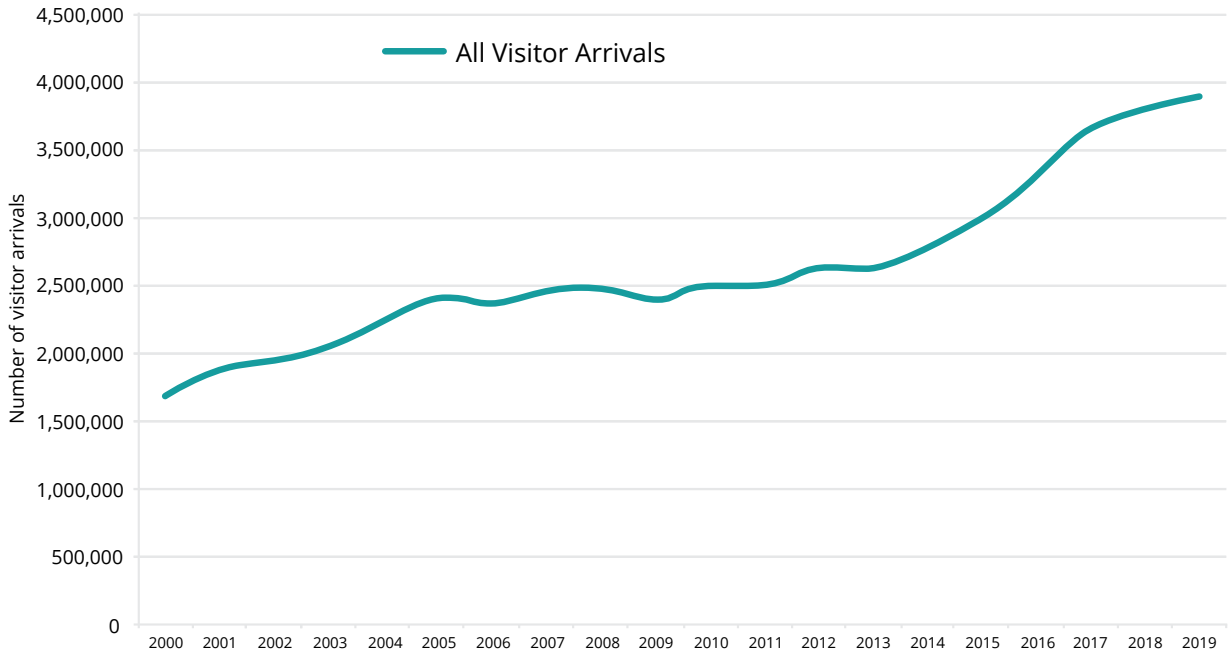


Figure 5. Visitor Arrivals into New Zealand retrieved from Statistics NZ – Visitor Arrival Statistics (YE Jun)

1.5 | Trends Affecting Kaipara

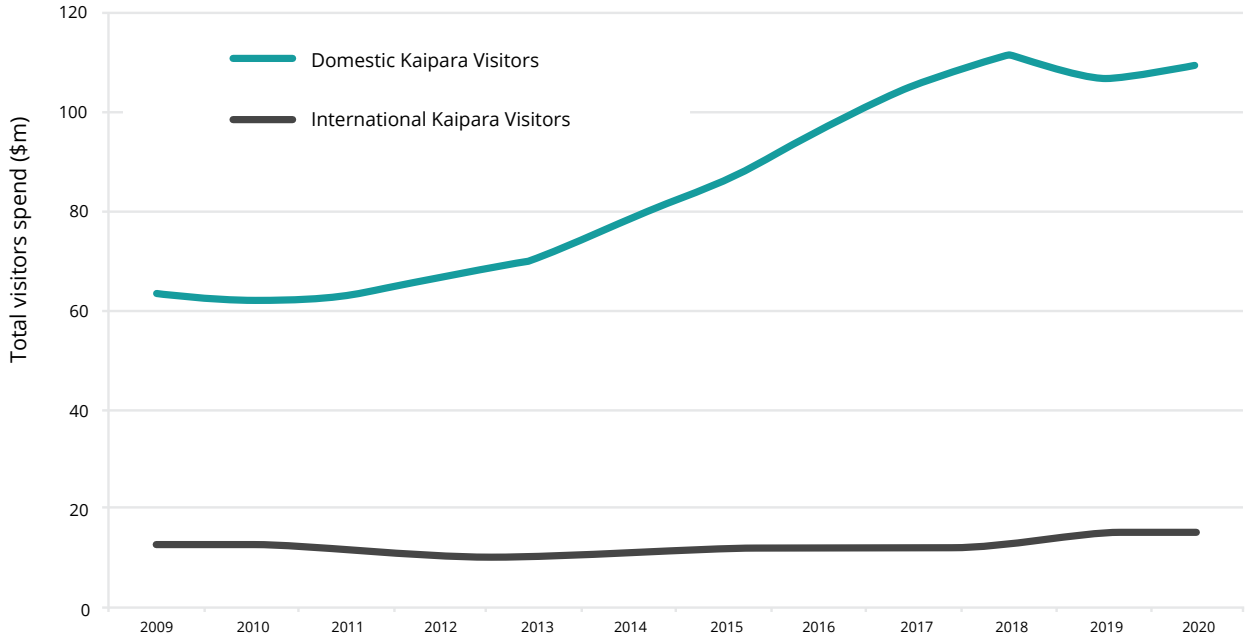
This pattern of overall tourism spend is shown below in the international and domestic visitors to Kaipara District. The figure adjacent shows solid growth in visitor spend by domestic visitors over the last 10 years, but virtually no change for international visitors. This highlights the significance of domestic (out of district) visitors overall, and a relative decline in the capture of overseas visitors for Kaipara District over the last 10-15 years (given national visitor arrivals are growing strongly).

Even before the COVID-19 pandemic, the data indicated that the Kaipara District was best suited to domestic tourism and niche international visitor opportunities. Overall, the potential exists to create niche tourism opportunities that can have a positive impact on local populations, without the negatives associated with mass tourism models.

Research conducted as part of the Kaipara Wharves Feasibility Study suggests that the District can position niche experiences around its areas of relative experiential strength. This includes the harbour – especially the more sheltered estuarine environments, the landscape, the culture, history and people – and the activities they participate in such as fishing and cycling. Many of the experiences (especially those that are guided) will be blended and offer visitors a sample of several different types of experiences.

The overall approach would be one that could be labelled "slow tourism" or "integrated community tourism". It would be based on guided experiences and self-guided routes throughout the district. The routes could, in places, be facilitated by local operators (like the current ferry operator who takes mountain bikers across the harbour).

Creating exploratory routes also enables locals to offer their services along the way (such as bike shops, cafes, guides, accommodation providers). This is common and well-established elsewhere in the world.



Source: Monthly Regional Tourism Estimates (MRTEs), MBIE, YE Jan

Figure 6. Domestic and international Visitor Spend – Kaipara District

[7] Estimates based on non-resident card spending data, Ministry of business, Innovation and Employment. Domestic Visitors are those whose card data indicates residence >40km away.

1.5 | Trends Affecting Kaipara

That said, New Zealand's strong agricultural sector, and position as a food exporter, is likely to provide a solid foundation for regional New Zealand (Infometrics, 2019). The ability of Kaipara's economy to recover is therefore better than most due to its focus on kai production. The food sector has been largely unaffected by the nationwide lockdown restrictions and export prices for food commodities (particularly dairy and meat) are holding up well.

"... New Zealand's strong agricultural sector, and position as a food exporter, is likely to provide a solid foundation for regional New Zealand."

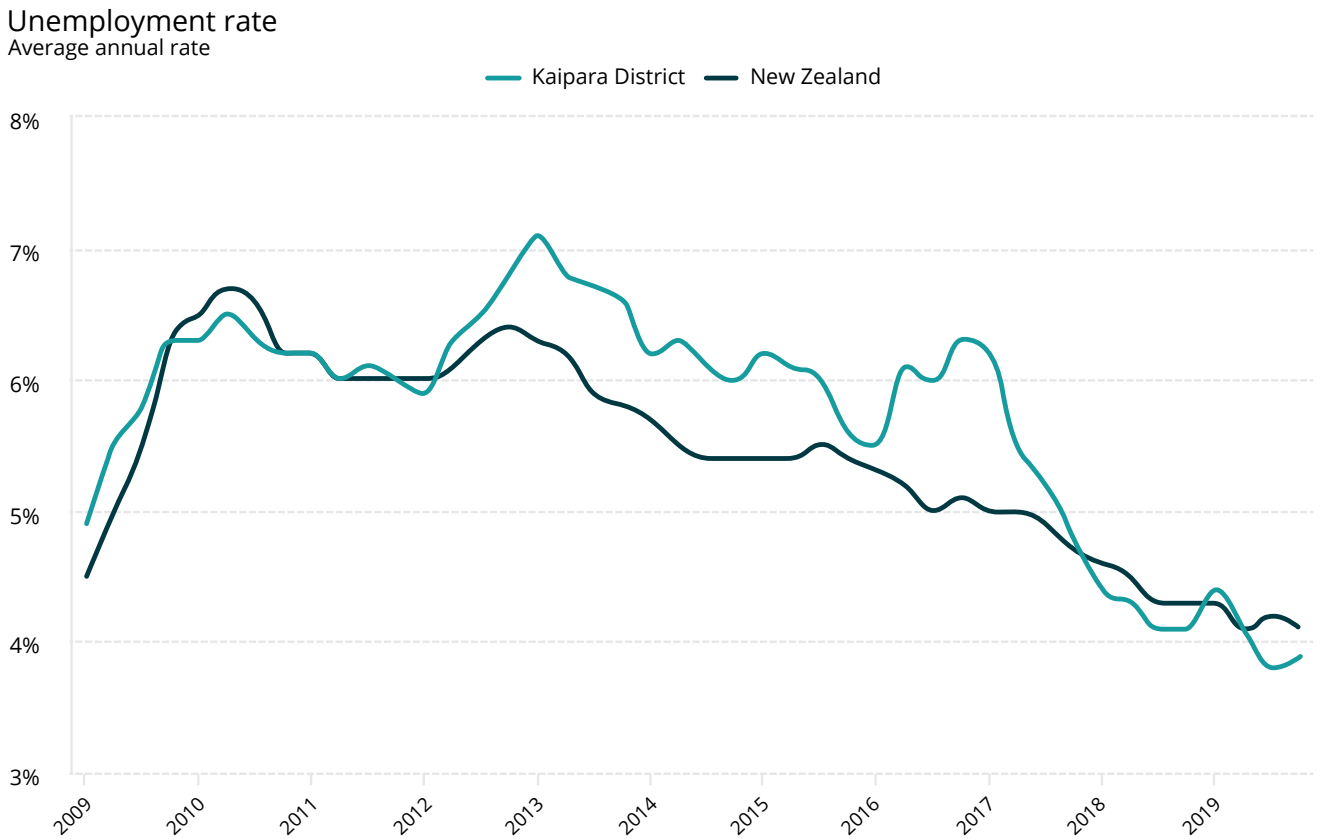


Figure 7. Average unemployment annual rate of New Zealand and Kaipara District

1.5 | Trends Affecting Kaipara

What does this trend mean for the Council infrastructure?

Kaipara's proximity to Auckland (both the international airport and as New Zealand's largest domestic centre) makes it well positioned to offer weekend getaways and family road trip experiences. The Council is looking to support its local tourism industry with upgrading and replacing our aging wharf infrastructure and facilitating new cycle trails and other tourisim projects. Improving access for all modes is key to encouraging more visitors.

"The Council is looking to support its local tourism industry with upgrading and replacing our aging wharf infrastructure and facilitating new cycle trails"

1.5 | Trends Affecting Kaipara

Climate Change and Sea Level Rise

It is projected that by about 2040, Kaipara's climate will be warmer throughout the year, slightly less wet overall, drier in winter and spring and wetter in autumn. Kaipara will see less water flowing in rivers and streams annually, with lowered low flow and high flow levels. Our soils will also be drier, with more moisture deficit and evapotranspiration accumulation.

Kaipara will also experience more weather extremes. Extreme hot days will be more frequent, and we will see more heatwaves. With an increase in intensity of sub-tropical cyclone events, our rare, extreme rainfall events will become more intense and bring more rain in a short amount of time. Mean annual floods will become larger. Extreme wind events will also become more intense.

On Kaipara's coastlines, sea levels are projected to rise about 0.3metres by 2040 and Kaipara will see more intense extreme sea levels.

Due to these projected changes, Kaipara District faces increased flooding, coastal erosion, storm surge, coastal inundation and saltwater intrusion, drought, bushfire, extreme winds, and soil erosion and landslides. These are not new hazards for Kaipara. However, the increased frequency and/or severity of these hazards introduces increased risks to infrastructure assets.

Risks to infrastructure include:

- Reduced integrity and breaching of stopbanks and flood defences
- Reduced capacity of land drainage networks
- Unplanned overflows, contamination and pipe damage to water supply, wastewater, and stormwater networks
- Flooding and/or erosion of waste minimisation management sites and contaminated sites and leaching
- Disruption to and reduced integrity of transport networks
- Flooding (alluvial, pluvial and coastal) of buildings;
- Damage to power lines and/or reduced capacity of transmission for electricity transmission and
- Coastal flooding, saltwater intrusion and/or storm damage to coastal reserves, parks and wharves.

All the risks identified pose a connected primary risk of erosion of services levels/failure by Council to provide expected levels of service. In short, increased frequency and/or severity of natural hazards poses risk to both the assets themselves and to Council's obligation to provide certain levels of service.

The intensity of impact for the above risks, including negative or positive outcomes, is based on several factors. These factors include physical location, current condition and asset capacity, dependency on the service, available alternatives, and possibility of intervention and/or response. Understanding and reducing negative impacts is one outcome of this strategy's climate resilience work focus. Climate resilience work focus aims to reinforce positive impacts and identify opportunities for efficiency, increased capacity, and sustainability.

1.5 | Trends Affecting Kaipara

What does this trend mean for the Council's infrastructure?

Infrastructure services play an integral role in increasing a community's resilience and capacity to adapt. Climate resilience work focus puts Council on track to make sure assets are ready for a hotter and somewhat drier Kaipara, with higher sea levels and more extreme weather events. Council is currently in the process of developing a climate change work programme that will establish action on adaptation, mitigation and sustainability.

All significant infrastructure programmes will need to consider an options assessment framework to inform the approach taken to address climate change impacts. Adaptive pathways (discussed further in the Part 2) will be a key strategy for determining adaptation responses, especially in the community interface area. Climate adaptation projects already identified include stop bank and flood gate upgrades, improving water security and stormwater infrastructure upgrades.

"Council is currently in the process of developing a climate change work programme that will establish action on adaptation, mitigation and sustainability."

1.5 | Trends Affecting Kaipara

Regionally Significant Infrastructure Projects

Largescale infrastructure projects, or even the combined effect of many incremental improvements, has a strong influence on patterns of development.

Perhaps the most significant regional infrastructure projects to affect the Kaipara are the continued improvements to State Highway 1 (SH1) and connectivity with Auckland.

Mangawhai is already attracting migrants from Auckland who commute back to the city for work. Further reducing travel times between Kaipara and Auckland is anticipated to further accelerate Kaipara's growth. An extension of the Northern Motorway from Puhoi to Warkworth is already under construction; anticipated to open by the end of 2021. Planning for a further extension, bypassing the Dome Valley and reconnecting with SH1 north of Te Hana is also progressing. An application for a Notice of Requirement (NOR), together with an associated application for regional resource consents has already been lodged. When completed, this will result in Mangawhai being located just 18 minutes, and Maungatūroto 25 minutes from the end of the new motorway.

North Port, the port servicing Kaipara and the Northland Region, also has the potential to influence Northland's future direction. The port is built on a natural deep-water channel and has considerable vacant port and industrial zoned land into which it can expand.

North Port features prominently in the Government's review of the Upper North Island supply chain There is growing pressure for some or all of the freight handled by the Ports of Auckland to shift to North Port. If this eventuates, it may reduce transport costs to Kaipara exporters and importers, further encouraging industry to establish in the District.

1.5 | Trends Affecting Kaipara

Furthermore, the development of industry around the port and associated job creation would result in more families potentially moving to the Bream Bay and Mangawhai areas. This would further prompt the need to upgrade local infrastructure to cater to this growth. In particular, Cove Road (the coastal route connecting Mangawhai and Waipu/SH1) may increasingly come under pressure from commuters to the port.

Along with proposals around the expansion of North Port has come the proposal to build a rail link to the port, especially as the port further increases its freight handling.

At the same time, a major rejuvenation of the North Auckland rail system has begun. The line from Whangarei to Auckland has been upgraded to accommodate modern hi-cube containers and the rail link to the Far North is to be reopened.

The rejuvenation of rail in Northland will provide a welcome alternative to moving bulk freight by road. The presence of an efficient rail network in Northland could further entice industry to relocate to Northland, particularly where industries are feeling the pressures of rising land prices and growing congestion in Auckland. This will have implications for provision of local infrastructure in rail-served industrial areas such as Maungatūroto and Kaiwaka, which have access to the main north rail line, as well as SH1 and SH12.

"The presence of an efficient rail network in Northland could further entice industry to relocate to Northland.""

1.5 | Trends Affecting Kaipara

What does this trend mean for the Council's infrastructure?

Getting ahead of development that occurs as result of major infrastructure involves making land use plan changes and locking in the land, consenting and construction requirementsfor the infrastructure needed.

To facilitate the significant infrastructure projects and spatial planning the Council is looking towards partnering with multiple Government and local government agencies to co-ordinate all planning and development along the Northland to Auckland Corridor. This includes working with MHUD and Kainga Ora to prepare for accelerated growth in Mangawhai, Kaiwaka and Maungaturoto. More information on this programme response is covered in Part 2. Increasing drinking water security is also key.

1.5 | Trends Affecting Kaipara

This map depicts the future influence of some of the regionally significant projects if or when they are realised.

1.6 What Are Our Infrastructure Challenges?

Over the past three years, the Council has engaged broadly as part of projects such as the Spatial Planning for Dargaville, Maungaturoto, Kaiwaka and Mangawhai, Kaipara Wharves Feasibility Study, as well as public meetings and residents' surveys. The feedback provided an analysis conducted as part of the Activity Management Plans, which has helped to shape the district's key infrastructure challenges into five categories.

Aging infrastructure

Many of Kaipara's infrastructure assets are approaching or past their useful life, particularly its water supply and wastewater assets. Significant expenditure can be expected on renewal work in the future.

Meeting customer expectations and legislative requirements

Kaipara's residents have expectations for infrastructure in the district, which is a challenge for the Council's financial capacity. Additionally, the planning framework (national, regional and local) significantly changes the Council's ability to meet Levels of Service.

Recognising the need and providing for resilience

Kaipara's infrastructural networks must be endowed with the capacity to endure and recover from shocks, particularly from natural events (drought, flooding etcetera) brought on by climate change.

Balancing how to fund new infrastructure

Kaipara will be faced with many competing funding priorities, and a careful balance must be struck to meet the expected level of growth in local communities over the short, medium and long term.

Uncertainty around waste minimisation

Recycling rates in Kaipara are low; meanwhile, uncertainty remains as central government strategies for waste minimisation are still being finalised.

Current low levels of diversion from landfill on top of increasing costs for landfill will impact on communities.

1.6 What Are Our Infrastructure Challenges?

Aging Infrastructure

Overview

The District's infrastructure has historically lacked investment at the appropriate time (due to budget constraints) which has resulted in a significant portion of assets aging and in need of costly renewals.

The adjacent examples are some of the most pressing situations due to the aging infrastructure that the Council has to deal with over the next three years of the LTP.

Dargaville Water Pipes

In the historic area of Dargaville a large portion of the water lines are classed as being in very poor condition, owing to be in the 50-80 age bracket. As a result of this lack of investment, the maintenance costs (attending to leakage) and lack of pressure are the resulting issues. The Council will need to invest heavily in this infrastructure to bring it up to an improved level of reliable service.

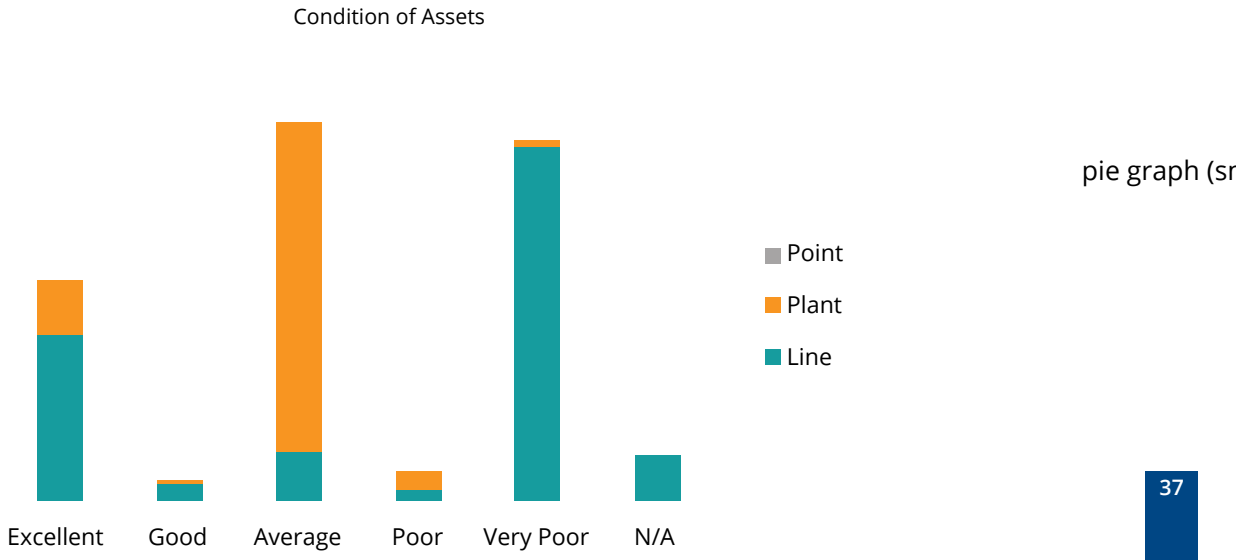
Road Bridges

Through the Northland Transportation Alliance (NTA), the Council has identified a serious need to upgrade bridges on the roading network that are reaching the end of their lives and require renewal. The bridges upgrade programme will seek to strengthen and upgrade 5% of Kaipara's bridges over the following 10 years. The bridges that are being prioritised have reached the end of their design life and structurally require strengthening or replacement.

Rural Settlements Infrastructure

Several of Kaipara's smaller villages and settlements which have historically developed using more self-sufficient methods such as on-site septic systems are now reaching a point where these

systems are now failing. In smaller rural communities, on-site concrete tanks and pipes are cracking. This is causing the receiving environment (i.e. creeks and beaches) to become contaminated with untreated wastewater especially during high rainfall events. The Council and the community will need to work through options to address this situation. This could include considering whether the release of rural land bordering these villages could be rezoned for residential and business development and help fund part of a new centralised wastewater system.



pie graph (sr

Figure 8. Condition of Assets – water supply

1.6 What Are Our Infrastructure Challenges?

Meeting Customer Expectations And Legislative Requirements

This section covers the challenges the infrastructure area has in meeting customer expectations and the legislative requirements.

The Government's Three Waters legislative review (following the Havelock North campylobacter bacterium outbreak) has highlighted increased expectations in water quality. The expectations to restore clean waters in the district's receiving environments means sediment must be reduced in addition to addressing any substandard wastewater schemes.

Customer Expectations

Customer expectations, in some areas, exceed the ability for the Council to fund the level of service expected. City dwellers who move to a rural district often have high expectations for a service they have received from a city council. For example, there is a desire for more roads to be sealed as unsealed roads make up 72% of the network. With limited financial capacity, this desire must be considered alongside structural upgrades to bridges that have reached the end of their design life and at risk of failing if not renewed.

Legislative Changes

Legislative change through central government policy statements can significantly affect the Council's ability to meet minimum Level of Service and required improvements to infrastructure assets.

Changes in Northland Regional Council's Proposed Regional Plan for Northland, environmental standards and the Resource Management Act 1991 (RMA), may also affect services.

In addition, changes in legislation can influence the ease at which new water treatment consents are obtained or existing consents are renewed.

Experience demonstrates that consent conditions are becoming more stringent, with increased monitoring requirements being commonplace. There is a likelihood of better management and possibly reduced volumes in water take consents.

The Ministry for the Environment (MfE) is promoting a series of National Environmental Standards that can be enforced as regulations under the RMA. One such standard is the proposed standard for Ecological Flows and Water Levels, the objective of which is to facilitate the sustainable management of New Zealand's water resources. It intends to promote consistency in the way decisions are made to ensure sufficient variability and quantity of water flowing in rivers, groundwater systems, lakes, and wetlands. Whilst the Onsite Wastewater Systems National Environmental Standard has been withdrawn, other standards have the potential to impose costs on ratepayers including those not connected to a Council wastewater system (such as remote rural settlements as discussed prior).

1.6 What Are Our Infrastructure Challenges?

Increasing Resilience

Cultivating resilience in our communities and productive areas means endowing them with the capacity to endure and recover from shocks.

The impending impacts of climate change in Kaipara highlight the need for improving resilience of infrastructure from natural events. Extreme weather events, such as prolonged drought, intense rainfall and sea level rise, will all place unprecedented pressures on Kaipara's infrastructure.

Improving resilience of infrastructure includes flood protection measures, such as stopbank improvements, floodgates renewal and a pipe renewals programme for the urban stormwater network.

