BAY OF PLENTY
REGIONAL COUNCIL
TOI MOANA

Draft Asset Management Plans 2021-2031

Adoption for Consultation
February 2021

Introduction

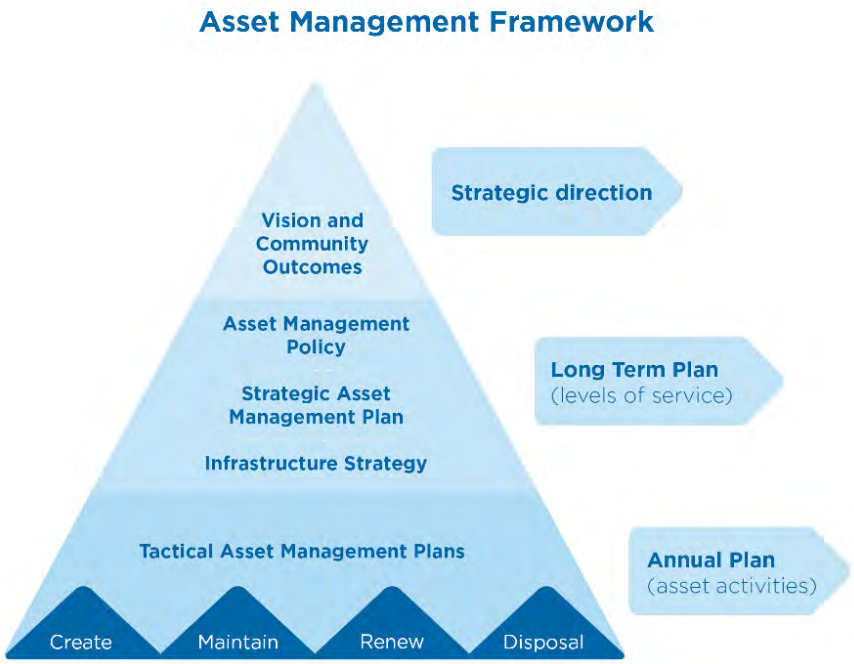
This document brings together Councils Asset Management Plans, a key foundational component of Councils Asset Management Framework.

Council is governed by the principles of the Local Government Act 2002, including taking a sustainable development approach to promoting the social, economic, environmental, and cultural well-being of their communities.

Council owns, manages, operates, and maintains assets valued at approximately $424.4 million through five Asset Management Plans (AMPs) and informed by the Strategic AMP which provides the linkage between the strategic direction of Council and the asset management objectives for those assets that deliver services to its community. The list of AMPs included in this document are:

- Strategic AMP
- Rivers and Drainage AMP
- Regional Parks and Coastal Catchments AMP
- Rotorua Te Arawa Lakes AMP
- Maritime AMP
- Property AMP

Councils Asset Management Policy, SAMP and individual Asset Management Plans (AMPs) combine to deliver Asset management planning that is fit for purpose and provides the information required for effective and efficient management of infrastructure assets to meet the future needs of its communities.



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Strategic Asset Management Plan 2021-2031

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Author	Description of change	Date	Version
Graeme Howard	Initial draft created	October 2020	0.1

1 Executive summary

Providing effective and efficient management of assets is a key obligation for the Bay of Plenty Regional Council (Council). As custodian of community assets, Council is committed to managing its assets in the most cost-effective manner and to provide efficient, safe and reliable services for current and future generations.

This Strategic Asset Management Plan (SAMP) provides the linkage between the strategic direction of Council and the asset management objectives for those assets that deliver services to its community. This is the first time a SAMP has been prepared as part of Councils approach to asset management planning and this forms part of Asset Management Improvement Plan.

Council owns, manages, operates, and maintains assets valued at approximately $424.4 million. These assets these are managed through five asset management plans (AMPs) with a significant majority of the assets sitting within the Rivers and Drainage AMP.

- Rivers and Drainage
- Regional Parks
- Rotorua Te Arawa Lakes
- Maritime
- Property

This SAMP covers all physical assets that are owned, managed, operated or maintained by Council that provide services to its community. This SAMP does not cover plant, fleet and equipment.

Council is governed by the principles of the Local Government Act 2002, including taking a sustainable development approach to promoting the social, economic, environmental, and cultural well-being of their communities. Councils Asset Management Policy, SAMP and individual Asset Management Plans (AMPs) combine to deliver Asset management planning that is fit for purpose and provides the information required for effective and efficient management of infrastructure assets to meet the future needs of its communities.

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2 Introduction

2.1 Purpose of the SAMP

2.1.1 Purpose

The purpose of this SAMP is to formally set out the long-term approach the Bay of Plenty Regional Council will follow to manage those assets that contribute towards achieving its strategic direction, in particular its vision and community outcomes. This approach ensures that acceptable levels of service are provided in the most cost effective manner.