Resilience In Our Drainage Districts

Flood protection and control covering flood control schemes, river alignment control and land drainage are co-ordinated in 31 drainage districts. (Refer to drainage district map on subsequent page). As each drainage district is managed differently, there are variable Levels of Service (LOS), some of which do not meet the minimum standards. Failure to meet minimum standards will be exacerbated by increased intensity of storm events and sea level rise. The drainage districts were established to provide leadership to protect people's homes, livelihoods and infrastructure including road connections in the many low–lying parts of the District.

Urban Stormwater Network

The condition of large parts of the urban stormwater network condition is not known. Our lack of knowledge in this area means many assets do not end up being recognised for renewals. This makes managing the assets difficult as there is not sufficient data to make informed judgements. Over the last two years, over 150 stormwater manholes have been identified which have not previously been on the list. Further research needs to be completed to model their effects and eventually plan for potential significant events.

The biggest gap is in the data knowledge of the pipe network. The known Stormwater network is made up of 87.3km of pipeline, 83.0km is tagged as 'Waters' assets, the remainder being Transport and privately owned assets. The ownership split between Waters and Transport is currently under review and should be taken as

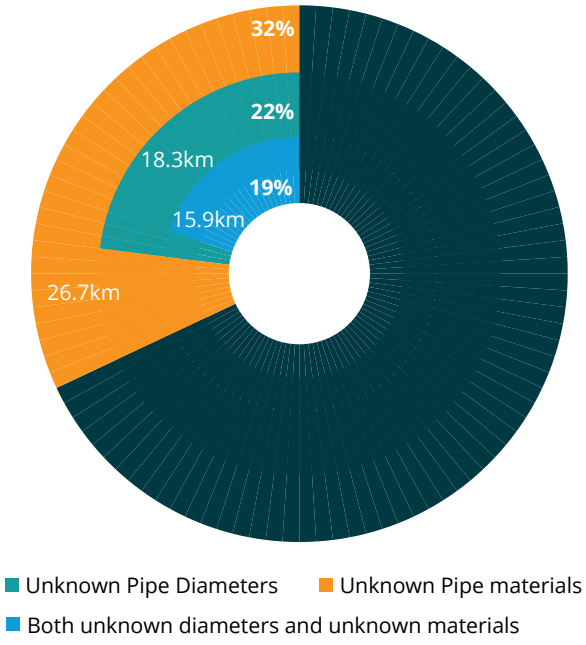


Figure 9a. Stormwater pipe network

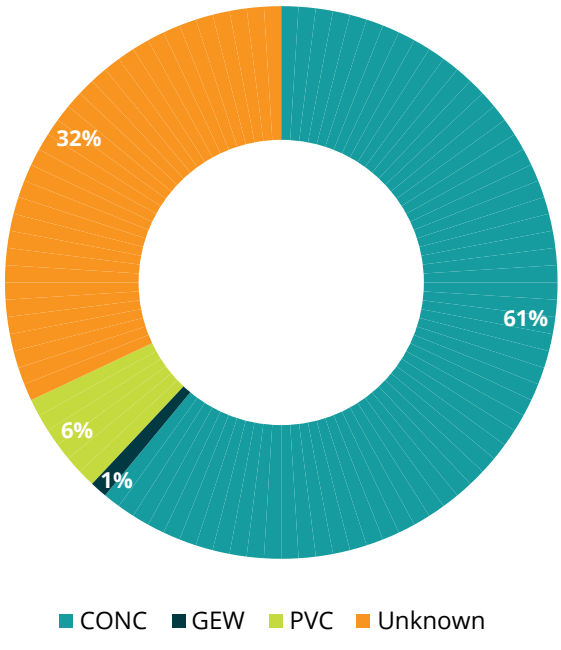


Figure 9b. Stormwater Pipe Materials

1.6 What Are Our Infrastructure Challenges?

Funding Growth

A balance must be struck between competing funding priorities, particularly on how to fund new infrastructure needed to meet the expected level of growth in our towns over the short, medium and long term. As one of the fastest growing Districts in New Zealand, the Council needs to be able to capitalise on external funding as well as create clear structure plans to support development which enriches its communities rather than become a financial burden. This financial challenge will need innovative solutions to support sustainable development and the aspirations set out in our Spatial Plans.

The Spatial Plans for Dargaville, Maungatūroto, Kaiwaka and Mangawhai show the potential spatial changes and improvement possibilities that our key urban areas could see over the life of this Infrastructure Strategy (2021-2051). The Council is currently consulting on the Sub-regional Spatial Plan for the Kaipara District, which seeks to provide direction for the future District Plan review on how Kaipara's rural and coastal communities could potentially grow.

"As one of the fastest growing Districts in New Zealand, the Council needs to be able to capitalise on external funding as well as create clear structure plans to support development..."

Council cannot exceed its debt ceiling so must work alongside those who wish to develop land and find smart solutions to fund larger bulk infrastructure projects. All Councils in New Zealand, especially in high growth areas, are investigating how to innovatively fund growth-related infrastructure projects.

1.6 What Are Our Infrastructure Challenges?

Some of the options that the Council will consider include:

- External funding – the Tai Tokerau water storage project in west Kaipara may create opportunity for a funding application to MBIE, with further financial support from NRC.
- Interest-free loan – previous funding schemes such as the Housing Infrastructure Fund have allocated capital funding to cover the upfront cost of infrastructure schemes, with a cost recovery from developers and house builders over the 10-year period, resulting in a smaller cost and risk to the Council.
- Separate Agreement – wherever there is a particularly large development proposal, or project specific to an area that Council wishes to support but does not have the ability to fund some of the key bulk infrastructure, then an agreement with developers can be a tool to unlock this impasse. This would usually recognise the creation of an infrastructure asset like road sealing that is utilised by people outside their development area. Agreements will show the cost which the Council is contributing to cover this additional capacity.

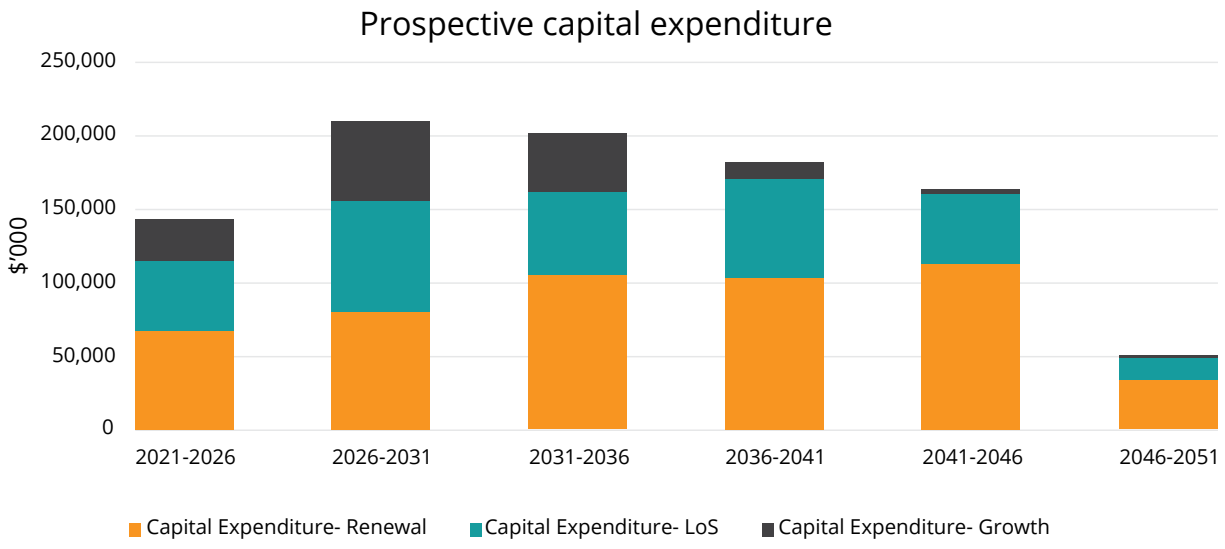


Figure 10 Year Capex by Area

1.6 What Are Our Infrastructure Challenges?

Uncertainty Around Minimising Waste in a rural district

We have low levels of recycling, however it is clear from our community that this is an important matter. Landfill costs are increasing and that increases the costs to our community.

Currently, central government's direction regarding waste minimisation is limited to the New Zealand Waste Strategy, published in 2010. However, the Local Government Waste Management Manifesto 2020 Update was released to set out national waste management actions.

Local direction for waste minimisation in the Kaipara district is determined by the Waste Management and Minimisation Plan 2017/2022.

Council has achieved increasing diversion rates for the past five years and it continues to strive to seek opportunities to increase diversion from Landfill. Such opportunities include making it easier to recycle and focusing on composting.

The Local Government Waste Management Manifesto (LGWMM) 2020 Update outlines key priorities for local governments with regard to waste management and the reduction in waste to landfill, further reducing the costs borne by councils and their communities.

International ramifications which have occurred in the recycling sector in the past two years which have shaped these actions, include:

- Restricting imports of recyclable materials in China, impacted our recycling market particularly for grades of paper and plastic collected from kerbside
- The effects of COVID-19 on the waste sector such as the global economic downturn on consumer demand for products and services; disruptions to recycling and waste services; and shrinking of International commodity markets
- The ways in which plastic is managed is evident in the Amendments to the Basel Convention to restrict the export of mixed plastic grades, which will in turn increase the cost to export mixed grades of plastic
- Councils rationalising the types of plastics collected for recycling and potentially implementing a comprehensive range of measures to deliver sustainable use of plastics, and potentially a national plastic action plan
- Australia banning the export of waste plastic, paper, glass and tyres which will take effect early 2021.

1.6 What Are Our Infrastructure Challenges?

Kaipara's waste is largely comprised of putrescible items (something that is liable to decay) which makes up 40% of all waste. Paper and plastic make up the next largest share, each comprising 15% of all waste.

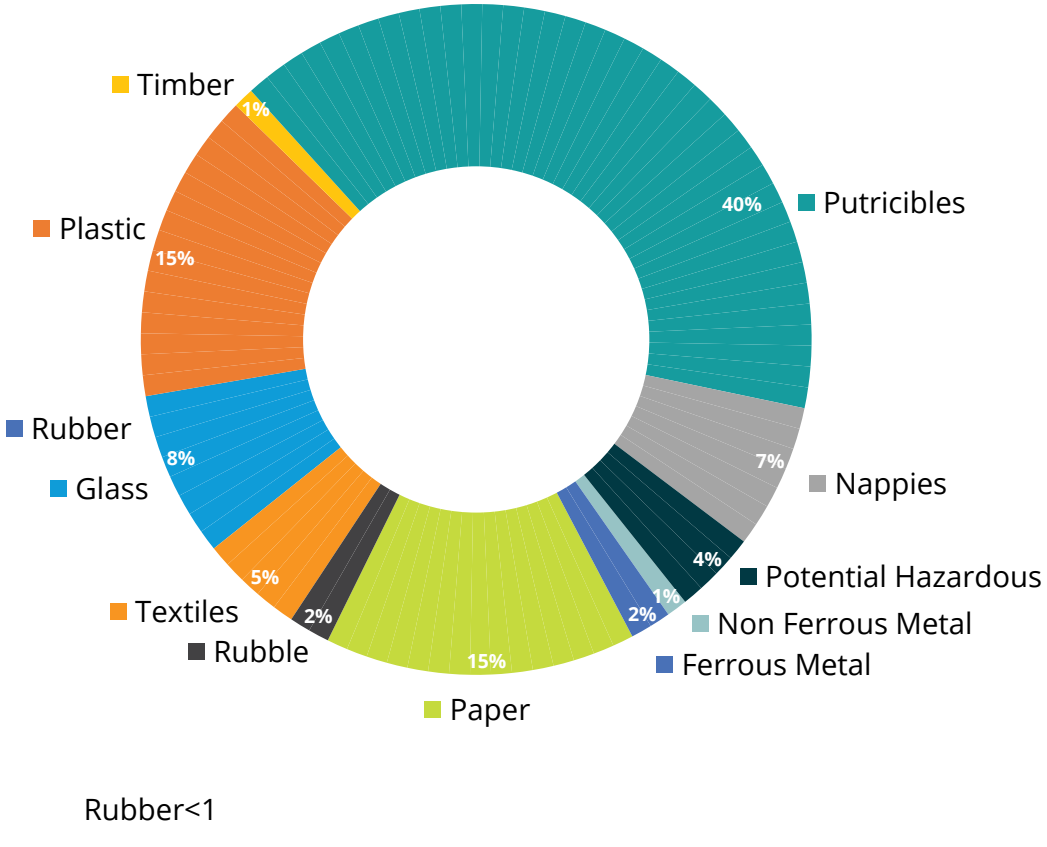
The latest waste consumption audit for the years of 2017-2022 as shown in figure on next page, varies to that of 2012-2015 with:

A decrease of:

- Ferrous Metals (3% to 2%)
- Glass (11% to 8%)
- Paper (20% to 15%)
- Plastic (17% to 15%)

Moreover, an increase of:

- Putrescible items (33% to 40%)
- Textiles (4% to 5%)
- Potential hazardous (2% to 4%)
- Rubble (1% to 2%)



Rubber<1

Figure 11. Kerbside Refuse Composition (2017-2020)

PART 2
Implementation

2.0 | Introduction

Part 2 covers Infrastructure Strategy implementation through a series of Principal Options. It also discusses the funding impact of these options and the key frameworks the Council will be employing to manage infrastructure over the next three years ahead of the next LTP review. Part 4 aims to give a clear picture on the significant infrastructure decisions that will have the largest impact on rates associated with infrastructure. These decisions are not finalised and still require further investigation to understanding their implications fully.

"Part 2 aims to give a clear picture on the significant infrastructure decisions that will have the largest impact on rates associated with infrastructure."

The following are discussed in this section:

- The principal options that the Council wishes to raise with the community
- The framework for how infrastructure will be managed, including procurement
- The overall funding approach across all activity areas
- The implementation summary (to be completed following selection of significant decisions and the funding approach)

2.0 Principal Management Options Overview

This section of the Infrastructure Strategy provides a series of key decisions that are deemed significant and which underpin the strategic direction where the Council is heading.

Criteria	Measure
Impact on Council's direction	Major and long-term
Change in Council's current Levels of Service	Major and long-term
Level of public impact and/or interest	Major and District-wide, or Major for an identified community of interest
Impact on Council's capability (non-cost)	Major and long-term
Net financial cost/revenue of implementation, excluding any financial impact already included in a long-term plan/annual plan.	Net capital expenditure >10% of total rates in year commenced, and/or net operating expenditure >2.5% of total rates in year commenced.

2.1 | How Will We Manage Infrastructure

This section looks at the principles of how the Council approaches its work (Nga Pou e Wha) and the strategies it engages to assist it to achieve its goals.

The Council's response to the identified trends, challenges and opportunities is built around Nga Pou e Wha – the four pillars. These four pillars have a basis in the four well-beings – social, cultural, environmental and economic. In this case, a "Kaipara-focused" lens has been applied. The relevance of these pillars to the Councils' work is explained in the adjacent table.

The third and fourth pillars (Te Aranga Principles and Managing Demand) relate to how the Council seeks to fulfil its Treaty partnership obligations and the mechanism by which it manages demand in its activity programmes.

Customer-centric Design	Infrastructure can enable and support the wider outcomes our community is looking to achieve. This principle seeks to be inclusive and involve the community during the design phase of projects, so that integration of community, partners and stakeholders are considered alongside other drivers in the decision-making process. We recognise that projects should not happen in isolation but should be part of a wider place-based approach (refer to Kaipara Spatial Plans). This more collaborative, partnership-based type of approach will be key to providing a more integrated infrastructure response.
Circular Economy	The world's dominant economic model can be characterised as 'take, make and waste'. In a circular economy, resources are never abandoned to become waste. Our 2017 Waste Minimisation Strategy signals the first step in reducing our disposal to landfills in Kaipara. We will look for opportunities to reduce waste and support circular material use in our operational and capital works activities. This will help us to see the possibilities around our waste and maintenance operations so that we are reducing the impact on our environment and creating our own Kaipara circular economy.
Te Aranga Design Principles	The key objective of the Te Aranga Principles is to enhance the protection, reinstatement, development and articulation of mana whenua cultural landscapes, enabling all of us to connect to and deepen our 'sense of place'. These principles were developed in Te Aranga marae in Hawke's Bay by Māori design professionals as a framework for people not familiar with the te ao Māori – the Māori worldview – to engage and learn. We will seek to engage early, especially on projects that are sensitive to mana whenua and establish how best we can ensure that adequate time and resources are set aside for meaningful, fruitful dialogue and follow-up actions.
Managing Demand	We aim to make the best use of the infrastructure we have by using technology and data as the basis for our renewals and capital upgrade programme. The process of demand management provides Council with a high-level tool to identify where infrastructure growth is likely to occur over a period. It enables a natural, structured growth of the public system to occur. Without this type of assessment, ad hoc development of localised assets 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.

2.1 How Will We Manage Infrastructure – The PMO

The Programme Management Office (PMO) aims to centralise all KDC projects by aligning them to the governance framework and being responsible for collecting and coordinating all related information to measure and define project delivery. The Council has focused on the standardisation of all project deliverables and the methodology of how projects should be approached and delivered using best practice principles and tools.

The objectives of the PMO are:

- Implement a common methodology and governance
- Standardised terminology and deliverables
- Introduce effective repeatable project management processes
- Provide common supporting tools
- Improve levels of project success within the organisation.

Figure 12. The PMO Framework – how the Council manages projects

2.1 | Principal Management Options

Adaptive Planning For Climate Change Events

Adaptive planning helps to avoid poor decisions regarding climate change that lock communities into a trajectory that may not be viable in the long term. Such plans are used to determine a combination of low-regrets options that use environmental (or service level) cues to identify timing of infrastructure upgrades. Moreover, methods such as options analysis processes are used which can be implemented at a range of scales, and incorporate uncertainty of timing and severity of climate impacts into long term planning.

Adaptive Planning For Raupo, Dargaville And Te Kōpuru

	Principal Options	Options	Advantages	Disadvantages
1.	**Adaptive planning for Raupo, Dargaville and Te Kōpuru** Climate change data indicates that the Council will see higher sea levels coupled with more intense storm events. This requires conscious decisions to be made around which areas need to be protected and which areas will require adaptive planning to determine communities' future responses.	Do nothing – accept that climate change events will occur and leave the land drainage districts to continue as they are. No extra funding required for stopbank upgrades, floodgates etcetera.	Prioritise investment in other parts of the District.	Risk of wholesale loss of drainage districts, resulting in loss of arable land and adverse economic impacts. Insurance cover may not be able to be secured (see Granity, West Coast). Costs will increase as storms are likely to get more intense.
		Prioritise water storage/ retention and stopbank improvements over the next 6 years, ideally partnering with external agencies to help protect Raupo to Ruāwai and Dargaville to Te Kōpuru.	By investing in water storage systems there will be methods to reduce the flood damage in 1-500 events. Increasing the height of stopbanks and improving the sluice gates will increase resilience over the long term.	It is difficult to protect all areas, even with improvements to flood control measures. Considerable investment may be required to protect these towns and productive areas.
		Increase heights of all stopbanks and upgrade all sluice gates and associated infrastructure for all our vulnerable towns and rural land.	Increases the resilience of most of the towns.	Substantial cost to upgrade and maintain; may cause unintentional effects further down the catchment where there are no flood protection measures.

Significant Intention Statement: The Council will work with drainage district partners in Raupo, Dargaville and Te Kōpuru to investigate further protection measures over the following 6 years, including raising of stopbank levels and water storage/retention as possible adaptation response options.

2.1 | Principal Management Options

Transport

The Council has been investigating the feasibility and funding for three walking and cycling projects. Funding has been secured for the Mangawhai Shared Path and further funding applications have been submitted for the Kaihu Rail Trail and the Dargaville River Trail.

New Walking And Cycle Trails In Kaipara

Principal Options		Options	Advantages	Disadvantages
1.	**Development of new walking and cycling trails** To implement the Kaipara District Walking and Cycling Strategy, there are several projects that have been identified to benefit residents and attract visitors to the District. These are the Kaihu Rail Trail (KRT), Mangawhai Shared Path (MSP) and Dargaville River Trail (DRT).	Do nothing – defer the implementation of the walking and cycling strategy.	Prioritise other areas of investment.	Enabling and promoting safe and healthy walking and cycling trails will not be able to occur for young people through to seniors. Lack of support for the diversity of the Kaipara economy, especially the tourism sector.
		Prioritise three walking and cycling projects, when there is a substantial external funding portion covering the majority of the investment.	Connectivity between towns (KRT) and within the towns themselves (MSP & DRT). Increase the number of new walkers and cyclists in the District. Increased tourism dollars which circulate within the host community.	Still requires Council contribution. Additional maintenance cost to maintain infrastructure.
		Prioritise more trail upgrades through increased Council contribution.	More certainty of delivery with confirmed funding.	Loads additional borrowing burden on existing ratepayers to cover the cost of the upgrades.

Significant Intention Statement: The Council will progress walking and cycling projects when there is a confirmed 95% external funding portion.

2.1 | Principal Management Options

Transport

The Kaipara Unsealed Roads Centre of Excellence was established through the Provincial Growth Fund sponsored Kaipara Kickstart Programme. This programme has and is rolling out $8.06m of unsealed network improvements this year and next year. 72% of Kaipara District roading network is unsealed which requires a considerable investment each year to the prescribed condition rating.

Priority On The Unsealed Road Network

Principal Options		Options	Advantages	Disadvantages
2.	**Prioritising the unsealed road network over sealing roads.** NTA has developed an Unsealed Network Centre of Excellence to manage the District's unsealed road network.	Do nothing – NTA to apply a bare minimum maintenance regime as similar to the previous LTP.	Reduced expenditure of this item.	Increased safety risk. Ride comfort reduces considerably. Increased maintenance costs for vehicles.
		Unsealed programme includes regular planned and unplanned maintenance to keep all unsealed roads to good condition categorised around the amount of usage.	Prioritised renewals and maintenance around a monitored asset management system.	No sealing component to bring roads up to a higher Levels of Service.
		Combination of limited unsealed and sealed programme.	Increases the amount of sealed road network.	Reduced Levels of Service for unsealed network.

Significant Intention Statement: The Council will support NTA and focus maintenance on the unsealed road network. NTA will only seal new roads where there is either external funding commitment (e.g., Pouto Road) or a group within an area who can contribute 100% of the expected cost.

2.1 | Principal Management Options

Water Security And Supply For Kaipara's Growth Towns

Water security for Kaipara's towns is one of the Council's key challenges and the Council has a variety of options to address how to:

- match the communities' expectations
- design within new Government legislation
- ensure affordability for current and future generations

This section covers the different options for the towns of Mangawhai; Kaiwaka and Maungatūroto; and Dargaville, Baylys Beach and Te Kōpuru.

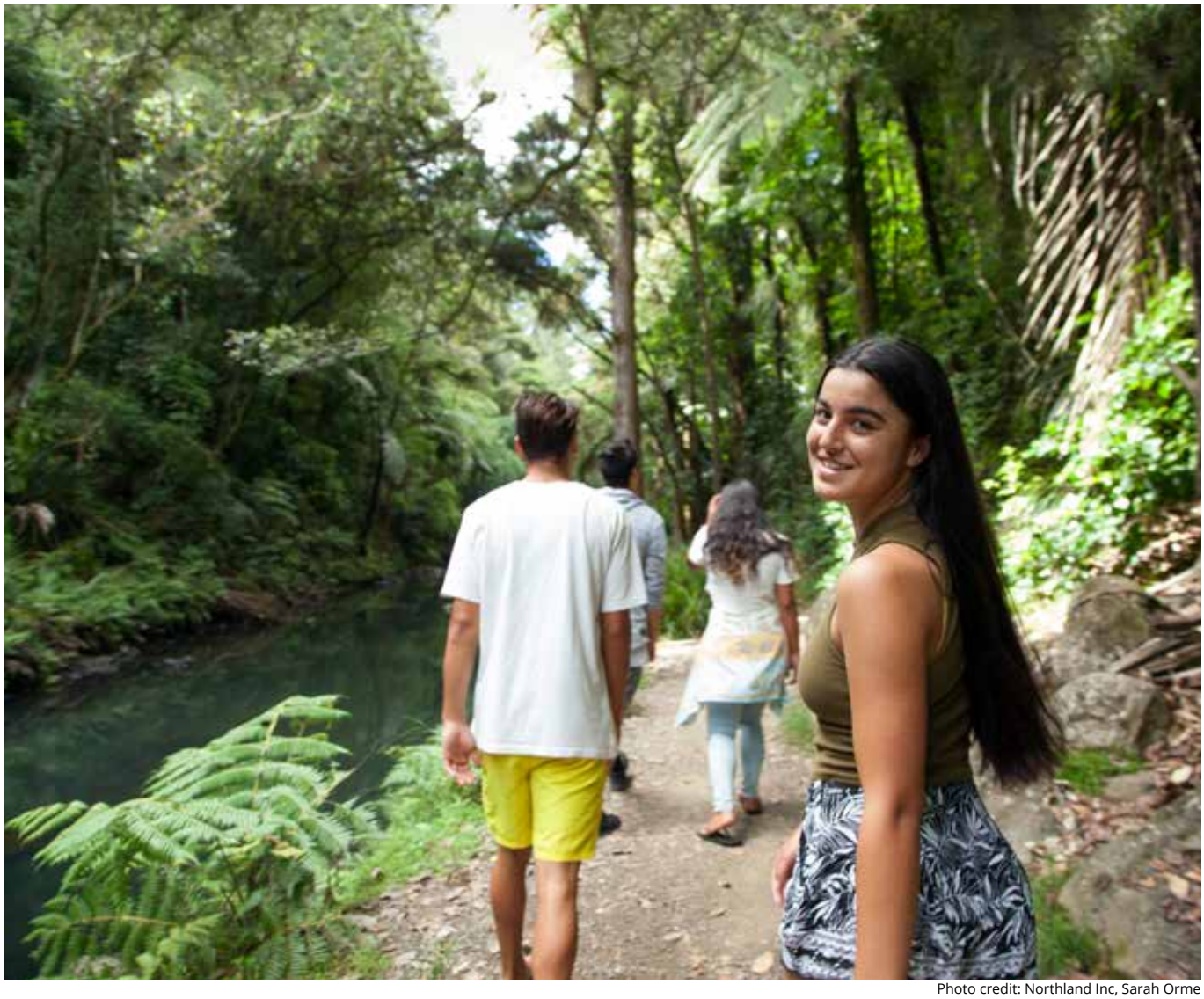


Photo credit: Northland Inc, Sarah Orme

2.1 | Principal Management Options

Water Security And Supply For Kaipara's Growth Towns

	Principal Options	Options	Advantages	Disadvantages
1.	**Mangawhai water supply and reticulation** Mangawhai does not have a public reticulated water supply – water tanks are currently the primary water supply solution. Changing climate conditions are putting increasing pressure on homeowners as droughts increase in frequency and duration. Costs to install more water reservoirs would fall back on homeowners if they have the space available. Auckland and Whangarei were able to provide water to cartage contractors through recent summer seasons. This is unlikely to continue in the face of increased levels of drought/water shortages, without serious investment into appropriate infrastructure.	Do nothing – requires individual households to manage their own water system.	Lower operating costs for residents during non-drought years. Reuse of rainwater which reduces the impact on the stormwater system.	Limited firefighting capacity if there is a major fire event in built-up areas. If there are drought conditions, there is a high cost and long waiting list for tanker water supply. Public health risk if there is not a robust management system for large organisations/ facilities (e.g., local school).
		Reticulated water supply in a staged manner by partnering with external parties.	Bulk line could be installed from Mangawhai Heads to the Village and provide for potable water, firefighting capacity and resilience. Ability to open dialogue with developers about offsetting costs by providing needed infrastructure – recover costs through development contributions to relieve financial burden from individual communities, while creating opportunities for the Council to proactively add value to local communities. Help facilitate and direct growth and densities of developments as they occur.	New growth areas and main commercial areas will likely comprise initial stages, while reticulation to existing areas may be de-prioritised due to significant costs of retrofitted reticulation. May make existing rain tanks obsolete unless there is a dual system plumbed into the house or business. May increase wastewater production due to anticipated increase in communal water supply usage.
		Targeted rate and development contribution funded water system introduced in Mangawhai to supply reticulated water.	Firefighting resilience; water supply system secured for the future to allow for anticipated growth.	Costs are levelled at those people who gain the most benefits. The targeted rate could be a significant increase in rates, especially for people on fixed incomes.

Significant Intention Statement: The Council will seek to provide reticulated water supply in a staged manner. As major developments are implemented it would be beneficial to partner with developers or seek external funding options where applicable to be able to construct the initial stages of water supply and treatment.

2.1 | Principal Management Options

Water Security And Supply For Kaipara's Growth Towns

	Principal Options	Options	Advantages	Disadvantages
2.	**Maungatūroto and Kaiwaka water supply and reticulation.** Maungatūroto has a public water supply and reticulation network to the existing community. Kaiwaka does not have a public reticulated water supply, with water tanks the primary water supply solution.	Do nothing – requires the individual households to manage their own water system at Kaiwaka.	**Maungatūroto** There are no significant changes to the metered rate to cover project costs.	**Maungatūroto** Future connections may be declined if there is not a more reliable water solution found, thereby reducing the ability for future development.
			Kaiwaka Lower operating costs for residents during non-drought years. Reuse of rainwater which reduces the impact on the stormwater system.	**Kaiwaka** Limited firefighting capacity if there is a major fire event in the built-up areas. If there are drought conditions, there is a high cost and long waiting list for tanker water supply. Public health risk if there is not a robust management system for large organisations/ facilities (e.g., local school).
		Joint project to source, treat and reticulate water in a staged manner by partnering with external parties.	Collaborate with a large development partner to secure a water treatment and supply solution that can be rolled out progressively with new growth areas.	New growth areas and main commercial areas will likely comprise initial stages, while reticulation to existing areas may be de-prioritised due to significant costs of retrofitted reticulation. May make existing rain tanks obsolete unless there is a dual system plumbed into the house or business. May increase wastewater production due to anticipated increase in communal water supply usage.
		The Council could potentially fund bulk upgrades for Maungatūroto and claim back from future developers. Targeted rate funded water system introduced in Kaiwaka to supply reticulated water.	Firefighting resilience. Water supply system secured for the future to allow for anticipated growth.	**Maungatūroto** Council becomes the infrastructure banker and therefore must take the risk on when development may occur and the payback period.
				Kaiwaka Costs are levelled at the people who gain the most benefits. The targeted rate could be a significant increase in rates, especially for people on fixed incomes.

Significant Intention Statement: The Council will undertake an options assessment to identify a safe and reliable water supply for the towns of Maungatūroto and Kaiwaka, as a joint project and seek to partner with external parties to reduce the rates burden.

2.1 | Principal Management Options

New Disposal Solution for Mangawhai Community Wastewater Scheme

The Mangawhai Community Wastewater Scheme (MCWWS) is reaching the end of its consentable limits and is in need of additional treated effluent disposal solution to continue to receive future connections post-2032.

This significant decision relates to which option the Council should continue to investigate as this will dictate the upgrades to the plant required to match the disposal option, including the advantages and disadvantages for each.

	Principal Options	Options	Advantages	Disadvantages
1.	**New Disposal Solution for Mangawhai Community Wastewater Scheme** The MCWWS was constructed in 2009 and was originally sized for 20 years of growth. In subsequent years, the scheme has had several small upgrades and additional land purchased for treated effluent land disposal (25ha to 65ha). The draft Mangawhai Spatial Plan proposed land use changes to increase the capacity for serviced wastewater from the current population of 5,000 to 15,000-17,000 by 2043 (under a medium growth scenario). The current scheme is expected to reach its irrigation field capacity by 2032 (averaging 70 new connections per year). Technical reports also predict that the Council could exceed their consenting limits for nitrogen removal as early as the summer of 2026. There is therefore a need to investigate future disposal solution options for accommodating anticipated growth.	**Discharge to field** Acquisition or lease of additional land to supplement current disposal field at Browns Road. This Includes upgrade to treatment works and new rising main and pumps.	• Acceptable by tangata whenua and environmental groups • Does not load the harbour with treated effluent	• Area required is up to 1.5x greater than the application area • Requires land acquisition • Odour effects on neighbours • New rising main required • Medium capital cost
		Discharge to sea outfall Rising main of around 4km, as well as ocean outfall of around 3km out from Mangawhai Heads Beach. Includes upgrade of treatment works.	• Future-proofing opportunities • Existing land disposal can be retained	• Compromised marine conditions • Construction location at beach access • High capital cost • Ongoing maintenance cost • Cost uncertainty • Unfavourable public perception • Write-off of farm assets • Pipelines may require directional drilling • Least acceptable option for tangata whenua and environmental groups
		Discharge to estuary Rising main around 1km, potential gravity main. Total flow can be diverted to estuary. Includes upgrade to treatment works. Filtered through a vegetated bed before release into the estuary.	• Most affordable option • Existing land disposal can be retained • Best quality discharge to minimise ecological impact • Possibility for upgrades on existing site	• Unfavourable public perception • Requires highest standard of effluent (but feasibly manageable)

Significant Intention Statement: The Council will investigate the Mangawhai Community Wastewater Scheme – discharge solution via an irrigation to field disposal option for environmental, cultural, community and economic reasons.

2.1 Principal Management Options Waste Minimisation

Focus On Increasing The Use Of Recycle Products

Principal Options	Options	Advantages	Disadvantages
Focus on reducing residual waste to landfill by investing in composting and processing equipment such as washing and shredding plant for plastics. To implement the Waste Minimisation Strategy, there are several investments that require the Council to create viable products	Do nothing – do the bare minimum in managing our recycled system following international market crisis.	Reduced short term expenditure.	Councils, communities and operators will suffer financially long term.
	Seek to formalise further partnerships with qualified enterprises e.g. involve manufacturers and distributors to have greater responsibility for products through their lifecycle.	This will avoid recycled materials ending up in landfills. Incentivise better design and material choices. A move towards a circular economy.	Circular economy business models are harder to develop as most are currently under a linear economy logic.
	Pre-treatment: engage and educate the public on how to reduce waste production through simple day-to-day choices.	Reducing the amount of waste being sent to landfill will directly have an environmental, financial and social positive impact. Conserving resources to make new material Creating a sustainable future generation.	Relying on the public alone may not be the most effect way to manage waste minimisation.

Significant Intention Statement: The Council will seek to partner with suitable qualified enterprises to store, process and distribute Kaipara District recycling to encourage new reuse markets, Councils in the North are actively seeking to form collaborative partnerships to share knowledge, resources and access to markets.

2.1 | How Will We Manage Infrastructure

Procurement Strategy

Our Procurement Strategy 2019 details how the Council seeks to conduct its procurement activities. Procurement is one of the most important aspects of the Council's role in facilitating delivery of infrastructure services and activities that promote community wellbeing in Kaipara. The Council has sought to align its procurement approach with good practice expectations set out by central government.

The way in which the Council conducts its procurement activities for infrastructure paves the way for broader cultural, economic, environmental and social outcomes in Kaipara. This is encapsulated by its Broader Outcomes, shown in the adjacent figure.

Kaipara Procurement Objectives:

- Deliver safely – a commitment to reducing harm to us and the people involved in our supply chain
- Creating and demonstrating public value through our activities with particular focus on:
  - Good price;
  - Good quality and
  - Good outcomes.
- Improve the efficiency of the way we progress projects through their lifecycle to deliver the capital programme
- Increase the ability of our Iwi, communities and businesses' in Kaipara to participate in Council activities;
- Increase the size and skill level of the supply chain delivering work in Kaipara;
- Support reduced greenhouse gas emissions and promote sustainable use of resources.

How will we implement our Procurement Objectives?

- The Procurement team (within Infrastructure Services) will be responsible for the implementation of the Procurement Strategy and will ensure strong oversight, governance and direction.
- The Procurement team will oversee pre-qualification requirements, while also focusing on relationships with approved suppliers and vendors. The level of pre-qualification required will be related to the level of risk of the given activity.
- Procurement Plans will be developed, and will include weightings to reflect Procurement Objectives; consider opportunities for packaging of work to provide stronger pipelines of work; and incorporate safety expectations through each project's lifecycle.
- We will seek to create critical mass and thus achieve greater efficiency. This could be utilising regional buying power to increase what we buy in a single activity, or packaging work in one given area
- We will generate collaborative opportunities by improving our relationships with our Regional Councils, suppliers and other agencies.

2.1 | How Will We Manage Infrastructure

Procurement Strategy – Broader Outcomes

2.2 | The Overall Funding Approach

Consistent with the Local Government Act 2002 (LGA), the Council budgeting process is iterative. Initial budgets are set with consultation between senior management and managers which is then workshopped with Council elected members. At the end of the LTP workshops, the Council agrees the draft budget it feels is in line with community expectations and is prepared to send out for public consultation. Based on submissions received from members of the community, feedback is sent back to the Council for final ratification before being formally adopted in June 2021.

Kaipara's infrastructure – its roads, water, wastewater, stormwater, solid waste, open spaces, and flood protection – are its backbone, making it easy to live in functional and connected communities, and supporting thriving communities working together.

Infrastructure is the Council's biggest investment. The funds needed to provide and keep this infrastructure working mainly come from:

- your rates
- NZTA subsidies for road maintenance and upgrades
- development and financial contributions
- targeted rates for Four Waters infrastructure – water supply, stormwater, wastewater and land drainage.

Major Capital Expenditure				
Description	**Cost ($m)**			
	2021/26	**2026/31**	**2031/41**	**2041/51**
Stormwater	7.355	16.717	6.390	4.465
Water Supply	8.011	10.185	38.473	18.309
Wastewater	13.227	25.788	43.612	12.534
Transport	100.245	114.328	241.433	172.756
Flood Protection and Control	14.437	38.255	51.794	5.791
Waste Minimisation	1.905	3.209	1.967	2.441
Reserves and Open Spaces[1]	10.498	7.566	10.301	11.486

[1] Includes costs for Swimming pool, reserves, public toilets, Mangawhai Harbour Restoration Society, cemeteries, and camping.

PART 3

Key Programme Responses

3.0 | Our Opportunities

Introducing The Four Key Programmes

In response to the infrastructure challenges and external trends affecting the Kaipara District, four strategic programmes have been developed to prioritise and co-ordinate significant infrastructure improvements. This approach will also inform who the Council will collaborate with to achieve the programme goals.

1. Northland to Auckland Corridor

2. North Kaipara Agricultural Delta

3. Ancient Kauri Coast

4. Building Resilience

3.1 | Key Programme 1:

Northland To Auckland Corridor Programme

Overview

Since the last Infrastructure Strategy in 2018, the New Zealand Government has approved and commenced several multi-million-dollar upgrades to transport infrastructure between Auckland and Whangārei. This includes the renewal of the North Auckland Trunk Rail line, the Puhoi to Warkworth motorway extension, and four-lane State Highway from Whangārei south to the Port Marsden turnoff. These significant upgrades have spurred a new regional collaboration approach to manage the expected urban growth along the corridor from Northland to Auckland. Based on the Hamilton-Auckland growth corridor model (upgrading rail and motorway links to growing urban centres), a similar Northland growth corridor has been proposed. This would see a partnership between Whangārei District Council, Kaipara District Council, Northland Regional Council and Auckland Council, together with NZ Transport Agency, Kāinga Ora (the Government's agency for housing and urban development), Northland District Health Board, and Māori to be formalised in the near future.

"This programme of big picture spatial planning not only requires a collaborative approach across the agencies, but will require Māori, the private sector and communities to be at the table, to discuss how this integrated corridor plan will work."

The first step is to review the spatial planning that the three Councils are responsible for, and work with the communities that are within this corridor to visualise how this growth could be incorporated. This spatial analysis is then overlaid across the impacts of a suite of large transportation and essential services infrastructure needed to enable people and business activities to thrive and prosper. This programme of big picture spatial planning not only requires a collaborative approach across the agencies, but will require Māori, the private sector and communities to be at the table, to discuss how this integrated corridor plan will work.

The Kaipara communities of interest for this corridor include the key urban areas of Mangawhai, Kaiwaka and Maungatūroto. All Kaiwaka and Maungaturoto have recently had spatial plans adopted (by October 2020), Mangawhai's' Spatial Plan is yet to be adopted which have indicated the level of sustainable development and the type of infrastructure needed to support this expected growth. The Council has signaled a need to partner with large landowners and developers to realise bulk infrastructure upgrades including consenting, design, land acquisition and construction for a long term water supply solution for Kaiwaka and Maungatūroto.

3.1 | Key Programme 1:

This map depicts the area of influence that this programme could have over the planning and infrastructure co-ordination for this corridor.

3.1 | Key Programme 1:

Significant Projects

1. Mangawhai Library

2. Wastewater treatment plant upgrades at Mangawhai – up to 7000 connections.

3. Tourism Infrastructure Projects for select communities … Maungatūroto and Kaiwaka

4. Waste minimisation (washing, shredding, recycling)

3.2 | Key Programme 2:

North Kaipara Agricultural Delta Programme

The North Kaipara Agricultural Delta programme seeks to protect highly productive land through increased stopbank protection. This would enable high value horticulture conversions where there is a reliable water source or via the water storage projects proposed in the Te Kōpuru rural area. This in turn creates the necessary demand for the creation of new zoning in Dargaville to allow for businesses associated with processing and value add products.

Overview

The climate of Kaipara District can be characterised as mild, humid and rather windy; owing to its northern location, low elevation and proximity to the sea. Summers are warm and tend to be humid, while winters are mild, with much of the district only observing a few light frosts per year. Rainfall is typically plentiful year-round, with occasional very heavy falls. However, dry spells and drought can occur, especially during summer and autumn. Despite relatively high average annual rainfall overall in Kaipara, a lack of storage means much of this water is not able to be harvested for use at other times, including summer and during droughts. The Kai for Kaipara Water Resources Assessment (Williamson Water & Land Advisory) concludes that in the short term, there are options for developing small-scale horticulture using run-of-river, groundwater or closed loop irrigation water supplies. The greatest concentration of high value soils in the Kaipara District is predominantly in the river delta between Pouto-Te Kōpuru to Dargaville-Ruāwai, stretching out to Kaihu. Much of this land is low-lying and susceptible to flooding events and salt water incursion.

The Council has partnered with Northland Regional Council and the Provincial Development Unit (within MBIE) to progress several water storage projects to realise the potential of the Te Kōpuru rural area and stimulate jobs in the agricultural and horticultural sectors. Scoping reports have indicated that if the water storage projects are fully implemented, that Kaipara District could benefit with an increase of $85m in GDP and up to 95 additional jobs (Source: Scoping of Irrigation Schemes in Northland report 2017). In addition, the Kaipara Kai project (part of the Kaipara Kickstart programme) has established considerable horticulture research and resources to assist landowners who are contemplating changing their land use in the future.

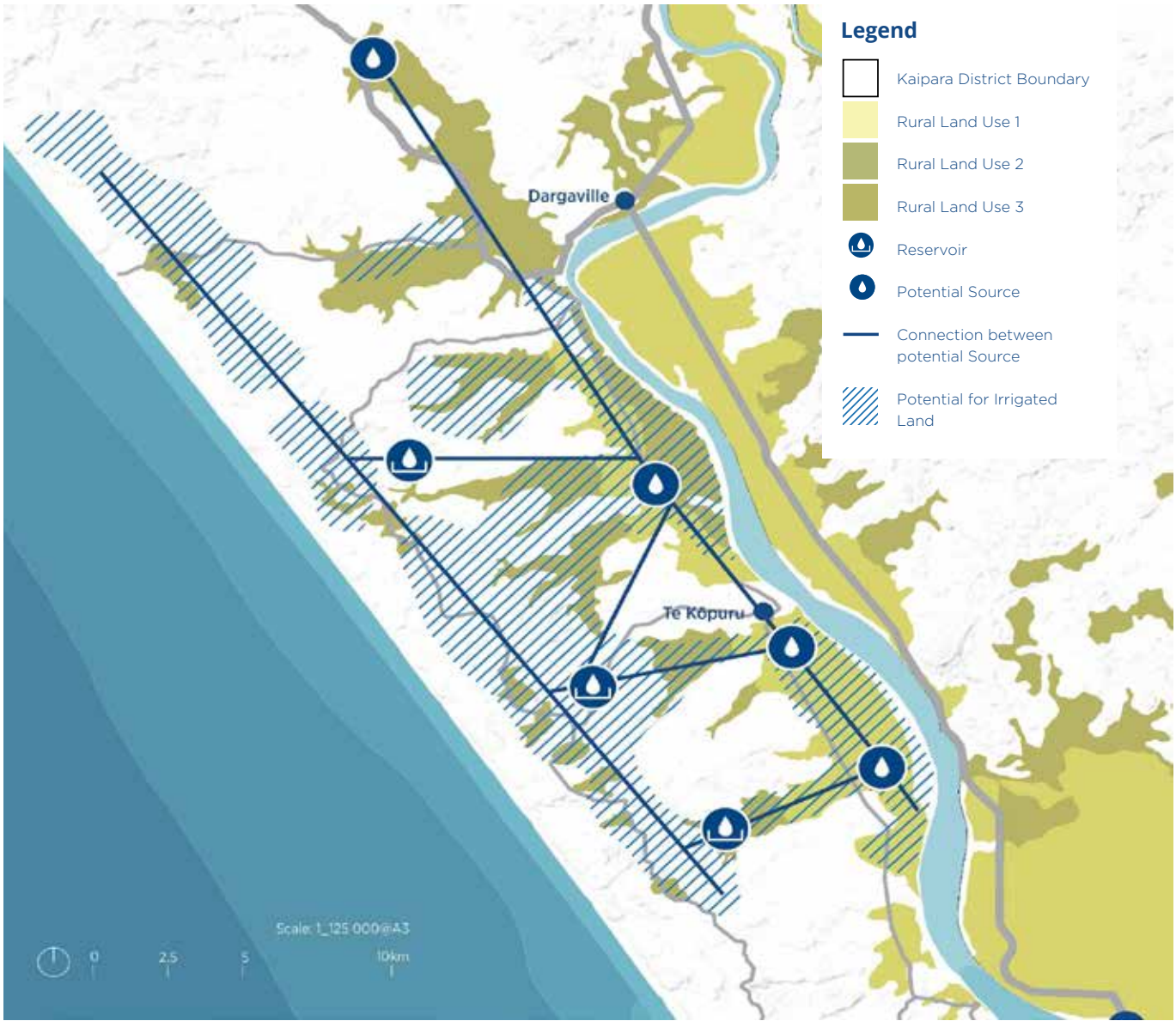
Climate Change Approach – Adaptive Pathways Planning

Adaptive pathways planning is a decision-making process used to identify outcomes sought and the range of options available to achieve this under changing circumstances. This is a developing process, however, its trialling in Hawke's Bay has attracted acclaim in developing effective climate change approaches.

Using adaptive planning strategies will determine a combination of low-regret options that use environmental (or service level) cues to determine timing of infrastructure upgrades. Options analysis processes will be used as it can be implemented at a range of scales and incorporate uncertainty of timing and severity of climate impacts into longterm planning.

3.2 | Key Programme 2:

This map depicts the extent of the agricultural delta, where the proposed water storage projects and potential irrigation area could develop and towns it encaptures.



Land Use Capability (LUC)

1_Highly suitable for cultivated cropping, vineyards and berry fields, pasture, tree crops or production forestry with minimal physical limitations for arable use. (None in the Kaipara District Area)

2_Suitable for many cultivated cropping, vineyards and berry fields, pasture, tree crops or production forestry with slight physical limitations for arable use.

3_Suitable for cultivated cropping, vineyards and berry fields, pasture, tree crops or production forestry with moderate physical limitations to arable use.

3.2 | Key Programme 2:

Significant Projects

1. Assessment of stopbanks and level of service and alignment with adaptation decision-making and ownership

2. North Kaipara Agricultural Delta – Te Kōpuru to Dargaville, Dargaville – Awakino Point East and Raupo Stopbanks

3. Upgrade and repair key transport structures to meet HPMV requirements eg. the Kaiwaka-Mangawhai bridge

4. Work with NZTA to upgrade detour routes alongside the SH1 corridor.

5. Water Storage and security of water supply for communities as above.

6. Contribution towards the cost of investigating new water storage infrastructure in western Kaipara.

7. Contribution towards development of new water storage infrastructure in western Kaipara.

8. Sludge System Reuse

9. Dargaville Growth (Spatial Plan Projects)

10. Dargaville TIP

11. Waste Minimisation (washing shredding recycling)

3.3 | Key Programme 3:

Ancient Kauri Coast Programme

The Ancient Kauri Coast route was developed by Northland Inc in 2017 to promote travellers to seek out an alternative to the established SH 1 tourism route. It is the beginning of telling the Kaipara District heritage story and showcasing the many special places that both domestic and international visitors are invited to discover. The next stage is to develop more experiences, improve and connected centres with richer stories and promotion of the Ancient Kauri Coast.

The extended Ancient Kauri Coast includes the Brynderwyns and Mangawhai and traverses through many of Kaipara's historic villages and settlements including Paparoa, Maungatūroto, Matakohe, Te Kōpuru and Kaihu.

Overview

The Ancient Kauri Coast programme is broken into three components:

Tourism Plan/Strategy

Development of a Tourism Plan/Strategy or Destination Management Plan which includes facilitating tourism groups to drive collaboration and marketing efforts and establishment of a Kaipara District Tourism Website to host content and link in with other regional tourism offerings. It will also be important for this strategy to be connected into the wider Northland Economic Development Plan and Destination Management Plan and leverage a close partnership with Northland Inc. and Auckland Tourism, Events and Economic Development.

Key Tourism Infrastructure Project

The Council has been partnering with the Provincial Development Unit to prioritise several projects to connect and stimulate tourism business activity. The projects stemming from the Kaipara Harbour Water Transport and Wharves Feasibility Study include a new pontoon at Dargaville Wharf, new pontoon and renewal of the Pahi Wharf and a new wharf at Pouto Point. There are also further projects planned to connect and improve other wharves and ancestral marae in future years. These wharves will also link in with new investment in cycle tourism projects. The Kaihu Valley Trail will create a multi-day cycle experience connecting Waipoua Forest with Dargaville. This trail links to enhancements of the Kaipara Harbour missing link trail which takes cyclists down to Pouto Point. Mountain bike parks and new cycle trails designed for all ages are proposed in Pou Tu o Te Rangi Park, Mangawhai and Taharoa Domain (Kai Iwi Lakes). In addition to these lead infrastructure projects, the necessary support facilities to cater for people utilising these places including toilets and parking will be provided, if not already available.

Town Centre Upgrades

The Council has recently adopted several key spatial plans which include the key urban areas of Dargaville, Maungatūroto and Kaiwaka and the Mangawhai Spatial Plan. Within these plans, there are key moves which the Council will seek to implement in a staged manner over the next 30 years. These upgrades include improving walking and cycling connections, creating safer and more enticing streets, enhancing the Council's community infrastructure, incentivising building owners to preserve heritage buildings and enabling developers through water upgrades to build new commercial enterprises. By focusing on staged improvements in these towns and others along the Ancient Kauri Coast route, both residents and visitors will benefit and be encouraged to spend time and money supporting retailers and tourism businesses.

3.3 | Key Programme 3:

Ancient Kauri Coast Programme

Kaipara District Council is unlikely to be able to fully fund the projects required to implement the staged upgrades of the town centres, there will need to be investment from external sources, identified partners and central government funds.

This map depicts the extent of the Ancient Kauri Coast programme, supporting the existing travel route from east coast to west coast showcasing the historic and distinctive places of interest.

3.3 | Key Programme 3:

Significant Projects

1. North Kaipara

Develop and open the Kaihu Valley Trail alongside accommodation and tourism initiatives

Premier Park – Taharoa Domain upgrades around Kai Iwi Lakes

2. Central Kaipara

Implement the first phase of the Dargaville Township Improvement Plan, including Hokianga Road, riverside cycle path and intersection improvements

Premier Parks

Parks projects

Dargaville to Maungatūroto Heartland Trail

Dargaville Pontoon

3. Poutō Peninsula

New wharf at Pouto Point

Sealing the Pouto Road

4. Kaipara Harbour

Renewal of the Pahi Wharf

Establishment of a beach landing opportunity at the ancestral marae of Arapaoa and Oruawharo

5. East Kaipara

Develop (in partnership with WDC) the Brynderwyns Cycle Trail and associated mountain bike parks

Continue to implement the Mangawhai Community Plan including the shared path network and Mangawhai Community Park

3.4 | Key Programme 4:

Building Resilience Into Our Asset Network

Overview

Since the last LTP, the Infrastructure Department has managed to bring all water services consents up-to-date and legally compliant. This has required gaining a greater understanding of both existing Levels of Service and what future expectations may include. The Council cannot renew all its assets at the same time. It must prioritise when each centre, village and settlement will require renewal and plan for events that are outside of its control, giving regard to climate change related weather events and sea level rise. Increasing resilience in the asset network programme recognizes the Council's core responsibilities in managing its assets efficiently and effectively but also in how it plans for climate change events and how these assets could be impacted.

The programme of work is broken down under the following AMPs:

Water and Wastewater Network

Conduct asset condition surveys and create models of the network to attain complete knowledge. Subsequently, prioritise critical assets which are in suboptimal condition; identify assets which require capacity increases to minimise leakages and breaks and to meet the minimum level of service.

Respond to climate change and sea level rise flooding, including protecting wastewater treatment, pump station and pond facilities, and groundwater infiltration in flooding events. When conducting asset renewal and upgrades, pursue water-sensitive and nature-mimicking design where possible. Investigate low emissions options for capital works projects and operational activities.

Waste Minimisation

Promoting mechanisms/incentives to support circular economies by reduction in waste, increasing recycling rates, and implementing plastic washing and shredding/preparation.

Parks and Recreational Facilities

Bring all open spaces, tracks and recreational facilities up to a minimum standard and within all codes and NZ standards.

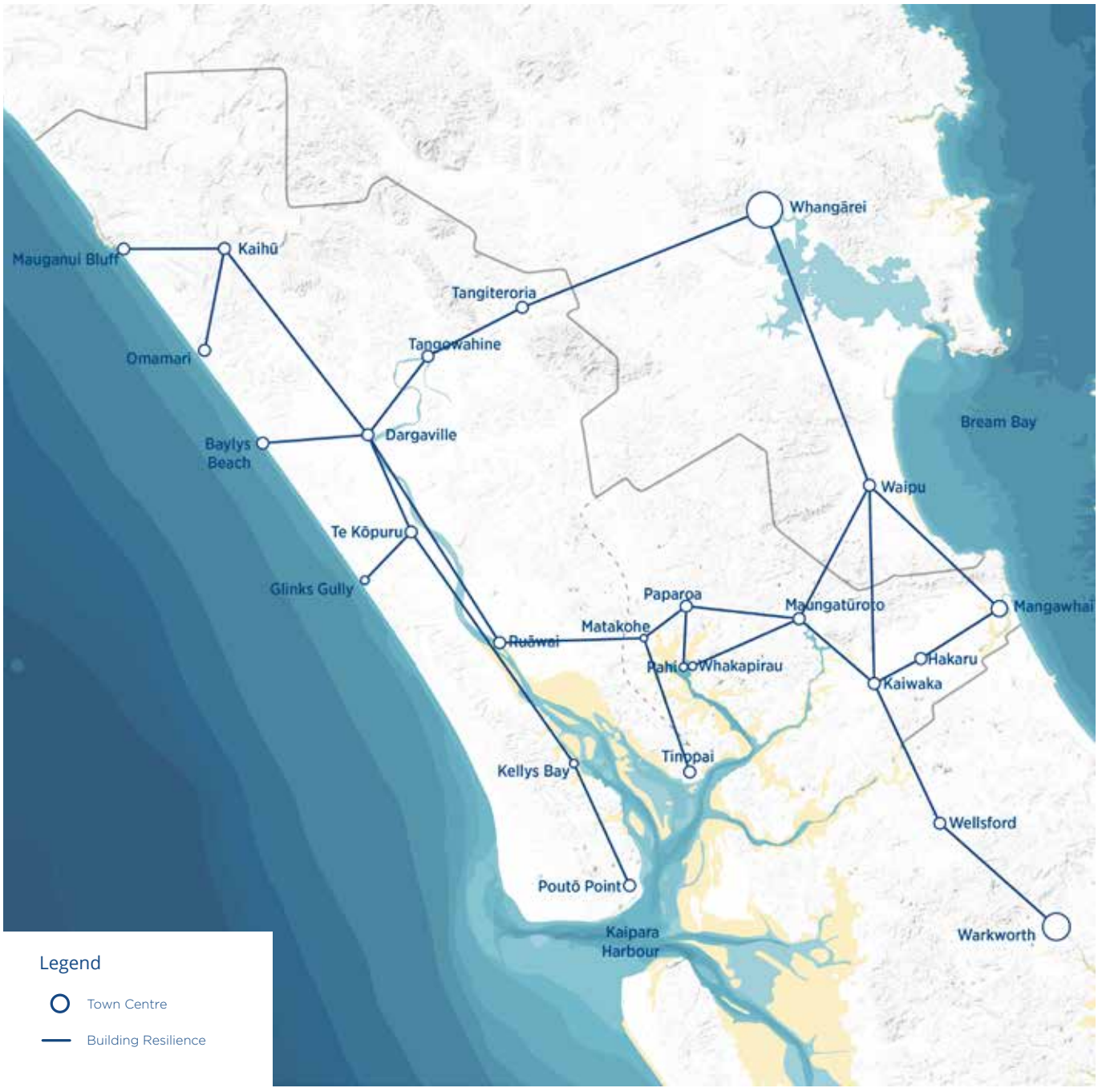
Transportation

Pursue the following for the road network:

- Resilience to flooding events in accordance with Levels of Service, implement road safety upgrades of black spot and pedestrian safety areas
- Maintain minimum drivable standards on sealed and unsealed road networks
- Improving the unsealed road standards
- Upgrade end of design life road bridges
- Encourage sustainable travel with safer walking and cycling while connecting important points of interest such as schools to parks and town centres
- Investigate low emissions, circular economy approaches to operational activities and capital works projects

3.4 | Key Programme 4:

This map depicts the Kaipara towns, villages and settlements connected through infrastructure that form the essential network which the community relies upon to live, work and play.



3.4 | Key Programme 4:

Significant Projects

Capital Projects

1. **Dargaville Water Storage**
2. **Dargaville Water Security**
3. **Maungatūroto Water Security**
4. **Maungatūroto Growth Projects**
5. **Kaiwaka Water Supply**
6. **Mangawhai Water supply**

PART 4

Activity Management Plans

4.0 | Introduction

Kaipara's infrastructure safeguards our environment and enables our communities to be functional and connected.

The Activity Management Strategy focuses on renewals programmes and renewals investment to get the best long-term outcome and reduce ongoing maintenance costs. A summary of the significant capital is also included in this section.

Our Activity Management Strategy is comprised of seven activity groups, each administered through an AMP.

Each Activity Management Strategy summarises the Council's strategic and long-term management and investment approach for provision and maintenance of the given activity.

This strategy applies to the following activity groups:

Transport		Safer roads that are resilient to the effects of climate change/flooding and unrestricted bridges, footpaths and cycleways that connect communities
Three Waters	**Water Supply**	The collection, treatment and distribution of quality potable drinking water in a cost-effective, sustainable and environmentally-friendly manner
	Wastewater	The management, treatment and disposal of sewage
	Stormwater	The management of discharges and collecting of contaminants in a manner that protects the environment and public health
Flood Protection & Land Drainage		Flood control schemes, river alignment control, and land drainage
Waste Minimisation		Reduce waste, increase recycling and resource recovery for the protection of the environment and human health
Reserves And Open Spaces		Maintain a diverse range of open space and reserve assets

4.1 | Transport

Overview

The Transport AMP includes all Council-formed roads, bridges and associated assets, as well as parking, footpaths and cycleways. It excludes private roads and unformed roads.

In Kaipara, transport plays a major role in connecting to the key destinations in Northland, and through the rest of New Zealand through Auckland. Our transport assets are critical for people to move around quickly and safely, but also for the movement of goods to drive our primary industries and wider economy. The Transport AMP seeks to improve customers' journey experiences by delivering on safe, direct and timely journeys with minimum disruptions.

Overview

Under this activity and the associated Activity Management Plan, are the provisions of the required transport infrastructure that has been agreed to meet the community's objectives in the Long-Term Plan and the requirements under the Local Government Act as one of the Council's core services.

The AMP for Transport seeks to improve standards for both sealed and unsealed road networks. Sustainable transport will be promoted with safer walking and cycling opportunities, while connecting important points of interest such as schools to parks and town centres. It is also important to ensure that flooding risk to the transport network is minimised where possible.

The adjacent table summarises the asset groups and data in Kaipara which are under the provisions of the Activity Management Plan.

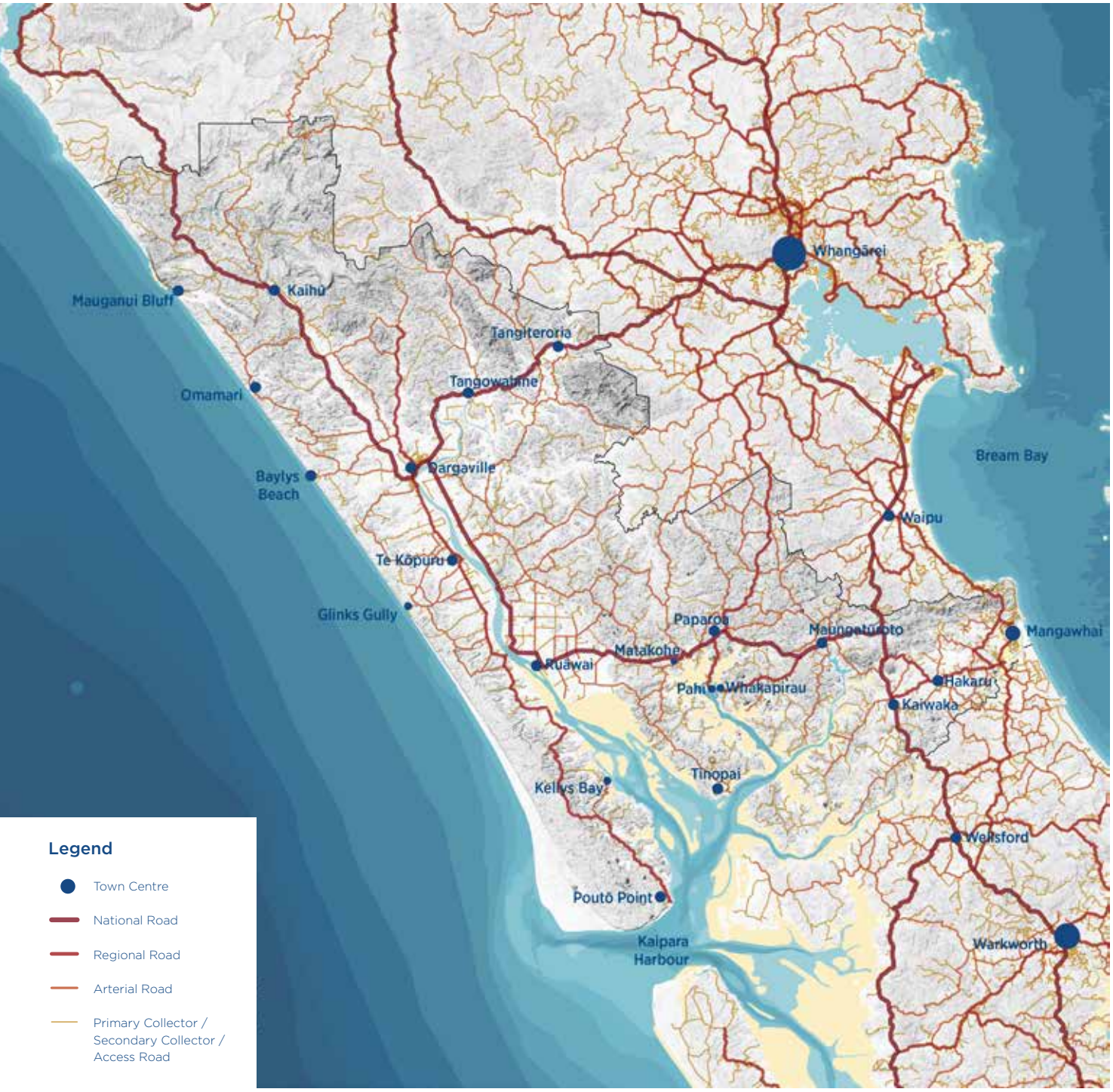
Inventory of Transport Assets in Kaipara

Transport Asset	Quantity
Bridges	348
Channels	1,845 km
Drainage	139 km
Drainage Structures	14,462 km
Footpaths	91 km
Land	3,234 ha
Lighting	1,184
Furniture	Railings, retaining walls, traffic facilities
Signs	9,459
Pavement	448 km
Unsealed	1,125 km
Formation	1,573 km

4.1 | Transport

Kaipara's roading network is made up of roads that serve different purposes and are broken up by roading classification called One Network Road Classification (ONRC). The adjacent map shows the breakdown of the Kaipara roading network.

The ONRC considers the needs of all road users, be they motorists, cyclists or pedestrians. It gives road users more consistency and certainty about what standard and services to expect on the national road network, including the most appropriate safety features.



4.1 | Transport

The NTA was formed to manage all of Northland s roading and transport assets on behalf of each of the territorial authorities.

The formation of the NTA was for improving the delivery of all transport services through better professional service resource utilisation. This has assisted in standardising activity management including transportation procurement across Northland.

Asset Condition

Overall network condition and performance is good, although there are some performance issues relating to sealed pavements, unsealed roads, bridges and footpaths due to historic under-investment in renewals. There is also an increasing trend of wet road and nighttime crashes on the low volume rural sealed network.

The condition of the road network assets is determined by detailed condition inspections and asset performance analysis that is carried out in accordance with Transport Industry Data Standards and Best Practices and the standards of the NZTA's (Waka Kotahi) Performance Monitoring Tool, (PMRT).

Modelling of asset performance using the condition information enables a programmed approach to managing renewals and maintenance of the transport network assets. The NTA has been utilising industry best practice modelling tools and where tools do not exist, developing modelling tools so that investment decisions can be made that deliver the appropriate long-term outcomes.

NZTA's PMRT also provides benchmarking of the transport network through Peer Comparison. This involves comparing each Council's transport network assets and service delivery so that a consistent manner can be applied into the future.

What we need to work on to get better

- Approximately 10% of the sealed network is in a very poor condition, and is the highest priority to be improved
- Residents' satisfaction with the unsealed network is low. The NTA is establishing an Unsealed Road Network Centre of Excellence (CoE) to assist with the decision-making and the evidence required to support the investment in the unsealed roading network. The CoE is a resource that offers continuity in the way upgrading, maintenance and renewal of the unsealed networks are managed
- Bridges and culverts are in relatively good condition with approximately 27 of 348 bridges being posted and/or restricted from HPMV/50Max vehicle use. The age profile for bridges shows an increasing need for planning the replacement bridges and component renewals to extend the life of non-critical route bridges. This need has arisen out of the post-world war bridge construction activities that occurred during the late 1940's and through into the 1960's
- Footpaths are in poor to very poor condition through lack of maintenance and renewals investment. These assets are also older and constructed to obsolete standards. Footpath renewals will be updated to the latest standards and a progress programme of investment based on priority is being introduced to tackle this underinvestment situation.

Investment in maintenance and renewals and development of new strategies will address these performance issues.

4.1 | Transport

Activity Issues

The NTA has summarised the challenges to meet the wider Northland customer expectations into seven problem areas.

Northland Transportation Issues:

Sealed Roads – Larger renewal programmes to address historic backlogs and inappropriate allocation of in-house costs and maintenance contract fixed costs in Kaipara and Far North are resulting in our sealed roads having some of the highest costs per kilometre in our peer group.

Drainage – Ad hoc historic maintenance of drainage systems has increased the susceptibility of our pavements to water ingress and premature failure. It also increases the likelihood of flooding and slips during heavy rain events.

Resilience – Erosion-prone land, high-intensity rainfall events and low-capacity drainage systems make our roads susceptible to slips and flooding during heavy rain events, resulting in road closures that often affect critical routes. Transport networks will need to adapt to increasingly challenging conditions and prioritise works to mitigate the highest risks. For example, slips are expected to get worse over time due to the effects of climate change. However, slips are not immediately addressed if they do not affect travel time due to Northland's significant geology problems relating to slow land movements.

As a result, Council cannot financially afford to fix every slip.

Unsealed Roads – Use of out of specification General All Passing (GAP) aggregates on our unsealed roads is resulting in:

- Making up 72% of the network
- Adverse health impacts to residents due to dust
- High levels of community dissatisfaction due to poor road condition and
- High maintenance costs.

Structures – Lack of historic maintenance and renewal of structures in the Far North and Kaipara is resulting in a large number of structures prematurely reaching the end of their life which is adversely affecting freight access and increasing demands for expensive bridges. Hence the need to upgrade bridges on the roading network that are reaching the end of their lives and require renewal. The bridge upgrade programme will seek to improve the overall structural standard so that the design standard is able to be maintained for the vehicle types expected.

Growth and Alternative Transport – Rapid growth and lack of suitable alternative transport modes are causing congestion in Whangarei during commuter peaks, in Kerikeri/Waipapa and Mangawhai during peak holiday periods. Lack of alternative transport modes in many communities restricts access to places of employment, education and social opportunities which is leading to severance, safety issues and higher levels of social deprivation.

Safety – Northland has a narrow, winding and unforgiving rural road network which, combined with poor driver behaviour, has resulted in the region being a high Community at Risk for Death and Serious Injury (DSI) crashes and the rate of DSI crashes is trending upward for all three councils. The Far North and Kaipara District Councils also have higher Collective Risks than their peer group.

4.1 | Transport

The Council has recently adopted place based spatial plans for the key urban areas. To enable future development so that it does not cause unintended consequences at a later stage, Network Operating Frameworks are proposed.

A Network Operating Framework is an agreed process that enables collaborative discussions and that links strategic intent with operational and planning decisions. It does this using workshop-based steps and a common language for the stakeholders to use. Towards the end of the process, there is a tool that allows performance deficiencies to be identified and interventions tested and compared. It is a holistic vision of transport that focuses on:

- Moving people and goods, not vehicles, and seeing this by time of day
- Seeing transport as supporting broader community goals
- Balancing the competing demands for limited road space
- Thinking 'network' rather than sites or routes.

Kaipara Transport Direction

- Less focus on sealed roads
- More focus on unsealed roads
- More focus on providing adequate drainage
- More focus on bridge renewals
- Continued focus on safety including speed management
- Alignment with climate change adaptation planning and focus on resilience improvements
- More focus on low emissions, sustainable and circular economy-guided activities
- Continuation of the shared path programme
- Continuation of intersection improvements

4.1 | Transport

Key Strategic Issues

A review of the issues associated with transport reveals several common issues which are outlined in the adjacent table. The medium-high and high issues (highlighted green) are identified as key issues. These issues have had an options assessment on the following page on how the Council and NTA plan to mitigate or manage this issue in the future.

Transport Issue and Consequences

Issue / Risk	Likelihood	Consequence
Unsealed Roads – customer perception issues	Low – Medium	• Dust leading to resident dissatisfaction • Perception of LOS unrealistic (urban to rural expectations) • Developments occurring that do not allow provision for LOS change to sealed roads
Funding – ability for NTA to attract level of Government funding and Council's ability to fund part share of significant transport projects	Low – Medium	• NZTA's future ability to provide capital improvements subsidy • Changing Government Priority Statement priorities • The Council's ability to provide for the local share of investment priorities • Mangawhai growth drives demand for significant investment by the Council, thereby reducing the ability to invest elsewhere.
Drainage – ability to deal with regular inundation	Low – Medium	• Poor historic drainage maintenance reduces roading drainage assets ability to deal with inundation • Undersize or misaligned culverts
Industry capacity and capability	Low – Medium	• Competency of contractors – lack of skilled workforce and upskilling of existing workforce • Quality of contractors – procurement compliance, industry best practice competency • Quantity of contractors tendering for projects • Delay to delivery of capital and new work programmes due to capacity within the industry

4.1 | Transport

Road Safety – high number of fatal and serious crashes	Medium – High	• Increasing trend of wet road and nighttime crashes • Increasing trend of Death and Serious Injury crashes, e.g. drink or drug driving, driving with no seatbelts, unfit for use vehicles, speed related crashes
Resilience – climatic events, climate change and sea level rise impacts	Medium – High	• Communities cut off from essential services when the network is under duress through emergency events • Unstable soils affected during emergency/heavy rainfall events • Climate change and sea level rise affecting coastal assets and increased coastal flooding during high tides that coincide with heavy rainfall events • Developments occurring in areas that will be subjected to increasing sea levels • Need to retreat assets due to climate change and sea level rise in the future, potentially affecting whole communities
Structures – including bridges and other structures condition	Medium – High	• Aging bridge stock • High number of wooden structures in poor to very poor condition • 27 bridges restricted from HPMV and 50MAX

4.1 | Transport

Issues Options Assessment

The following tables are options assessments for the three key strategic issues which present the highest risk for transport, where the preferred option for each issue is highlighted green and explained further in the anticipated response.

Anticipated response to transport issues

Issue	Options	Implications
Road Safety – High number of fatal and serious crashes	Do Nothing	High likelihood of the upward trend of Death and Serious Injury will continue.
	Focus on a site-specific behavioural campaign	Kaipara-specific targeted campaigns at the groups where the majority of the crashes are occurring i.e. young people driving on unsealed roads. Does not include any safety infrastructure improvements i.e. crash barriers on blind corners.
	Behavioral campaign and black spots/ identified safety issues improvements	Kaipara-specific targeted campaigns at specific crash issues and programme of safety improvements at known locations to prevent or reduce serious injury.
Anticipated response – Improving community road safety awareness through educational programmes and improving physical attributes of the transport network to reduce the occurrence and reduce the effect of accidents on the transport network. Investing in better surface treatments to improve skid resistance in wet road conditions and investing in better roadside delineation to improve visibility at night.		

4.1 | Transport

Anticipated response to transport issues

Issue	Options	Implications
Resilience – climatic events, climate change and sea level rise impacts	Do Nothing	Blown out budgets due to the high amount of unscheduled emergency works to clear slips and flooding debris and follow up repairs.
	Improved assets	Proactive maintenance and renewals of vulnerable roading assets such as aging bridges and coastal roads to create more resilience and reliable connection to the wider network.
	Adaptive planning to establish appropriate community and infrastructure response to climate change events	Develop adaptive plans for vulnerable and coastal communities that indicate a future strategy and funding allocation for proactively dealing with climate related events.
Anticipated response – Development of a regional resilience strategy and implementation of better network resilience management. Investment repairing slips and improving drainage assets to reduce the impact of heavy rain events on the transport network.		

Issue	Options	Implications
Structures – including bridges and other structures condition	Do Nothing	Could result in some properties and settlements being cut off until a temporary bridge is erected.
	Replace/renew only bridges and structures that are deemed a high safety risk of failure	This would replace or renew a smaller amount of bridges and structures each year and may not keep up with best practice and structural standards.
	Replace/renew through a systematic programme approach which aims to tackle enough to spread the cost over 30 years	A programme approach provides an affordable solution that provides the opportunities that industry and community need to achieve commercial and social connectivity.
Anticipated response – Delivery of a programmed, proactive bridge upgrade and replacement programme over the following 30 years (see graph below).		

4.1 | Transport

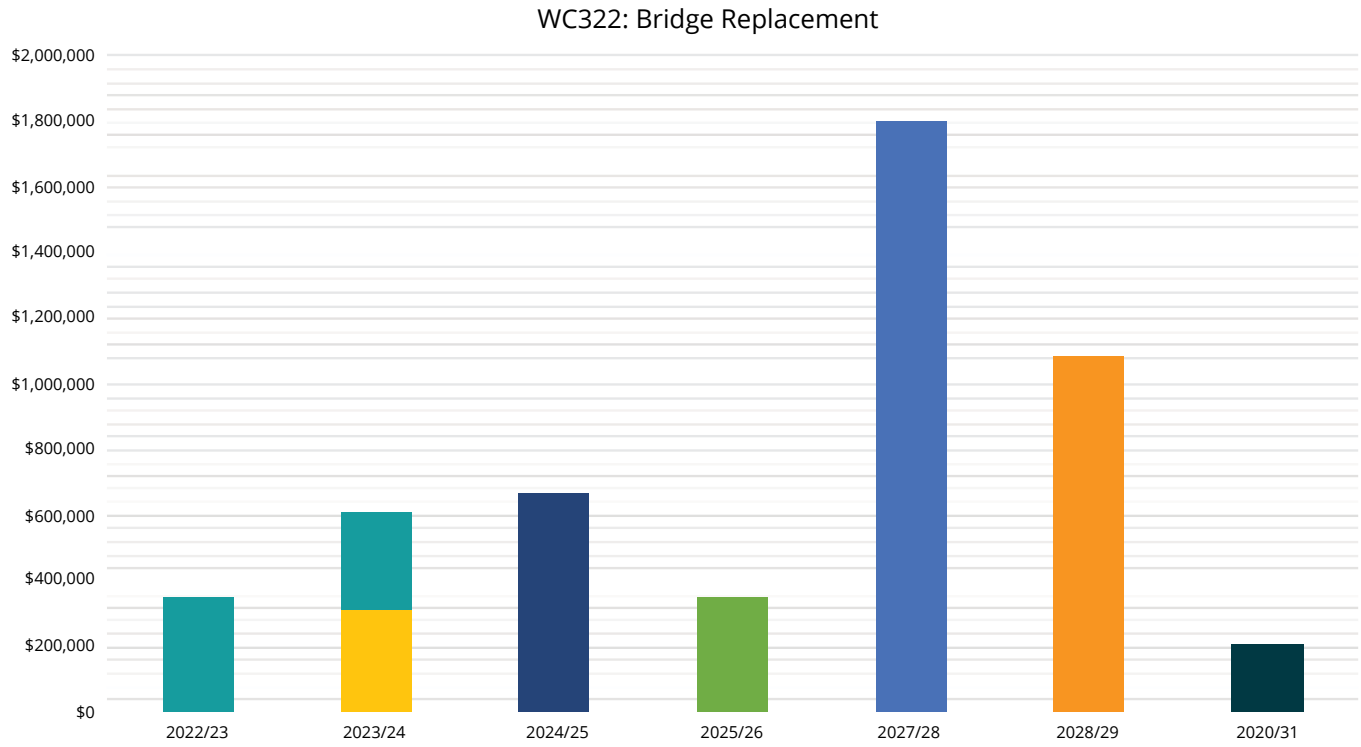


Figure 12. Cost of Bridge Replacement 2022-2031

3.1 | Transport

Activity Funding Strategy

Activity funding strategy puts a focus on renewals to reduce ongoing maintenance cost.

The below figure shows the breakdown in the first year of the LTP to be 50% new projects 50% renewals and maintenance. This is driven by the transport projects linked to the Kaipara Kickstart programme for sealing the remaining unsealed section of the Pouto Road. The new projects expenditure then reduces from 2022/23, with a balanced programme of New Works and Operational Maintenance and Renewals work to keep funding of assets at an optimized level to aid in attracting subsidy across the whole programme. In later years of the 10-year programme focus shifts away from purely maintenance and focuses on renewals of assets to provide a better long-term investment outcome for council.

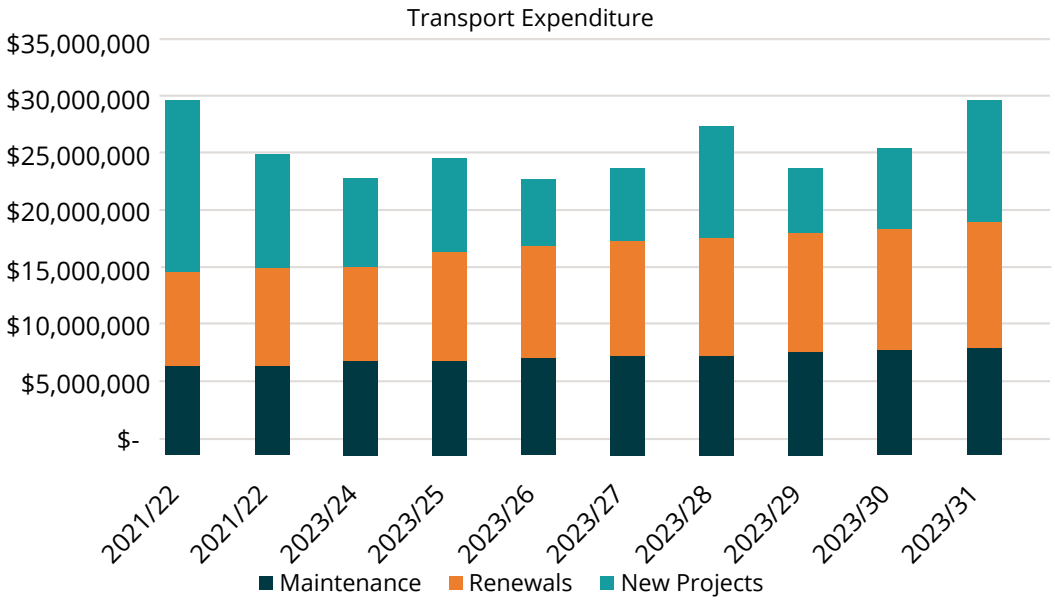


Figure #. Showing the breakdown of transport expenditure by type

4.1 | Transport

Prospective Infrastructure Strategy Costs

For the year ended: 30 June	Total Transport Budget ($'000)						
	2021-26	2026-2031	2031-2036	2036-2041	2041-2046	2046-2051	2021-2051
Total operating expenditure	65,981	76,834	91,317	107,361	128,941	151,829	622,262
Capital Expenditure - Growth	18,659	23,540	1,435	1,632	1,855	400	47,521
Capital Expenditure - LoS	26,297	27,042	29,417	33,446	38,026	8,209	162,436
Capital Expenditure - Renewal	55,289	63,747	90,138	85,366	102,202	22,064	418,806
Total capital expenditure	100,245	114,328	120,990	120,443	142,083	30,673	628,763
Total expenditure	166,226	191,162	212,307	227,804	271,024	182,502	1,251,025

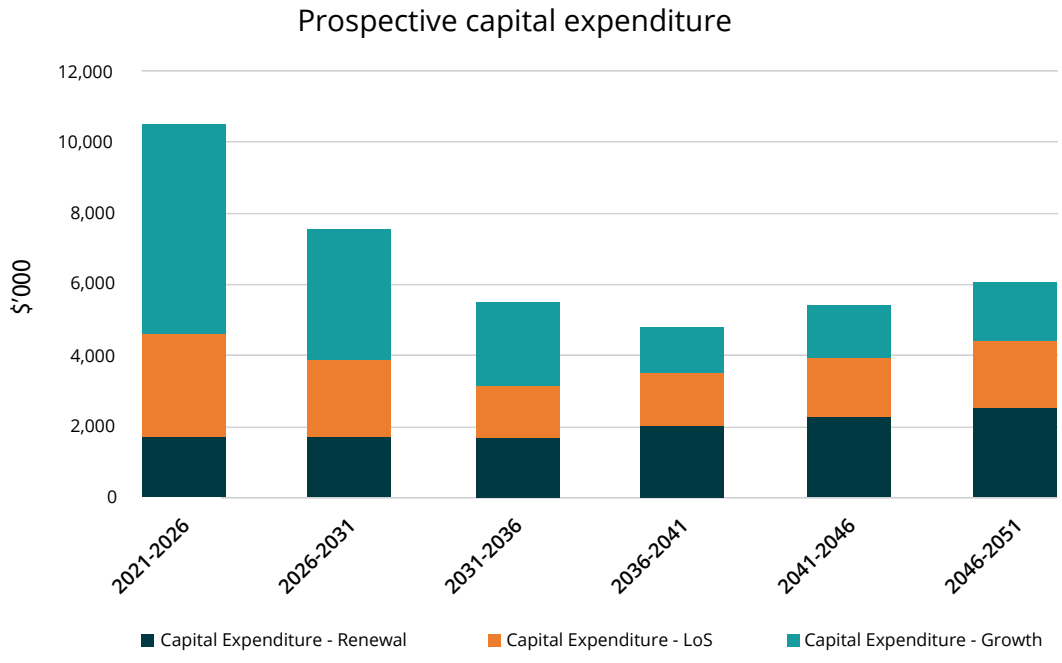


Figure 13. Transport Budget

4.2 | Water Supply

Activity Overview

The Water Supply AMP covers the storage, treatment and supply of quality potable drinking water.

It is critical for constant, adequate, sustainable and high-quality water to be supplied to the reticulated areas of the Kaipara District for domestic consumers, growth and local economic development. However, Kaipara is faced with external factors affecting our communities, such as climate change, which requires measures be put in place to safeguard this precious resource.

Water Supply in Kaipara

Five community water supply schemes currently run for Dargaville (including Baylys Beach), Glinks Gully, Ruāwai, Maungatūroto and Mangawhai (see figure of next page) providing them with a sustainable safe drinking water supply.

Outside of these reticulated areas communities rely on self-serviced water supplies, mainly through private water tanks.

Kaipara's water supply networks are quite old and are thus in predominantly poor condition.

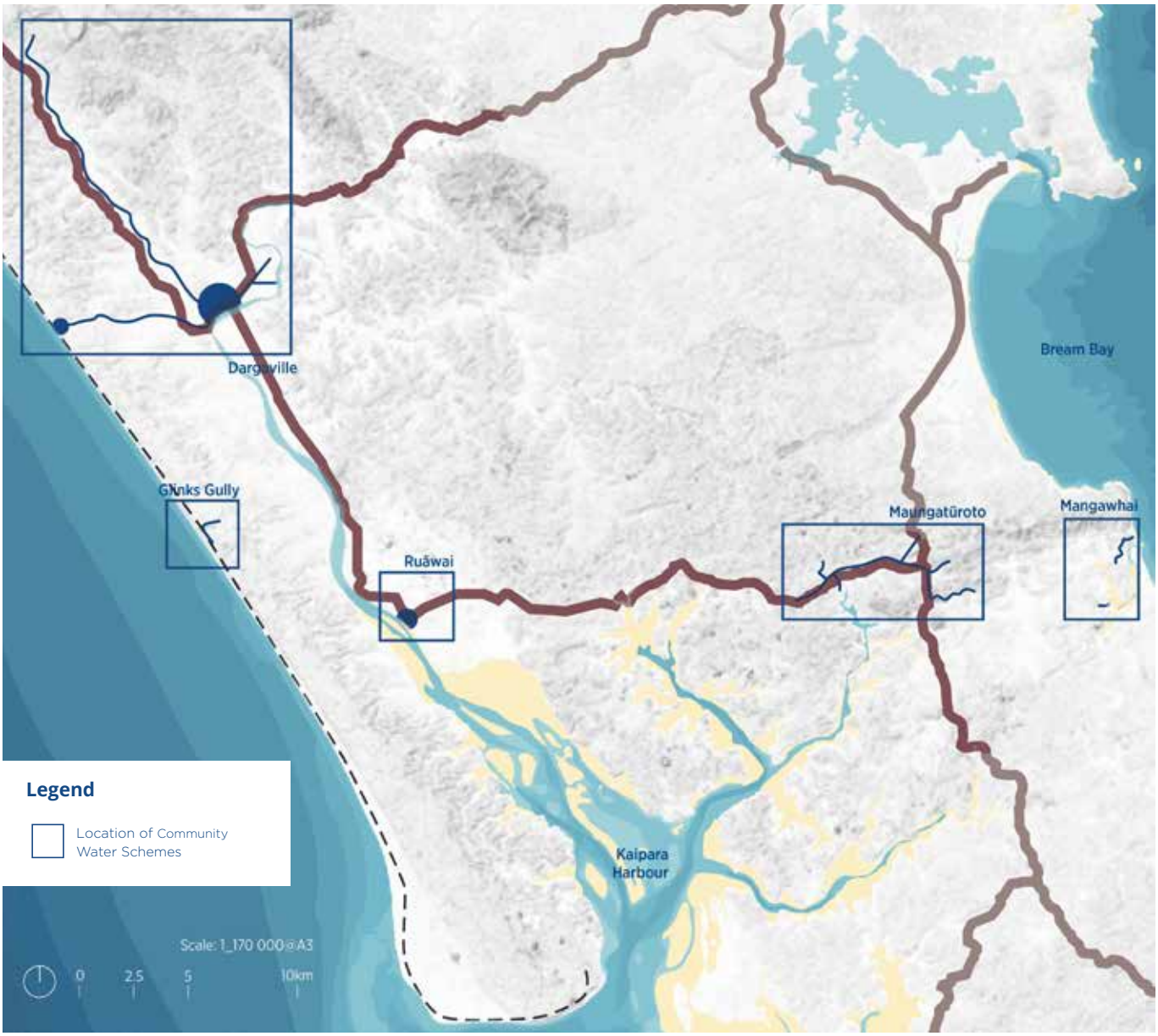


Figure 13. Locations of Kaipara District's five community water schemes

4.2 | Water Supply

Condition of Water Supply Assets

Kaipara's water supply infrastructure is aged and in largely poor condition. More accurate data is required to fully understand the true extent of all water supply assets condition.

Condition of Water Supply Assets in Kaipara

The Council faces historic issues around aging and poor condition of water supply infrastructure.

The overall poor condition results in an increased risk of failure and significant repair costs. Water supply is becoming more critical with climate forecasting being increasingly extreme (as demonstrated in recent drought conditions).

Data around asset condition is sparse in certain areas, and further investigation is required to optimise asset management practices.

A pragmatic approach is required, with particular focus on poor quality assets. Due to the sheer volume of the aging network, upgrades need to be made based on a needs/condition-based criterion first, rather than based on asset design life.

Figure 14. Condition of Water Supply Assets

4.2 | Water Supply

Key Strategic Issues

A review of the issues associated with the water supply schemes reveals several common issues which are outlined in the adjacent table. The medium-high and high issues (highlighted green) are identified as key issues. These issues have had an options assessment on the following pages on how the Council plans to mitigate or manage this issue in the future.

Table #. Water Supply Issue and Consequences

Issue / Risk	Likelihood	Consequence
It is difficult to keep water quality up to standard when treatment and supply systems come under pressure	Low – Medium	Poor water quality risks community public health and people's faith in the Council services and systems.
Decreased ability to respond to customer issues	Low – Medium	Customer dissatisfaction; people's faith in the Council deteriorates.
Rapid growth in Kaipara will increase demand for water	Low – Medium	Unreliable security of water supply coupled with ad hoc planning and consenting has the potential to continue the decentralised water approach which is unable to be monitored for water safety or provide additional fire fighting for community resilience.
The current asset data and asset register are unreliable and inaccurate	Medium – High	Council cannot efficiently and effectively plan future works and capital upgrades without sufficient knowledge of current asset condition. The risk is that there will be spikes in activity budgets as costly reactive expenditure occurs (emergency work rates) and assets continue to age and risk further failure.
Current infrastructure is aged near or past its useful life. $24m of pipe assets are in very poor condition, with constant breakages and leakages in the network	Medium – High	Loss of potable water creates greater stress on treatment plants, supply chains and high users of water such as processing plants, schools and hospitals.
As a result of climate change, Northland is forecast to become drier overall, with some periods of heavier rainfall	High	Kaipara is currently dependent on its stream flows for water supply, and these will be no longer be sufficient to support the current townships moving forward.

4.2 | Water Supply

Issues Options Assessment

The following tables are options assessments for the three key strategic issues which present the highest risk for water supply, where the preferred option for each issue is highlighted green and explained further in the anticipated response.

Table #. Anticipated response to water supply issues

Issue	Options	Implications
The current asset data and asset register are unreliable and inaccurate	Do Nothing	Unreliable data results in uncertainty in asset value and condition. Possible inefficiencies of management and failure most likely. Less asset management certainty.
	Cleanup of existing data	Current data set improved but this is reliant solely on existing knowledge. Can be done relatively quickly, with some initial cost and time associated.
	Additional data gathering	Gaps in network knowledge to be fixed, allowing better maintenance prioritisation of assets. Higher allocation of cost and time associated with inspections, data inputting and verification.
Anticipated response – Gather additional data to sequence the costs of required renewals, based on condition rating and age. The information gathered will help prioritise renewals investment for assets which are in poorest condition and spread the replacement programme over multiple years to reduce the spike impact on rates.		
Issue	**Options**	**Implications**
As a result of climate change, Northland is forecast to become drier overall, with some periods of heavier rainfall	Do Nothing	Possible system failures in drought scenario, with consequences for residents and the local economy. Increased costs for residents and businesses due to water cartage.
	Improved assets	Improve the pipe network which would result in fewer breaks/leakages and therefore improve the use of existing water supplies. Renewal costs to provide resilience to the existing network. Does not address water security and dry period supply.
	Additional storage and water schemes	Increased security and quantity of supply. Future-proofing for increased likelihood of dry periods. Higher capital and operating costs required for new assets and associated maintenance.
Anticipated response – Over the medium-long term, additional water storage will help communities adapt to increasing drought conditions and contribute to their resilience. The water storage projects have a higher upfront capital cost but a greater number of wider strategic benefits. These benefits include supplying water for both towns and new horticulture enterprises. This option does require a collaborative funding effort to get them across the line including funding from central government.		

4.2 | Water Supply

Table #. Anticipated response to water supply issues

Issue	Options	Implications
Current infrastructure is aged near or past its useful life. $24m of pipe assets are in very poor condition, with constant breakages and leakages in the network	Do Nothing	Network deteriorates, possible risks to water quality and supply, resulting in economic and public health problems.
	Reactive repair and maintenance of assets	Requires prioritising replacement of the poorest condition assets whilst still maintaining wider network. May be difficult to budget for the long term as failures may become unpredictable.
	Proactive repair and maintenance of assets	Systematic replacement of assets according to condition and age before incurring leakage or infiltration issues. Higher cost to lift Levels of Service to provide greater resilience over time. Needs strong understanding of asset conditions across the whole network to be effective.
Anticipated response – A proactive response requires prioritised repairs and maintenance based on up-to-date and comprehensive data. A proactive response will contribute to greater water resilience in our communities. A reactive stance may look to save costs in the short-term, but the nature of the reactive works is generally more expensive overall than proactive/planned maintenance and repairs.		

4.2 | Water Supply

Activity Funding Strategy

This activity requires Increased capital investment to be spent over a long-sustained period, with particular emphasis placed on early testing and asset management. The adjacent table outlines major capital expenditure between 2021-2051.

Water Supply Assets Funding Strategy

Emphasis is placed on testing and asset management, in order to best utilise the management process. The network is closely evaluated to identify which parts are in poor condition, allowing for works to be prioritised accordingly.

As a result, a key focus is placed on maintenance renewals and improvements of existing networks in order to provide a secure and sustainable system for the future.

4.2 | Water Supply

Prospective Infrastructure Strategy Costs

For the year ended: 30 June	Total Water Supply Budget ($'000)						
	2021-26	2026-2031	2031-2036	2036-2041	2041-2046	2046-2051	2021-2051
Total operating expenditure	16,694	17,692	20,510	23,775	27,004	30,629	136,304
Capital Expenditure - Growth	206	984	13,286	1,852	0	0	16,327
Capital Expenditure - LoS	579	0	0	0	0	0	579
Capital Expenditure - Renewal	7,227	9,201	11,149	12,186	8,568	9,741	58,072
Total capital expenditure	8,011	10,185	24,435	14,038	8,568	9,741	74,978
Total expenditure	24,705	27,877	44,945	37,813	35,572	40,370	211,282

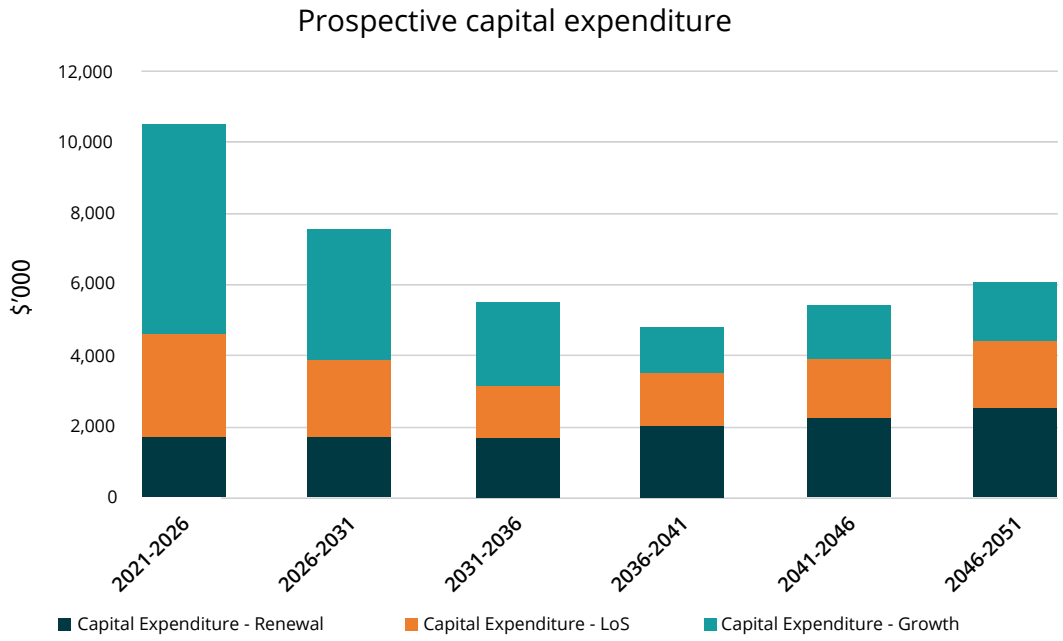


Figure 15. Water supply Budget

4.3 | Wastewater

Activity Overview

The wastewater activity focuses on protecting public and environmental health by collecting and treating wastewater prior to its discharge into receiving environments. Continued growth, as well as the need to provide for visitors in peak periods (particularly in coastal communities), has resulted in the Council's ongoing commitment to significant wastewater infrastructure development.

The Council undertakes asset management, planning, operation and maintenance of these wastewater schemes, including capital and refurbishment programmes, consent monitoring and continuous maintenance through its network contractors.

"It is highly important that we maintain wastewater from adversely affecting the people and receiving environment."

Wastewater in Kaipara

Provisioning wastewater infrastructure and ensuring environmental compliance comes with considerable pressures particularly on smaller communities. It is highly important that we maintain wastewater from adversely affecting the people and receiving environment.

The Council operates six community wastewater schemes (see figure on next page) in Dargaville, Glinks Gully, Kaiwaka, Maungatūroto, Te Kōpuru and Mangawhai. The purpose of these schemes is to protect public health by providing reliable wastewater service that minimises adverse effects on the public and environment.

Generally, this is done by collecting and treating wastewater prior to releasing it into the receiving environments. The quality of discharged wastewater is then monitored by NRC via consenting processes.

KDC owns and manages a number of smaller wastewater treatment facilities, generally servicing campgrounds and other community facilities. However, operations and maintenance funding are from community facilities budgets and are managed under independent service agreements

4.3 | Wastewater

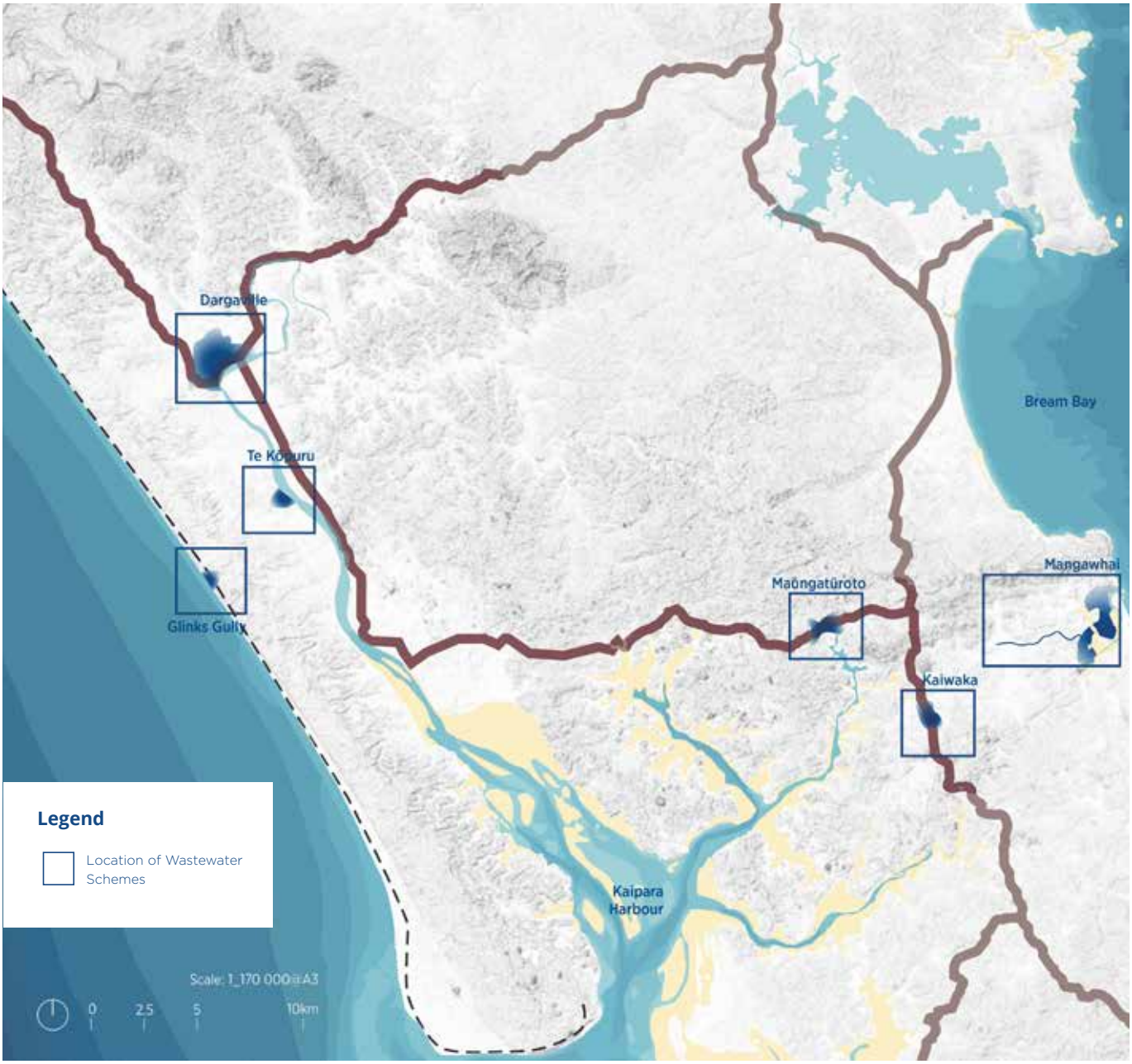


Figure 15. Kaipara District's Six Wastewater Schemes

4.3 | Wastewater

Condition of Wastewater Assets

Kaipara's communities value the streams, estuaries, rivers and harbour. As a result, the Council has historically prioritised investment into Kaipara's six community wastewater schemes to protect these sensitive receiving environments. This has delivered an overall condition rating of the District's wastewater assets as average to above average.

Kaipara's Wastewater Asset Condition

Most of Kaipara's wastewater network are 11- 20 years old – Figure #. The relatively young age of the network, along with the Council's proactive maintenance programme has resulted in most of the six schemes rated as average or above average condition.

Mangawhai is Kaipara's newest wastewater treatment plant, which is recognised as having the highest quality of wastewater treatment. There is, however, a lack of current knowledge around the condition of some of Council's networks, particularly in Mangawhai, whose reticulated network has not proactively been surveyed since it was installed in the early 2000's. The condition rating process involves the use of mobile cameras and contractor surveying of reticulated pipelines. There has been an ongoing monitoring programme, which has reduced the likelihood of system failure while maintaining consistent Levels of Service. 24km of pipeline have been surveyed since 2018 in Dargaville. 49km of pipeline is scheduled to be surveyed in Mangawhai, and 10km of pipeline are scheduled in Maungatūroto in the next stages of the condition rating programme.

The biggest threat to the wastewater network is stormwater infiltration into the piped network, during high rainfall events. For example, Dargaville's network is one of the oldest in the district and has up to 15 times the wastewater flows during high rainfall.

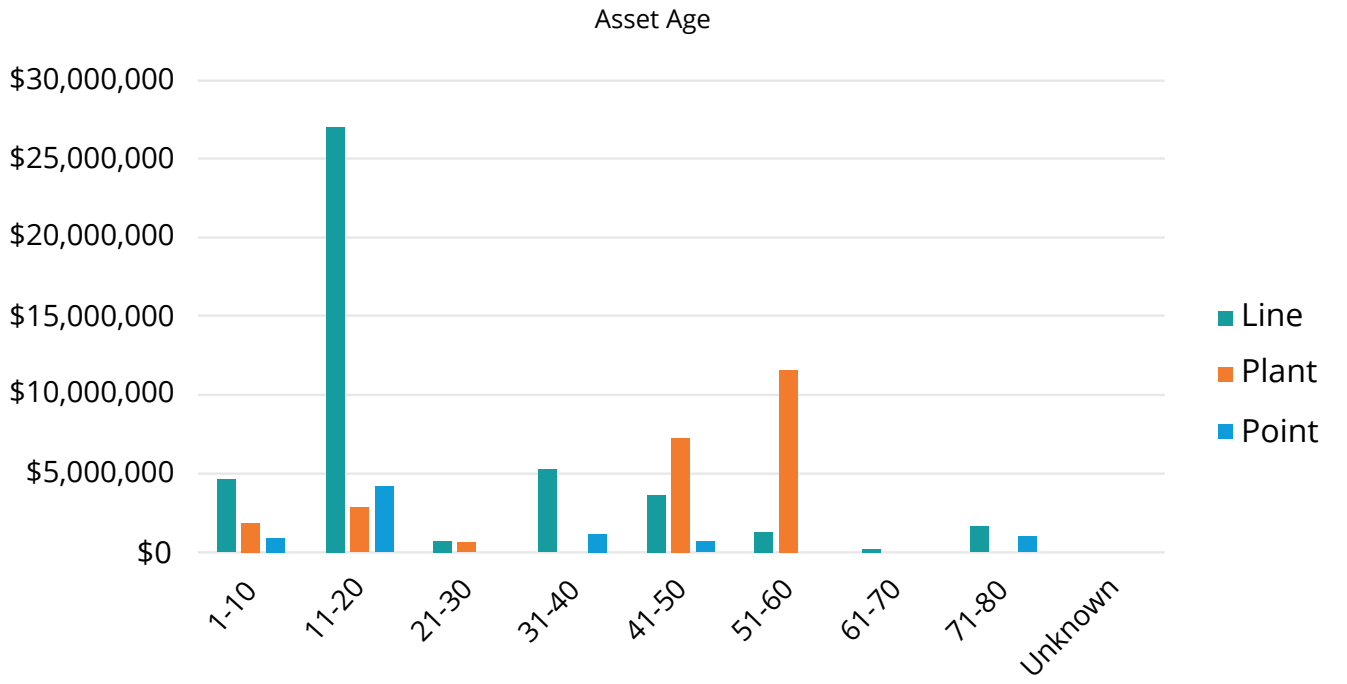


Figure 16. Wastewater Asset Age

4.3 | Wastewater

Key Strategic Issues

The issues or risks posed to the Council's six wastewater schemes, assessed by likelihood and consequence is outlined in the adjacent table. Those coloured green are those which pose the highest risk in Kaipara. These issues have had an options assessment on the following pages for how the Council plans to mitigate or manage this issue in the future.

Table #. Wastewater Supply Issue and Consequences

Issue / Risk	Likelihood	Consequence
Increased legislative requirements and higher environmental standards are increasing the costs to maintain assets and keep consents compliant	Low – Medium	The Council has invested heavily in the last three years to ensure all environmental consents for wastewater treatment are legal and compliant. If this Level of Service was to decline, NRC, tangata whenua and the affected communities may complain and lobby to the Council to rectify.
The future land disposal area and associated consenting has not yet been determined for the Mangawhai Community Wastewater System (MCWS)	Low – Medium	The Council is investigating options for land disposal close to the existing disposal area. If this option is not forthcoming, then alternative treatment and disposal options will need to be found.
Capacity for new connections to the MCWS may not be able to be accommodated unless there are minimum upgrades undertaken each year	Low – Medium	If the Council rezones land for additional development, it may not be able to accommodate additional connections unless there is a Private Agreement to fund the upgrade.
Capacity of the five other wastewater schemes* is unknown until capacity modelling is undertaken	Medium – High	The Council may not be able to accept additional connections to individual wastewater schemes until capacity modelling is carried out. This could put off potential developers and people who are wishing to invest in the District.
Inaccessibility of some pipes reduces the amount of inspections, which increases the risk of scheme failure	Medium – High	Wastewater overflow into street or harbour. NRC compliance and negative media cause damage to the Council's reputation.
The timing of when future development will occur in the key urban areas and how it is to be funded (Development Contributions or Developer Agreements) needs to be confirmed to avoid extra holding costs to the Council and negative environmental effects around its current schemes	Medium – High	If the Council upgrades bulk wastewater infrastructure and development is delayed and not taken up in a staged manner, then the cost of that borrowing is borne by the Council and the District's ratepayers.

*Five wastewater schemes include: Dargaville, Glinks Gully, Kaiwaka, Maungaturoto and Te Kopuru

4.3 | Wastewater

Issues Options Assessment

Inaccessibility, timing of future development and unknown capacity are the three most immediate issues for wastewater infrastructure in Kaipara. The following tables outline the possible options and resulting implications in response to each issue, where the preferred option for each issue is highlighted green.

Table #. Anticipated response to wastewater issues

Issue	Options	Implications
Inaccessibility of some pipes reduces the amount of inspections which increases the risk of scheme failure	Do Nothing	Inability to detect the most vulnerable parts of the pipe network will result in inaccurate condition assessments and could cause fluctuations in forecast budgets.
	Undertake CCTV camera and contractor surveys before and after inaccessible sections to gain a sample of the condition.	Inaccessible sections of the network will have a best endeavours condition rating based on surveying and inspections with additional contingency for unknown elements.
	Undertake more rigorous CCTV camera and contractor surveying to ascertain accurate condition ratings of the entire pipe network.	Tackling difficult pipe sections that most probably need replacing as part of the inspection programme will give the overall scheme additional resilience.
Anticipated response – Gaining a complete understanding of the entire wastewater system is an ambitious undertaking but needs to be strived for. Once we can benchmark the current status of our assets, we can then take a more pragmatic approach to condition assessments in the future not just based on age or other arbitrary factors.		

4.3 | Wastewater

Table #. Anticipated response to wastewater issues

Issue	Options	Implications
The timing of when future development will occur in the key urban areas and how it is to be funded (Development Contributions or Developer Agreements) needs to be confirmed to avoid extra holding costs to the Council and negative environmental effects around schemes that it anticipates growth	Do Nothing	Not having an upgrade plan for when development proposals start coming into the Council could result in delays to consenting and future development.
	Council seeks to negotiate a Private Agreement approach for large development proposals.	The full cost of the wastewater upgrades are difficult to estimate ahead of time and therefore who pays for additional costs needs to be understood. Executing an agreement ties the Council and the developer into an implementation timeframe which provides certainty of delivery and cost recovery.
	Developer transfers the cost to upgrade the bulk wastewater infrastructure to the future owner of the land.	The payback period for the Council could be protracted depending on the take up timeframes of land for development.
Anticipated response – By understanding our system and completing future project assessments that are associated with growth, we can provide better information to developers who wish to build in the district, whilst also protecting the interests of ratepayers. By being able to negotiate how the infrastructure is provided, we will be able to ensure that an appropriate level of infrastructure is built to facilitate and plan for growth. This will also reduce the likelihood of higher costs and inefficiencies of constructing the required infrastructure after development has occurred.		

Issue	Options	Implications
Capacity of the five other wastewater schemes* is unknown, until capacity modelling is undertaken.	Do Nothing	Any upgrades to the scheme may result in too little or too much capacity, which creates imbalance in asset management investment.
	Undertake a capacity modelling project to gain a complete picture of the wastewater schemes.	Generating a capacity wastewater model requires robust data inputs and known development growth scenarios for the areas of interest. If the inputs are inaccurate then the results will also be inaccurate.
	Undertake a capacity modelling project alongside a development proposal.	Capacity model generally has a focus on the development proposal and can be pushed through as part of a consenting approval. This can result in not predicting accurately the wider scheme capacity. The main benefit is that the developer pays upfront for a cost that the Council usually is required to cover.
Anticipated response – Complete modelling to fully understand our networks and what is required to maintain our current Levels of Service in the changing legislative environment and includes forecasting future growth. This allows us to effectively and efficiently plan and deliver projects based on sound principles and knowledge of condition, capacity and criticality.		

*Five wastewater schemes include: Dargaville, Glinks Gully, Kaiwaka, Maungaturoto and Te Kopuru

4.3 | Wastewater

Prospective Infrastructure Strategy Costs

For the year ended: 30 June	Total Wastewater Budget ($'000)						
	2021-26	2026-2031	2031-2036	2036-2041	2041-2046	2046-2051	2021-2051
Total operating expenditure	28,429	28,740	33,716	38,406	40,240	41,665	211,195
Capital Expenditure - Growth	9,404	19,790	23,752	7,034	1,333	1,515	62,827
Capital Expenditure - LoS	574	3,032	4,774	3,349	3,808	4,329	19,867
Capital Expenditure - Renewal	3,249	2,966	2,201	2,502	734	814	12,466
Total capital expenditure	13,227	25,788	30,727	12,885	5,875	6,659	95,161
Total expenditure	41,655	54,528	64,444	51,291	46,115	48,323	306,356

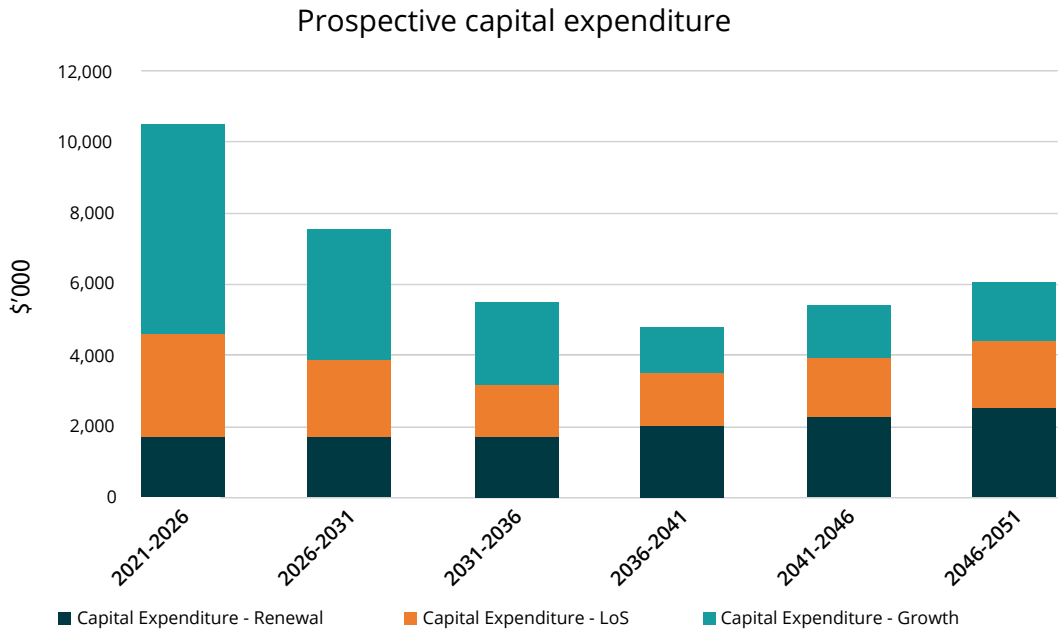


Figure 16. Wastewater Budget

4.4 | Stormwater

Activity Overview

The purpose of the Stormwater AMP is to plan and manage for drainage of normal and extreme water storm events.

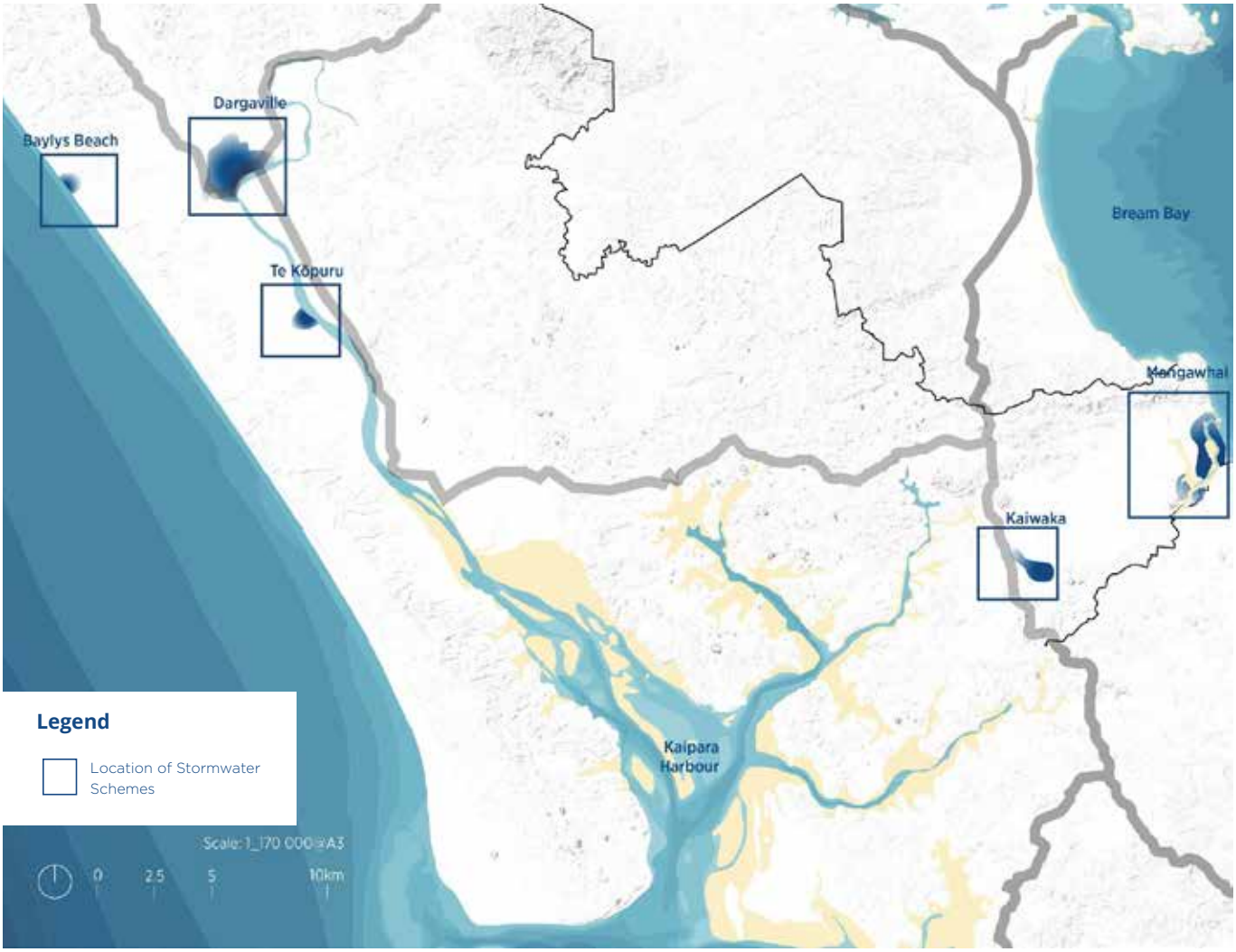
The provision of sustainable stormwater systems is about finding a balance between maintaining and enhancing natural watercourses and providing piping to enable urbanisation to occur. The Council is required to manage the effects of collecting and treating stormwater runoff prior to it entering the receiving environment water such that it is not detrimentally affected.

Locations of the Council's Stormwater Schemes

The Council operates five community stormwater drainage schemes for Dargaville, Baylys Beach, Te Kōpuru, Kaiwaka and Mangawhai. Stormwater systems predominantly incorporated into the road network are provided in Glinks Gully, Kelly's Bay, Pahi, Whakapirau, Maungatūroto, Tinopai, Paparoa and Matakohe.

These act to remove and discharge stormwater in regular and extreme rainfall events, whilst collecting contaminants to protect the environment.

The drainage schemes are a mixture of open drains, pipes, manholes and sumps. Information surrounding these assets is variable.



Location of Stormwater Schemes

4.4 | Stormwater

Asset Condition

The condition of the majority of the stormwater network assets is largely unknown. This makes it difficult to produce an accurate condition assessment.

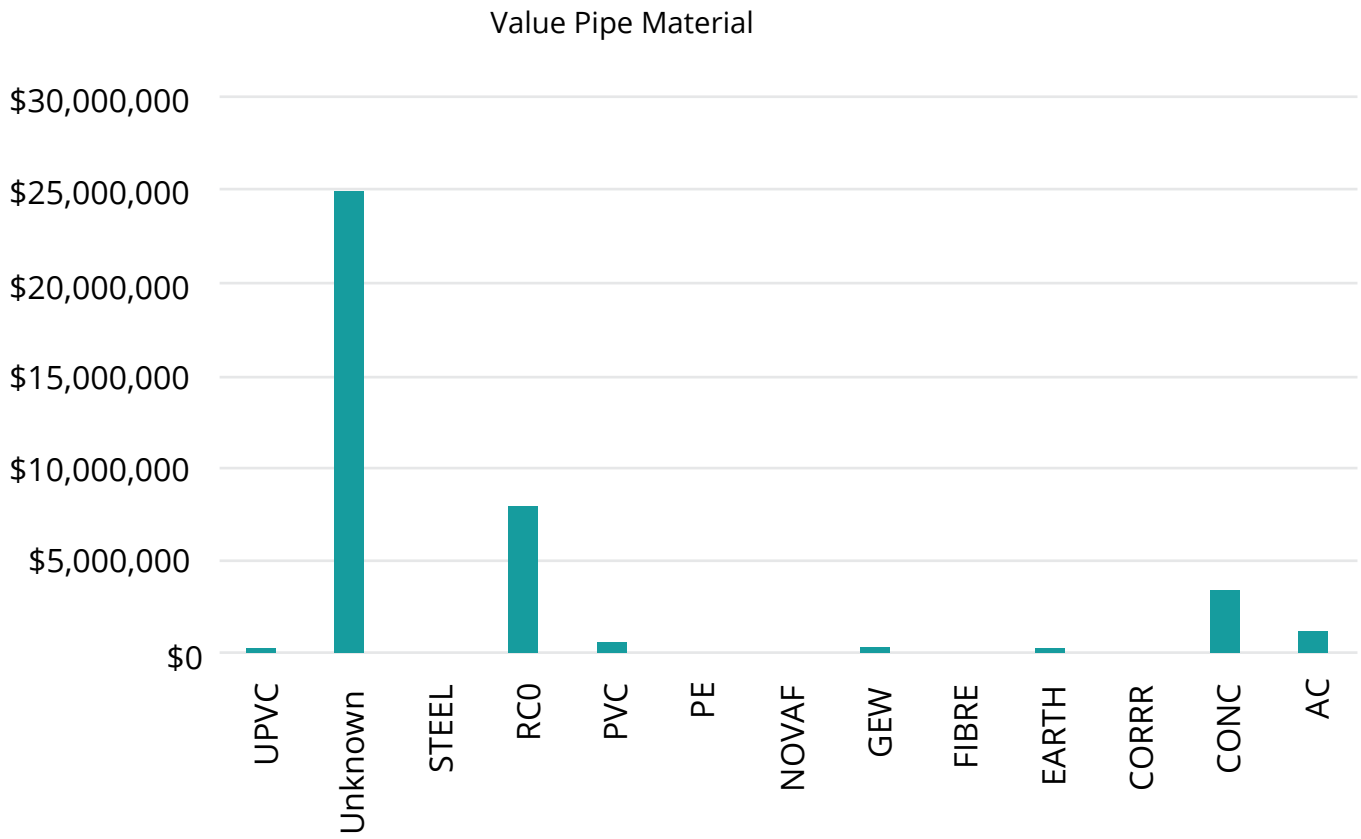
Asset Condition

There are 83km of pipeline and 70km of open drains spread across the five community stormwater networks, with Dargaville and Mangawhai comprising the bulk of the whole network.

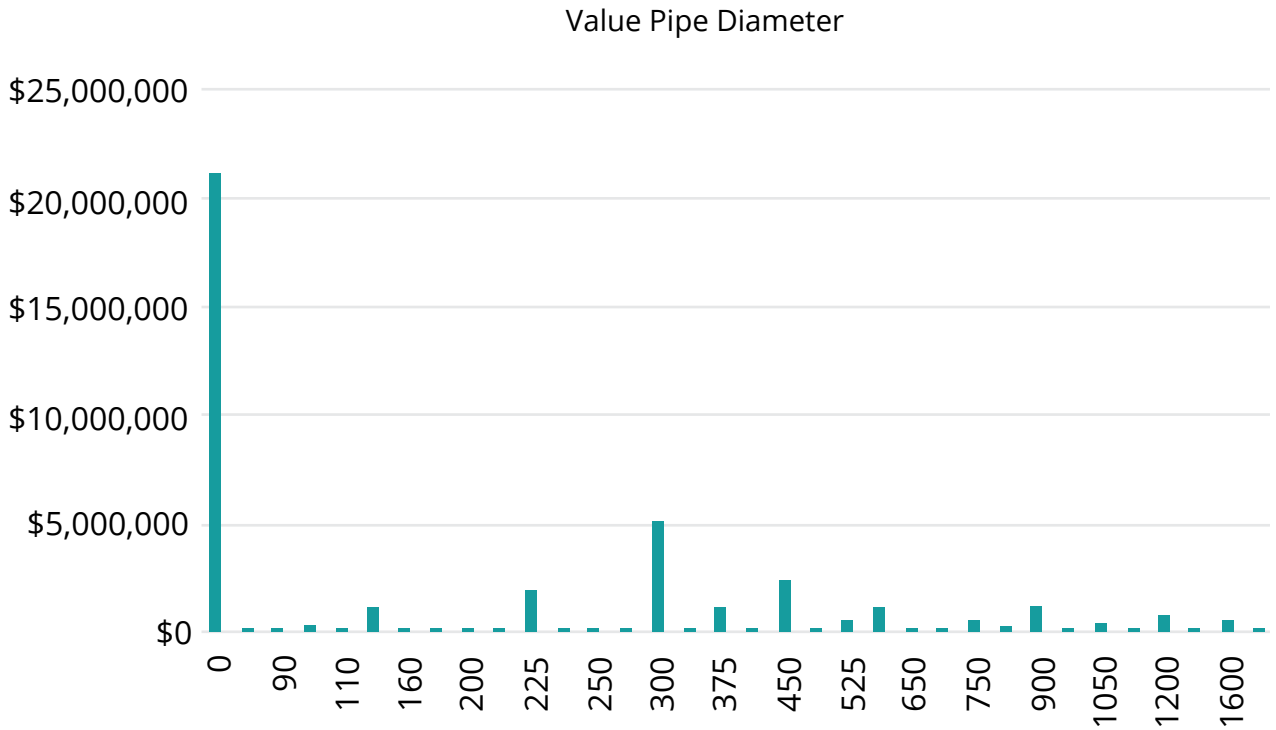
Condition and performance data relating to stormwater historically has not been well-documented, due to the asset register containing several unknown, incomplete and incorrectly coded assets. However newer assets from recent subdivisions have been well- documented. Improving the quality of data and knowledge of the older existing networks has been identified as a critical project and is now underway.

Asset condition has typically been recorded as 'Excellent' and asset age from installation dates are unreliable in all but the most recent developments. This skews the data and makes the overall condition of assets appear better than it is and means that it cannot be used as a reliable database.

Due to this inaccurate data management, repairs have previously been prioritised based on the age of the asset. This approach is problematic if the recorded installation dates are not correct.



4.4 | Stormwater



4.4 | Stormwater

Key Strategic Issues

A review of the issues associated with Kaipara's stormwater schemes reveals a number of common themes which are outlined in the adjacent table. Those coloured green are considered to be those which pose the highest risk in Kaipara.

Stormwater Issues and Consequences

Issue / Risk	Likelihood	Consequence
Poor understanding of ownership and associates operation/maintenance responsibilities	Low – Medium	Fragmented and disconnected management of stormwater assets. As it stands, there are already discrepancies between urban, roading and private stormwater systems.
Rapid growth and visitors brought on by improvements to SH 1, particularly in Kaiwaka and Maungatūroto	Low – Medium	Increased need for reticulated stormwater systems and investigation into capacity of existing infrastructure.
There are some in the community who wish to pipe the deep open drains in urban areas, due to safety concerns	Low – Medium	Piping open drains increases efficiency of stormwater flows to the final receiving environment which can cause downstream erosion and increased sedimentation effects. It also does not allow for the natural filtering process that exists in open drain environments.
Poor understanding of the impact of urban stormwater discharge into receiving environments, including outfall locations, landowner responsibility and management of discharge consents/monitoring	Low – Medium	Poor monitoring of the effects of stormwater discharge, resulting in adverse effects upon the receiving environment, including upon the district's beaches, farmland and harbour.
Compromised water quality in sensitive receiving environments from contaminants in stormwater discharges	Medium – High	The Council will need to observe and comply with environmental requirements set out by NRC with respect to stormwater quality, to ensure these are appropriate for the risks involved and affordable to the Kaipara community. Requirements should be incorporated into each township's respective Stormwater Catchment Management Plan.
The current asset data and asset register are unreliable and inaccurate	Medium – High	The Council cannot effectively and efficiently plan future works and capital upgrades without sufficient knowledge of current systems. The wrong assets could be prioritised over other more urgent areas.
Climate change and sea level rise can impact existing network and hinder future growth by overwhelming existing capacity and existing flood protections	Medium – High	Existing networks are not able to cope with future pressures brought on by climate change, and communities are flooded as a result of inadequate stormwater infrastructure.

4.4 | Stormwater

Issues Options Assessment

The following tables are options assessments for key strategic issues for the stormwater assets. Compromised water quality, incomplete asset information and climate change have been identified as the most immediate issues for the stormwater network. For each issue/risk, the preferred option is highlighted green.

Anticipated response to stormwater issues

Issue	Options	Implications
Compromised water quality	Do Nothing	Impacts on receiving environments of downstream waterways. Negative cultural, social and environmental effects, and unhappy public perception.
	Discharge management – construction sites, discharge points	More restrictive and stringent measures e.g. resource consent monitoring, or enforcement of engineering standards to ensure that stormwater discharge points meet current best practice. Review and identification of overland flow paths, as well as receiving environment testing may result in increased regulatory and enforcement costs, but with improved water quality.
	Discharge Treatment – increase the treatment devices (both natural and engineered)	Not reliant on community changes. Set up and maintenance costs of devices can be high.
Anticipated response – The Council will improve enforcement of current best standards and any requirements to meet resource consents, including remediation of historical stormwater issues due to lack of oversight on previous approved developments.		

4.4 | Stormwater

Anticipated response to stormwater issues

Issue	Options	Implications
The current asset data and asset register are unreliable and inaccurate	Do Nothing	Unreliable data results in uncertainty in asset value and condition. Possible inefficiencies of management and future failure are most likely.
	Cleanup of existing data	Current data set improved, which can be done relatively quickly. Some cost and time associated for this option.
	Additional data gathering	Gaps in network knowledge fixed, allowing better maintenance prioritisation of assets. More cost and time associated with this option, based on the amount of effort needed.
Anticipated response – The Council's knowledge of its stormwater assets is suboptimal, even though work has been completed in the 2018-2020 LTP period, there is far more work to be done. The Council still has limited knowledge of its systems and that is only based on assets that are known to be there. Of greater concern is the large amount of infrastructure that is under pressure that is not identified on any of our asset registers. By making a big push to identify, capture and verify all asset data Council can appropriately plan for stormwater management and renewal.		

Issue	Options	Implications
Climate change and sea level rise can impact existing network and hinder future growth by overwhelming existing capacity and existing flood protections	Do Nothing	Possible system failures with overloading in high rain events. Flooding occurs and water quality is reduced.
	Upgrade infrastructure	Will add cost but increases the efficiency and effectiveness of the stormwater network.
	Improved catchment planning	Additional requirements to improve services and resilience. Better understanding of flows and requirements for downstream infrastructure to facilitate anticipated growth. Can be achieved in some areas through mutually beneficial Development Agreements.
Anticipated response – Through the creation of robust catchment management plans in response to the spatial plans adopted for our townships, we will be better placed to understand the upgrades and infrastructure required to facilitate and plan for growth and the resilience of our networks. In this way, we can provide better information to anyone looking to do work or develop land in the Kaipara District and promote collaborative working practices to achieve mutually beneficial outcomes.		

4.4 | Stormwater

Prospective Infrastructure Strategy Costs

For the year ended: 30 June	Total Stormwater Budget ($'000)						
	2021-26	2026-2031	2031-2036	2036-2041	2041-2046	2046-2051	2021-2051
Total operating expenditure	6,421	7,479	8,388	8,879	9,289	9,880	50,336
Capital Expenditure - Growth	2,142	7,440	626	712	476	541	11,937
Capital Expenditure - LoS	4,290	5,350	44	50	190	216	10,141
Capital Expenditure - Renewal	924	3,926	2,320	2,638	1,423	1,618	12,849
Total capital expenditure	7,355	16,717	2,990	3,400	2,090	2,376	34,927
Total expenditure	13,776	24,196	11,378	12,278	11,378	12,255	85,262

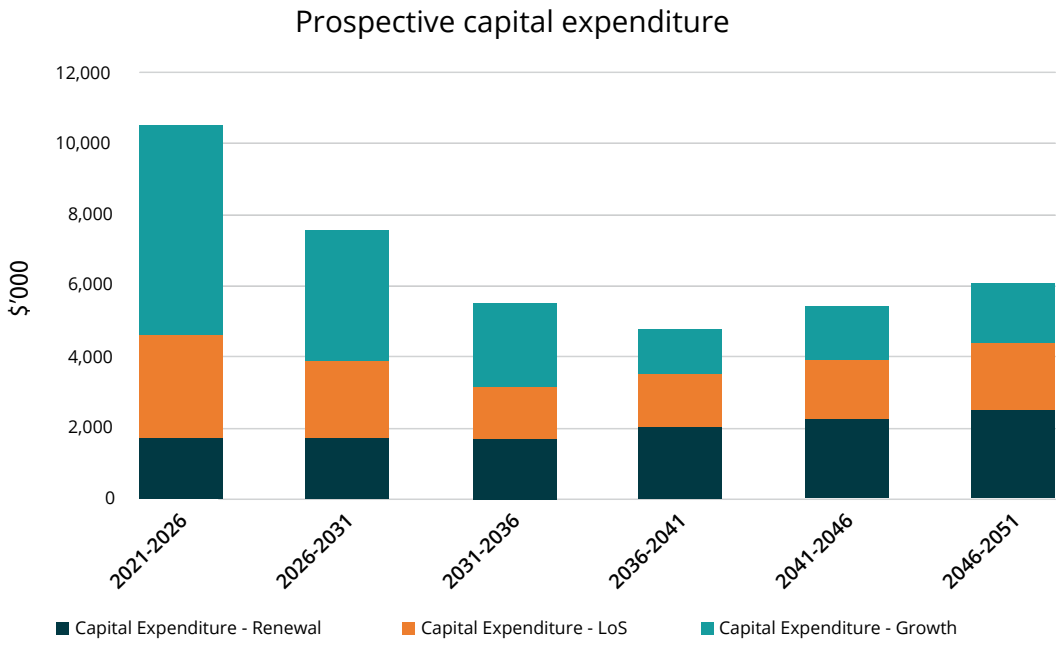


Figure 17. Stormwater Budget

4.5 | Flood Protection & Land Drainage

Activity Overview

The Flood Protection and Land Drainage AMP involves the planning and management for flood protection over Kaipara's drainage districts.

Historically, protection of communities from flooding caused by severe weather events was administered by drainage boards – this model still holds for the Raupo Drainage District.

Land drainage responsibilities became amalgamated under the Local Government Act 1984 and are currently co-ordinated between KDC and NRC. Existing drainage committees made the decision to remain under their local area of responsibility than that of regional responsibilities.

Land Drainage In Kaipara

The Council is conscious of climate change as a significant trend affecting Kaipara. The maintenance and development of flood protection and land drainage infrastructure is therefore important in mitigating the effects of climate change. For example, sea level rise will affect Kaipara's coastal areas, rivers and waterways. This puts pressure on people, their properties, infrastructure and roads.

Through our land drainage networks, we seek to deliver on the following in a cost-effective manner:

- Protection of land from tidal waters;
- Managing surface water in events of flooding and
- Diversion of runoff from inland hills.

Council co-ordinates land drainage works in 31 land drainage schemes of various sizes (see figure on next page). The largest is the Raupo Drainage District, where the Council provides administrative and technical support. To fund the costs of local infrastructure, a targeted rate applies for each drainage district.

The Raupo and Northern area land drainage networks represent a major investment by the community and are of vital importance to the quality of life of the district's residents and the sustainable management of both tidal and flood waters.

Demand Management

The Council's approach to demand management is based on the analysis of factors affecting demand, including:

- Population growth
- Increase in land drainage services
- Technological change
- Quality of stormwater runoff on the receiving environment and
- Changes in water patterns.

Demand management strategies are recommended based on examination of the aforementioned factors. This ensures that asset utilisation is optimised, that the Council objectives and customer needs are met, and that more sustainable services are provided.

Challenges

It is important to highlight the fragmented nature of drainage districts makes it difficult to administer, resulting in inconsistencies and mixed results. The Council tends to take a facilitation role for infrastructure in these drainage districts, rather than a management approach. Furthermore, formal standards have not been established for stopbanks or other related infrastructure.As such due to the changing nature of the climate and predicted sea level rise, taking a co-ordinated approach to all of our drainage districts is almost impossible and this is likely to result in failed schemes and different levels of service across the district.

4.5 | Flood Protection & Land Drainage

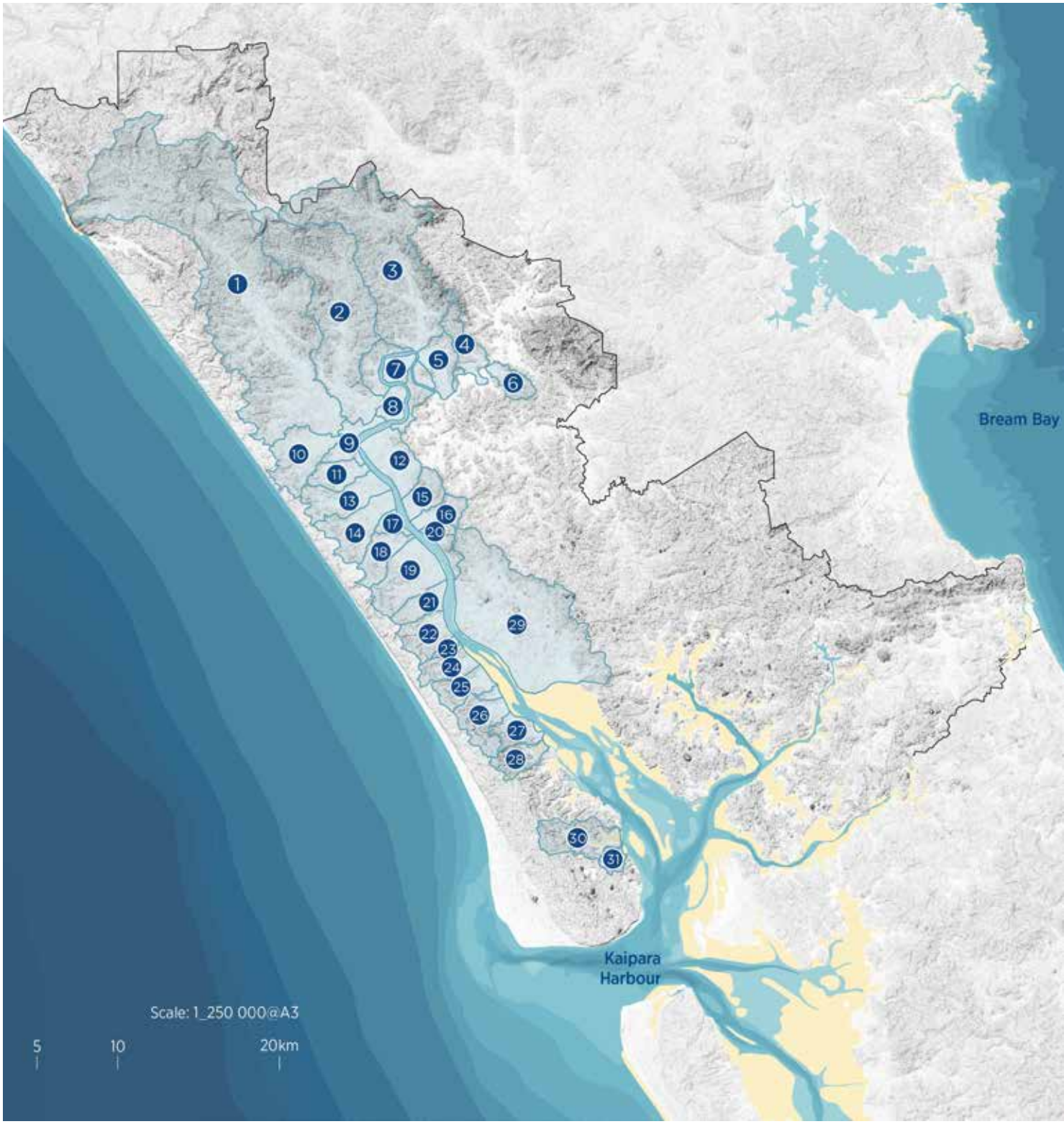


Figure 18. Land Drainage Districts in Kaipara

4.5 | Flood Protection & Land Drainage

Asset Condition

The current asset data and asset register overall are unreliable and inaccurate in terms of the information contained within them. It is essential that this information is gathered to increase the knowledge of our current systems to enable the Council to facilitate with land drainage representatives the future works and capital upgrades.

The Raupo area contains better data, due to condition assessments made and overall more organised management.

Land Drainage Asset Conditions

The assumed Levels of Service outlined in the AMP are:

- Drains are able to remove floodwater within three tidal cycles
- Stopbanks currently positioned 2.6m above mean sea level, with 0.5m above for extreme high tide events in Raupo
- Raupo Drainage Committee, a formal Council committee, is in place to perform delegated functions. Whereas flood protection activities outside of the Raupo Drainage District are administered through informal community committees that are supported by the Council's Land Drainage Co-ordinator upon request. NRC is responsible for catchment management.

System adequacy is generally reflective of the capacity to capture and convey flows as a result of extreme weather events without damage occurring to habitable floors or arable land. This, however, is not well-defined across the district, requiring stormwater catchment studies in areas of growth and historical issues.

Improvement plan: Targeted maintenance of all stopbanks, stopbank ownership and ensuring all land drainage protections are at the same standard and will be an improvement over the next Long Term Plan period.

Level of Service and Performance Measures

Measuring performance				
What we measure	**LTP Year 1 Target 2021 /2022**	**LTP Year 2 Target 2022 /2023**	**LTP Year 3 Target 2023 /2024**	**LTP Year 4-10 Target 2025 /2031**
The number of flood events not contained by the drainage schemes up to a 1:5 year flood.	0			
Service requests for additional cleaning of drains i.e. missed by the monitoring and maintenance programmes.	< 5 service requests per year			
Bi-annual inspection of our drainage network to ensure it can contain a 1:5 year flood.	2 inspections per 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.	Minimum yearly inspections and targeted maintenance completed			

4.5 | Flood Protection & Land Drainage

Key Strategic Issues

A review of the issues associated with the Council flood protection schemes reveals a number of common themes which are outlined in the adjacent table.

Land Drainage Issues and Consequences

Issue / Risk	Likelihood	Consequence
The current network does not have sufficient capacity to cope with the impacts of climate change and sea level rise	Medium – High	Increased severity of storm events leading to increased risk to land and property damage, as well as potential loss of life. Increased cost of insurance and replacement value of assets.
Public safety – the community wishes to pipe the deep open drains in urban areas (Ruāwai)	Low – Medium	Community disquiet and potential Council reputational risk if there was an incident/accident. When concerns are raised there is an investigation 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	Low – Medium	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 for each township.
Coastal discharges – a better understanding of the impact that stormwater discharge has on the receiving environment is required	Low – Medium	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.
The current asset data and asset register are unreliable and inaccurate	Medium – High	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 the Council to effectively and efficiently plan future works and capital upgrades.
Land management responsibility	Medium – High	Further clarification of ownership and associated operation and maintenance responsibilities is needed across the Raupo Drainage District.

4.5 | Flood Protection & Land Drainage

Issues Options Assessment

A review of the issues associated with the Council flood protection schemes reveals a number of common themes which are outlined in the adjacent table.

Anticipated response to land drainage issues

Issue	Options	Implications
The current asset data and asset register are unreliable and inaccurate	Do Nothing	Unreliable data results in uncertainty in asset value and condition. Possible inefficiencies of management and failure are most likely.
	Cleanup of existing data	Current data set improved, which can be done relatively quickly. Some cost and time associated for this option.
	Additional data gathering	Gaps in network knowledge fixed, allowing better maintenance prioritisation of assets. Cost and time associated with this option.
Anticipated response – The Council will be looking to increase its knowledge of all land drainage assets to ensure that it can provide the correct response to any future demand or protection; this will be focused on stopbanks and floodgates.		
Issue	**Options**	**Implications**
Land management responsibility	Do Nothing	Poor co-ordination between the Council and other stakeholders e.g. Raupo Drainage Board, resulting in mismanagement of flood protection assets; limited response to climate change.
	Commit to identifying ownership of assets and work with drainage boards to formalise responsibilities for stopbanks and floodgates. Require documentation to clarify issues if assets are to remain with respective drainage boards.	There is a large amount of land drainage infrastructure in the district which has questions around ownership and responsibilities, by working with the drainage districts to formalise ownership of the assets and the land it sits on the Council can remove a lot of questions around responsibilities for maintaining and enhancing existing assets.
	Acquire seaward-facing assets by utilising the Local Government Act (LGA) and Land Drainage Act 1908 (LDA) and raising general rates to cover costs of climate change response. Subsequently realign the nature of drainage districts from land drainage to be more flood protection-oriented.	This is the Council's last option and the least palatable. It would mean that there is a complete breakdown in trust between the Council and the drainage districts. There would be significant costs in utilising the legal powers of the LGA or the LDA. If other options do not eventuate then the Council would need to consider this option.
Anticipated response – The Council will look to liaise with existing Land Drainage Districts and the landowners within them to try to come to a position regarding the ownership of assets and the responsibilities around maintenance and climate change response.		

4.5 | Flood Protection & Land Drainage

Prospective Infrastructure Strategy Costs

For the year ended: 30 June	Total Flood Protection & Land Drainage Budget ($'000)						
	2021-26	2026-2031	2031-2036	2036-2041	2041-2046	2046-2051	2021-2051
Total operating expenditure	4,027	4,737	6,423	8,824	10,545	10,986	45,541
Capital Expenditure - Growth	0	0	0	0	0	0	0
Capital Expenditure - LoS	13,907	37,716	20,970	30,557	4,724	1,005	108,879
Capital Expenditure - Renewal	531	539	127	141	51	11	1,398
Total capital expenditure	14,437	38,255	21,096	30,697	4,775	1,016	110,277
Total expenditure	18,464	42,992	27,520	39,521	15,320	12,001	155,817

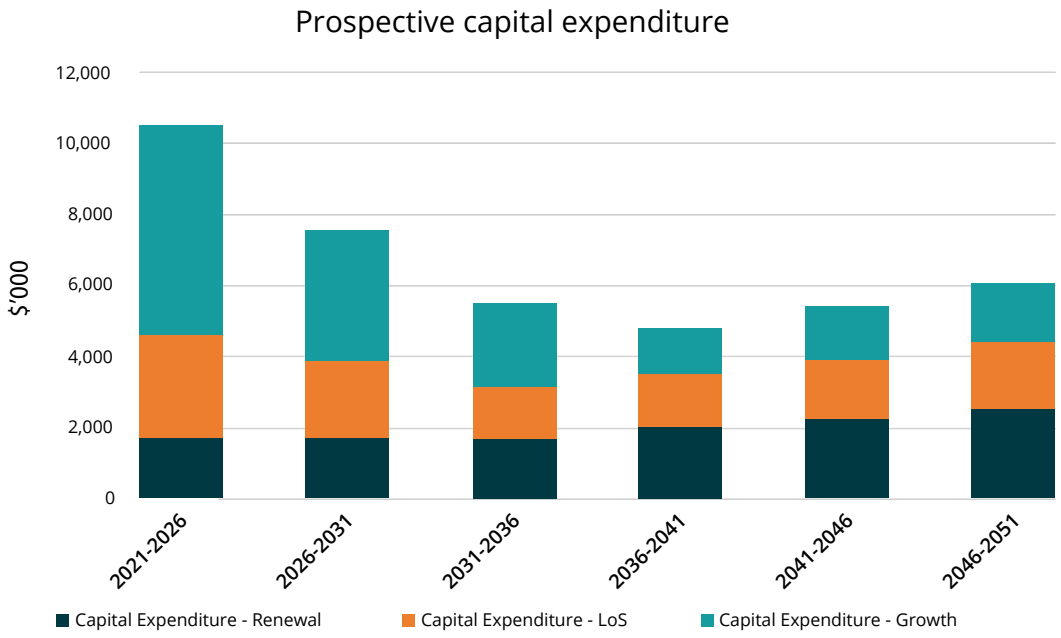


Figure 19. Stormwater Budget

4.6 | Waste Minimisation

Activity Overview

Kaipara District aims to reduce waste and promote a circular economy. The waste minimisation activity purpose is to collect and distribute the communities disposal and recycling products to meet its statutory obligations and community needs.

The decisions the Council makes on managing waste minimisation directly affect its communities and its environment.

The Council need to ensure that this service is affordable, hygienic and environmentally sustainable, which contributes to its well-being, by protecting and enhancing its natural assets and open spaces.

"Kaipara District aims to reduce waste and promote a circular economy. "

Waste Minimisation in Kaipara

Waste minimisation assets and associated services form an infrastructure network that is directly proportionate to the well-being and quality of life of those residing within the Kaipara District.

The Council owns a limited number of waste minimisation assets such as transfer stations, closed landfills, collection cages and public litterbins. These asset groups are to be managed to meet the interests and expectations of stakeholders alongside regulatory compliance requirements.

Whilst there are no open landfills currently in Kaipara, the Council provides two transfer stations – as shown in the figure over the page. One of which is operating in Dargaville (Awakino Rd) to cater for the northwestern area and the other in Hakarū (Kaiwaka Mangawhai Rd) catering for the southeastern area of the District. General waste is collected, moderately compacted and later transferred to Puwera Landfill, south of Whangarei. Whereas recycling collected at the two stations is processed and sold to market by a Specialist contractor.

4.6 | Waste Minimisation

Figure 20. Location of Kaipara's Closed Landfill sites and Transfer Stations

4.6 | Waste Minimisation

Primary Assets and Services

The Council-owned minor site facilities and infrastructure are not currently valued by the Council for formal depreciation and renewal purposes. Asset value is relatively minor and most assets are owned by the contractors.

The Council's primary focus is to deliver solid waste collection disposal that is affordable, environmentally sustainable and hygienic which aligns with both the Council's statutory requirements and community's needs.

Waste Minimisation Services in Kaipara

The Council's services include:

- Currently, all solid waste from Dargaville and Hakarū is transferred to Whangarei's Puwera commercial landfill
- Recycling services are undertaken weekly in association with the weekly bagged kerbside collection (major urban areas only) from Mangawhai to Dargaville. There are also drop-off facilities at both transfer stations
- Abandoned vehicles services and illegal dumping retrieval are carried out as and when required, separate to contracted services.
- There are also a number of historic closed landfill sites that the Council has responsibilities for and carries liability for ongoing monitoring and maintenance, as well as reinstatement obligations for their closures
- Setting service levels and associated performance measures assists to define the service standard that the customer can expect from the Council. Performance measure targets provide a basis for measuring the Council's performance through identified indicators.

Photo credit: Sustainable Kaipara, Compost pick up service trial in Mangawhai.

According to annual surveys conducted by Key Research Ltd 2016-2019, kerbside and recycling collection services have been improving. 2019 saw the lowest percentage of satisfaction with litterbin services across the District, largely due to capacity following freedom campers and household rubbish being dumped in litterbins. As a result, a review of litterbin capacity, frequency of clearing as well as locations are incorporated as part of the Waste Minimisation Improvement Plan.

4.6 | Waste Minimisation

Waste Minimisation Asset Risks

There are present-day waste minimisation assets risks which have been rated high or extreme and are activity related:

- Illegal dumping and the impacts of climate change at closed landfills
- Environmental contamination at operations and waste minimisation facilities and
- Risks to other businesses due to implementation of central government Initiatives.

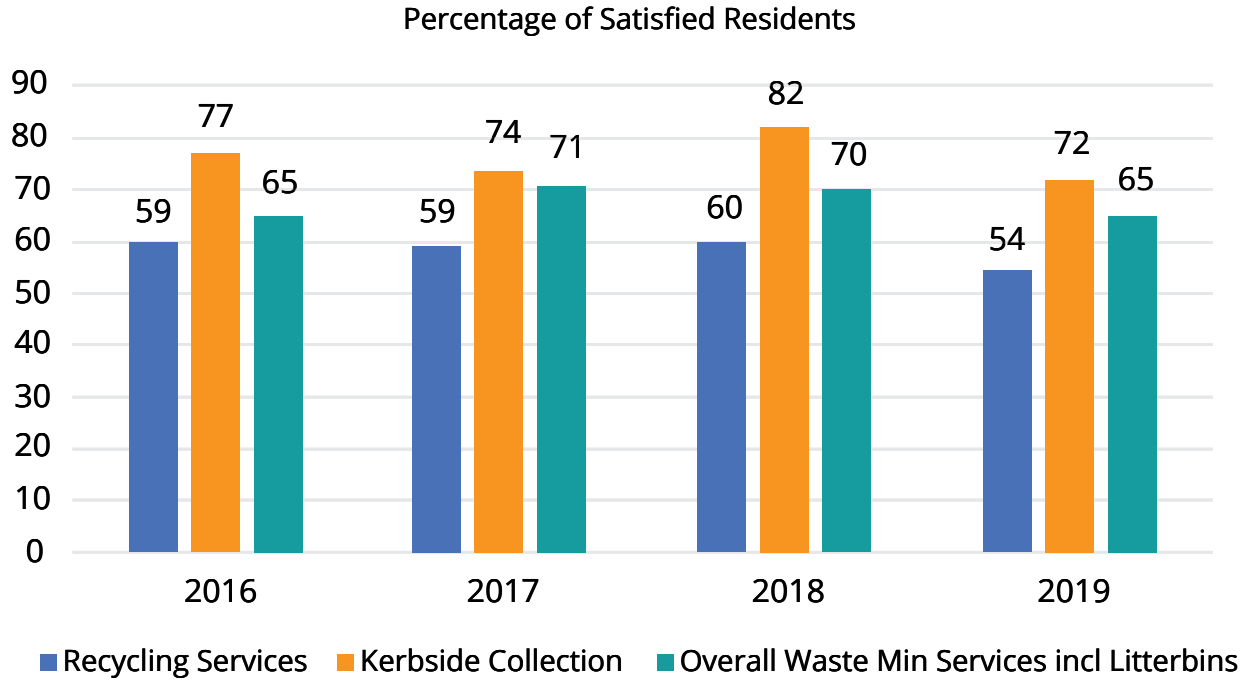


Figure 21. Comparison of percentage of Satisfied Residents between 2016-2019

4.6 | Waste Minimisation

Key Strategic Issues

The key issues relating to the effects of waste minimisation activity in the Kaipara District are listed in the adjacent table.

Anticipated response to waste minimisation issues

Issue	Options	Implications
Closed landfill management issues: • Climate change effects on landfills • Leachate contamination of water • Management of pollutants in landfill sites.	Do Nothing	Contaminants will continue running in receiving environments and cause potential damage to flora and fauna.
	At all closed landfills, investigate the following: • Effects of climate change • Extent of contamination of water through the management of clearwater diversion drains and leachate treatment systems • Pollutants (e.g. heavy metals) within existing landfills	Focuses on current and future issues by providing a risk management framework and a clear path to meet legislative requirements, while satisfying public perception.
	Organise a vegetation-focused filtration programme to help manage the impacts of stormwater runoffs	Investing into natural systems enables mitigation of adverse environmental effects.
Anticipated response – Multiple projects to investigate current closed landfills, and also to identify any unknown landfills that may be vulnerable to increased risk of erosion and land slips and coastal/freshwater flooding. This will be used to focus our attention where needed to provide better outcomes for heavy metal contamination of waterways and the contamination of storm and ground water through untreated leachates.		
Issue	**Options**	**Implications**
Increase in illegal dumping (fly tipping) including abandoned vehicles: • Increase in fly tipping due to isolated communities with limited facilities • Abandoned vehicle retrieval costs are on the rise • Lack of reporting by the public to the Council.	Do Nothing	Illegal dumping will play a role in public health, environmental and economic consequences.
	Seek to facilitate a circular economy and increase waste diversion to achieve reductions in overall disposal costs and cumulative effects on the environment such as recycling and scrap metal	Public gains access to feasible and cost-effective options for recycling and refuse disposal, while facilitation of a circular economy will install environmental and economic resilience in the district.
	Educate and provide a feasible and accessible tool for the public to promote reporting of illegal dumping	Ability to track the unauthorised activity of fly tipping and impose fines appropriately.
Anticipated response – The Council will seek to facilitate a circular economy solution and work with a service provider that can take unused cars for scrap and recycling of materials, thereby reducing the disposal and cumulative effect on the environment.		

4.6 | Waste Minimisation

Issues Options Assessment

Anticipated response to waste minimisation issues

Issue	Options	Implications
Ability to meet community expectations particularly around: • Kerbside collection delays • Recycling collection is not sustainable • State of transfer stations and recyclable facilities • Capacity of public litterbins	Do Nothing	Not addressing these issues will result in a higher number of customer complaints, reputational damage and potential budget blow out if disposal rates stay high and recycled products have no market and therefore require stockpiling or cartage.
	Council introduces management interventions to address behaviour issues around illegal dumping, recycling promotion and getting the public to report on contractor kerbside delays.	Behavioural changes will assist with improving the quality of the solid waste and how the Council responds to customer-raised complaints. It may not further address all issues, especially the standard of transfer stations and increased cost of recycling materials.
	Improve the Levels of Service to address increased costs of recycling by providing better processing – subsequently explore higher value market opportunities to help fund better recycling practices. Improve transfer stations and capacity of public litterbins to match more efficient technologies.	Better processing of recycled products has the potential to open up new market opportunities to help fund better recycling practices (see circular economy in Part 2). Likely to have an increase of >15% operational costs to cover the start up and operational costs of additional recycling plants.

Anticipated response – The Council is looking to construct a purpose-built recycling and resort centre to focus on providing a better-quality product that is more marketable and can be utilised for future uses. In addition, it is also investigating newer technologies around the collection of urban rubbish through litterbins, in particular heavy use and holiday areas. The installation of a washing and recycling plant will enable the Council to be able to recycle more materials and seek better markets, thereby reducing the cost of landfill fees and promoting a more circular economy.

4.6 | Waste Minimisation

Prospective Infrastructure Strategy Costs

For the year ended: 30 June	Total Flood Protection & Land Drainage Budget ($'000)						
	2021-26	2026-2031	2031-2036	2036-2041	2041-2046	2046-2051	2021-2051
Total operating expenditure	14,419	18,493	8,970	10,034	27,937	31,705	111,557
Capital Expenditure - Growth	121	0	0	0	0	0	121
Capital Expenditure - LoS	1,784	3,209	921	1,047	1,142	1,299	9,401
Capital Expenditure - Renewal	0	0	0	0	0	0	0
Total capital expenditure	1,905	3,209	921	1,047	1,142	1,299	9,522
Total expenditure	16,323	21,701	9,891	11,080	29,080	33,004	121,079

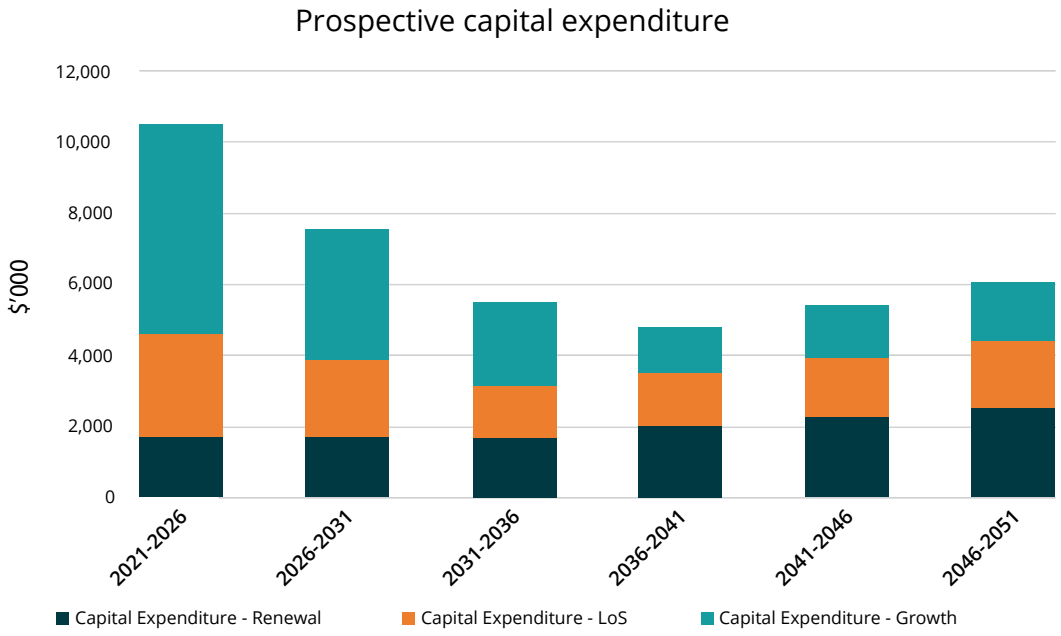


Figure 22. Waste minimisation Budget

4.7 | Reserves & Open Spaces

Activity Overview

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

The Council's Reserves and Open Spaces assets has been developed over time in response to community aspirations, needs and demands. This 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.

Reserves and Open Spaces

The Kaipara District is rich in landscapes, environments and thus, a diversity of reserves and open spaces. The Reserves and Open Spaces activity covers a large range of playing fields to local playgrounds, cemeteries, seaside picnic spaces, wilderness coastal areas, riparian strips, iconic rock formations and some larger bush reserves. Open space areas and facilities that support public use are critical to both the social and physical well-being of Kaipara's communities.

Although the Council is the main provider of community assets in the Kaipara District, it also contributes in varying scales of partnerships with landowners and community groups to provide access and further improve the wider open space network. The Department of Conservation (DOC) oversees the provision of various reserves and conservation areas. This includes large wilderness areas in Pouto and the Waipoua Forest to meet a range of recreational and environmental needs. Whereas local schools provide facilities and sports fields for community use, sports clubs and organisations also provide facilities such as buildings, swimming pools and sports fields. 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.

Key Open Space Assets in Kaipara managed by the AMP

Asset Description		Quantity
Playgrounds		16
Public toilets / changing rooms		323
Cemeteries	Council-managed	4
	Community–managed	4
Walkways		6,042m
Open spaces	Gardens	62
	Gardens – area	11,009m^2
	Parks – maintained	97
	Parks – green space/ area mown	594,953m^2
Coastal structures	Boat ramps	8
	Groynes	4
	Impact piles	3
	Sea walls	25
	Wharves	3
Campgrounds	In-house	1
	Community	4

4.7 | Reserves & Open Spaces

Asset Condition

The Council's ROS AMP manages a wide variety of unrelated assets, many of which have uncontrolled public access and usage. In addition, the asset group includes substantial tracts of land making up parks and reserves, which are not given condition ratings.

The condition of assets related to reserves and open spaces are graded by an internationally recognised National Parks and Recreation Assets Condition Grading Standards (PRAMS).

Overall, asset conditions are average to good with sports and recreation facilities having been upgraded with new technologies in turf management.

Reserves and Open Spaces Asset and Conditions

Asset	Condition
Public Toilets	Recent independent audits completed, that rated asset condition from poor to excellent. This needs to become a regular bi-annual assessment. A condition assessment conducted in 2019 found that the general ambience of public 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 being the highest and 5 lowest).
Playgrounds	General condition good. Recent independent audit results show 66% across the District. Benchmarked across the country, the Council is in the average/above average category. An independent safety audit undertaken in 2020 of 19 sites and 105 items of equipment found 23 items did not comply with New Zealand and Australia playground standards. The report found that the majority of playgrounds were in good condition. Many of the non-complying playgrounds were in coastal settings which influenced the life and wear of equipment.
Walkways	The Mangawhai coastal access walkways have been assessed as part of the Mangawhai Community Plan in 2017. This prompted the Council to begin the process of assessing all of the walkway's trails and structures across the district to grade them against the NZS 2858 track standards.
Outdoor Furniture and Fittings	Data for furniture has been collected and this has fed into the Maintenance Contract schedules prior to re-tendering. This data has also been added to the Council's asset management system AssetFinda.
Green Space	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.
Cemeteries	Good condition with plenty capacity. Current information tells us we have enough capacity across all of the cemeteries in the district to cover the next 10 years (approx.) though this will need to be reviewed in the next LTP.
Campgrounds	Campground data is currently being collected, data is being collated and the Council is in the process of reviewing the campgrounds against the campground standards. A project will be undertaken to assess and complete any works to bring these in line with accepted standards.
Coastal Structures	The Council has undertaken a condition and structural review of all Kaipara District's wharves in the Kaipara Harbour, as part of the Kaipara Water Transport and Wharves Feasibility Study. This report showed the condition of the wharves to vary from very poor to good. It is now in the process of evaluating the report and forming a renewals plan on the wharves that it has ownership and responsibility over.

4.7 | Reserves & Open Spaces

Issues Options Assessment

The Open Space asset is subject to various risks in the ordinary course of business. The table to the right summarises key issues, possible options and related implications.

The most significant of these are listed in the adjacent tables.

Anticipated response to Reserves and Open Spaces issues

Issue	Options	Implications
Climate change and sea level rise: The frequency and severity of extreme weather events result in greater damage to the Council administered public open spaces	Do Nothing	Effects of climate change on the Council and/or private/public open spaces will increase the likelihood of flooding, erosion and contamination from stormwater and wastewater overflow and potential loss of open space.
	Budgeting for extra costs of repairs	The Council will continue to identify and invest in open spaces for the benefit of the community. Minor damage will be repaired as it occurs, though where land is lost through coastal erosion, or other climate change mechanisms, the Council will not be looking to construct hard infrastructure to protect these areas at this stage.
	Protect existing assets through proactive management of hazardous zones and stormwater overflow to account for large rain and flood events	Avoids adverse effects of climate change on the environment, safety of the population and any additional potential additional costs.
	Adapt existing assets by providing more softer measures	Softer adaptations such as coastal planting instead of hard retaining walls to allow assets to change gradually as a result of climate change events.
Anticipated response – The Council will budget for increased costs to repair damage as it occurs. In order to be cost-effective, this will include a variety of activities and will not be limited to one approach.		

4.7 | Reserves & Open Spaces

Anticipated response to Reserves and Open Spaces issues

Issue	Options	Implications
Increase operational costs due to new facilities and land vested with the Council through development	Do Nothing	Reduced Levels of Service for non-high-profile assets.
	Work closer with community groups to provide maintenance for open spaces such as walkways, parks, etcetera.	Community groups would need to apply for funding through contestable funding streams. Staff allocation of time to facilitate community groups and outcomes to monitor health and safety practices employed by community groups.
	Increase operational budgets for open space land vested from development	Requires working closer with community groups and developers who are interested in designing new reserve spaces that the community needs, looking into the future.

Anticipated response – Operational budgets will need to be increased to manage reserves vested to the Council. In the past the Council has tried to avoid having land vested to avoid maintenance issues, though this has resulted in a disproportionate response to the Levels of Service for maintenance in certain areas and the provision of parks and open spaces for our communities.

Issue	Options	Implications
Costs: • Reduced levels of funding would compromise the ability to maintain and enhance • Additional assets will increase maintenance costs • Limited lifecycle data may cause asset failure, unexpected replacement timeframes and costs • Health and Safety Act 2015 may add additional cost to services by volunteers, affecting the amount of work they can do	Do Nothing	Unable to fund maintenance, new facilities and funding for related services may cause assets to deteriorate and reduce user experience and community held events.
	Focus on providing improved funding strategy and seek a major strategic purchase	Meeting quality and community standards, providing opportunities for development partnerships as well as potential district-wide economic benefits.
	Seek additional external funding for key open space upgrades, thereby reducing the operational component of certain areas and freeing up money for other management initiatives	Reduces the risk of limited maintenance and upgrades of facilities.

Anticipated response – Where possible the Council will need to account for any funding streams that will be closing off (e.g. development contributions) and will need to ensure that effective operations and maintenance activities are recovered through other funding processes.

4.7 | Reserves & Open Spaces

Anticipated response to Reserves and Open Spaces issues

Issue	Options	Implications
Asset failure: • Damage to assets poses health and safety risks to users, staff and contractors	Do Nothing	Continue to impose health risks to the users and staff and loss of ability for the community to utilise the open spaces and facilities.
	Fixing damage to assets with minor repairs to enable assets to be returned to public use in the short to medium term	Increased costs to meet quality standards as well as maximising social, economic and environmental benefits.
	Focus on fixing assets to avoid similar events to occur in the medium to long term	Ability to utilise assets by the public, staff and contractors without any potential hazards and reduce costs of long-term damages.

Anticipated response – A proactive response to management and renewals of Reserves and Open Spaces is required to ensure cost effective maintenance. If the Council was to move to a fix on failure model it would be more expensive and potentially put some of its more vulnerable community members at risk.

4.7 | Reserves & Open Spaces

Funding Strategy

The AMPs have been developed as a tool to help the Council manage its assets, deliver LOS and identify the expenditure and funding requirements of the activity.

The 10-year forecast for capital expenditure is shown in the table over page.

Renewal Expenditure:

A move to an Open Spaces 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. This has resulted in robust decision-making and a more systematic approach, especially to depreciation planning in renewal of assets.

4.7 | Reserves & Open Spaces

Prospective Infrastructure Strategy Costs

For the year ended: 30 June	Total Flood Protection & Land Drainage Budget ($'000)						
	2021-26	2026-2031	2031-2036	2036-2041	2041-2046	2046-2051	2021-2051
Total operating expenditure	14,419	18,493	8,970	10,034	27,937	31,705	111,557
Capital Expenditure - Growth	121	0	0	0	0	0	121
Capital Expenditure - LoS	1,784	3,209	921	1,047	1,142	1,299	9,401
Capital Expenditure - Renewal	0	0	0	0	0	0	0
Total capital expenditure	1,905	3,209	921	1,047	1,142	1,299	9,522
Total expenditure	16,323	21,701	9,891	11,080	29,080	33,004	121,079

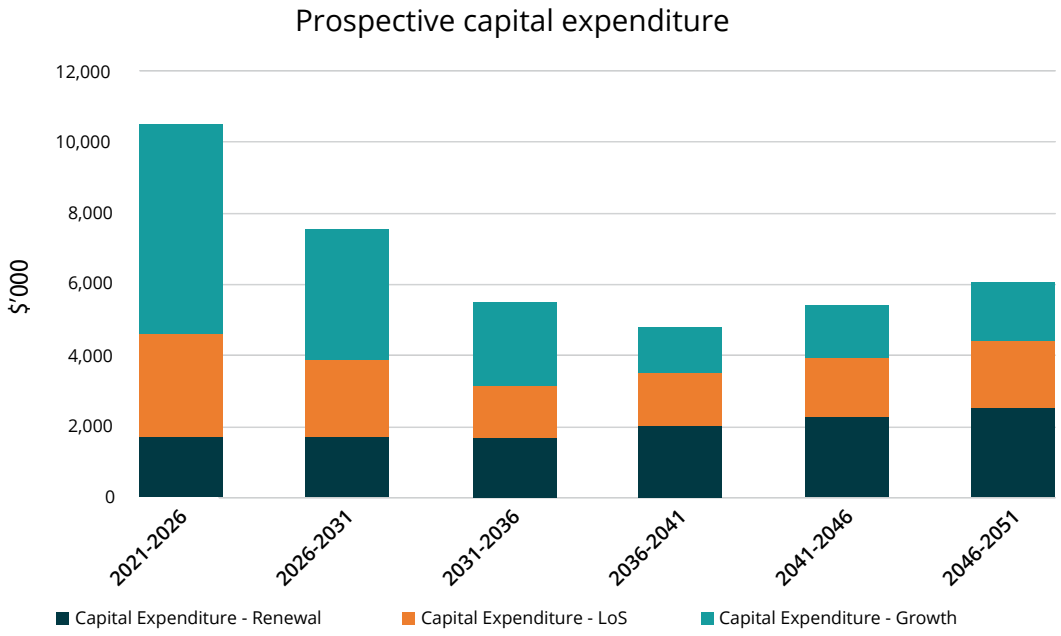


Figure 22. Reserves and Open Spaces Budget

4.8 | Key Assumptions

Key assumptions are a work in progress.
Finance team to confirm and update.

Financial Assumptions			
Assumptions	That all expenditure has been stated on 01 July 2019 New Zealand dollar values (GST exclusive) and no allowance has been made for inflation. Asset valuations are in 2018 New Zealand dollar values.	**Discussion**	The LTP will incorporate inflation factors. This could have a significant impact on the affordability of the AMPs if inflation is higher than allowed for, however the Council is using the best information practicably available from Business and Economic Research Limited (BERL).
Levels of Service			
Assumptions	Asset management activity aims to maintain a consistent Levels of Service across the district.	**Discussion**	Although service levels may vary for a number of reasons, the aim is to maintain assets to the levels noted in the AMPs.
Growth Forecasts			
Assumptions	Kaipara District Council uses a set of Medium-High series population projections provided by Infometrics as an indication of future growth. This projected growth will slow over 2020 and 2021 with softer net migration and a decline in employment as a consequence of COVID-19. Population growth is projected to pick up from 2022 onwards, with the district growing steadily to reach a population of 32,600 in 2051. Most growth is projected to be centred in the Mangawhai area (as it has been historically) with other southeast areas such as Kaiwaka also growing rapidly. Strong growth is also projected for the northwest of the District though not to the same extent as the southeast.	**Discussion**	If growth deviates from what has been projected, it will have a significant impact for infrastructure planning. If higher, the Council may need to advance capital projects. If it is lower, the Council may have to defer planned works. The Council plans its infrastructure (e.g. size of water pipes) to have sufficient capacity for the population it is anticipated to serve over its design life. If population exceeds the designed capacity, there will be additional costs. The amount of development is a key consideration for the Council when planning how it will fund the required infrastructure. If growth falls short of that projected, it may result in a shortfall of income.

4.8 | Key Assumptions

Network Capacity			
Assumptions	Current knowledge of network capacity and condition is largely unknown, however it is assumed that much of the district's piping is old and regularly fails and will require repair/ replacement.	**Discussion**	If the network capacity is lower than assumed, the Council may be required to advance capital works projects to address congestion. The risk of this occurring is low; however, the impact on expenditure could be large. If the network capacity is higher than assumed, the Council may be able to defer works. The risk of this occurring is low and is likely to have little impact. There is a degree of uncertainty regarding network capacity with increased severity of rainfall events and risk of freshwater flooding, increased frequency of coastal inundation and flooding, and increased drought.
Natural Hazards			
Assumptions	Climate change will bring an increase in the frequency and severity of extreme weather events.	**Discussion**	Network capacity may be insufficient. There will be an increase in costs to maintain and repair exposed assets. Capital works projects may need to be altered or advanced to account for increased exposure and vulnerability.
Strong Growth Activity in the East			
Assumptions	Future economic and growth data scenarios point towards the towns of Mangawhai, Maungatūroto and Kaiwaka as anticipated main growth area, with land identified for rezoning as part of recent spatial plans.	**Discussion**	To support anticipated demand, there should be a focus on investigating, designing and consenting the infrastructure needed to enable sustainable development, while fulfilling clear environmental standards, within the first 3-6 years of the LTP.
Partnerships Will be Formed to Assist in Delivery of Infrastructure			
Assumptions	The Council already has a strong working relationship with the Ministry of Business, Innovation and Employment (MBIE) in delivering the Kaipara Kickstart programme and will continue to foster this partnership in the programme's implementation. It will also continue to collaborate with Northland councils to shared knowledge and help each other in the climate change challenge.	**Discussion**	Further partnerships will need to be formalised, particularly in the development of the Northland to Auckland Corridor programme, Kaipara Harbour project development, iwi-led projects and large development proposals.

4.8 | Key Assumptions

Population Fluctuations			
Assumptions	The populations of some coastal settlements in Kaipara fluctuate considerably throughout the year with regular influxes of holidaymakers. Comparisons of the number of occupied dwellings and unoccupied dwellings, as well as comparisons of wastewater volumes, suggest that the combined population of Mangawhai Village and Mangawhai Heads can more than double during holiday periods. Population fluctuations are expected to continue to be a feature of Kaipara's coastal communities. However, the level to which they fluctuate is anticipated to decrease over time. A trend towards a greater proportion of occupied dwellings versus unoccupied dwellings is already evident in Mangawhai and this is anticipated to continue. This is partly driven by Mangawhai's improving commutability to Auckland and improving services. However, in Mangawhai and across the district, this trend is being perpetuated by the aging population retiring to lifestyle destinations. In addition, some traditional bach communities are emerging as satellite suburbs of growing parent settlements, such as Baylys Beach which is easily commutable to Dargaville.	**Discussion**	The capacity of the Council infrastructure needs to be capable of meeting the needs of the peak population and not just the usually resident population. If the peak population increases beyond the planned capacity of the infrastructure, there may be operational issues and unforeseen costs. A key downward driver on the proportion of holiday homes in Kaipara's settlements is New Zealand's aging population and their desire to retire by the sea. In addition, former holiday homes are increasingly being taken up by young families seeking more affordable housing. These drivers appear unlikely to change. The proportion of holiday homes in Kaipara's coastal settlements may be driven up if the level of disposable income available to the working age population in neighbouring Auckland and Whangarei increases. Substantial increases in disposable income could allow more people to purchase a holiday home in Kaipara. Similarly, rising house prices make developing and investing in property more attractive. However, Infometrics economic forecasts suggest that disposable income, house prices and consumer confidence are all likely to fall over the near term due to the COVID-19 recession. This suggests that a reversal in the trend towards lower population fluctuations is unlikely over the near planning horizon.