The key purpose of this plan is to:

- Convey the role of assets and asset management in supporting the achievement of Council's organisational objectives (strategic direction including vision and community outcomes).
- Outline how the strategic direction has been linked to the asset management objectives.
- Set out how asset portfolios are managed to ensure Council continues to deliver services, in a sustainable and affordable way, to meet community expectations and legislative requirements.
- Outline the processes that enables informed and robust asset management decision making and planning.

The functional relationship between the SAMP and other organisational documents is shown in the diagram below.

- **Asset Management Policy** outlines the objectives, requirements and responsibilities for undertaking asset management across the organisation.
- **Strategic Asset Management Plan** sets out the long-term approach Council will take to manage its assets and links Council's organisational objectives (strategic direction) and asset management objectives (managing the assets required to support and deliver the objectives).
- **Asset Management Plan** documents the life cycle activities (create, maintain, renew and dispose) to be undertaken so that assets are able to provide a defined level of service in the most cost effective way.
- **Infrastructure Strategy** sets out the issues and implications that Council faces over the next 30 years and the approach for managing those issues with regard to flood protection and control works, as required by section 101B of the Local Government Act (2002) (LGA).
- **Long Term Plan** sets Council's strategic direction including the Community Outcomes that Council is seeking to achieve. The LTP establishes the work we will deliver to our community over the next 10 years, as well as setting out how that work will be funded, including through rates and various fees and charges.
- **Annual Plan** – the Long Term Plan is developed every three years, an Annual Plan is developed to update the work programme and funding for year two and year three of the Long Term Plan.

2.1.2 Asset management objectives

The overall goal of asset management is 'formally set out the long-term approach the Bay of Plenty Regional Council will follow to manage those assets that contribute towards achieving its strategic direction, in particular its vision and community outcome'.

In order to fulfil its strategic direction outlined above, Council is committed to best ***appropriate*** practice asset management in order to achieve the following key asset management objectives*:

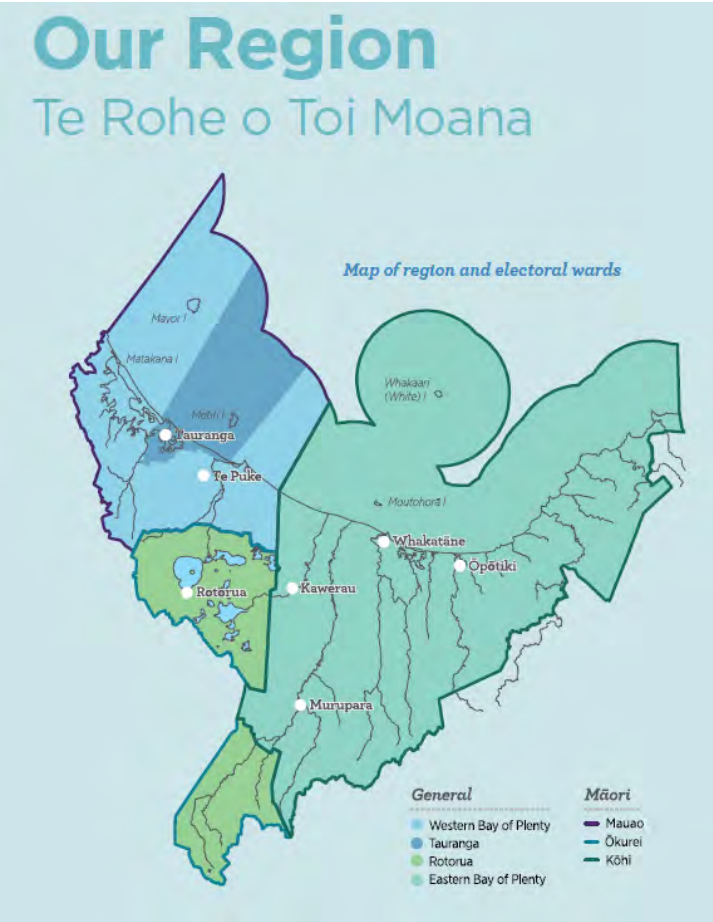
- Recognise the importance of AM planning and adequately resource the AM System.
- Actively and transparently engage with stakeholders on how the assets are to be managed.
- Manage asset networks in a prudent manner.
- Maintain the AM System to a high quality.
- Take a continual improvement approach.
- Use the most appropriate approach for service delivery.
- Consider climate change and implications for Māori.

**The above objectives are taken from Councils Asset Management Policy.*

2.2 Overview of the Bay of Plenty region

2.2.1 The place

The Bay of Plenty is located on the east coast of the North Island of New Zealand. The region incorporates the full extent of the coastline from Cape Runaway in the east, to Waihi Beach in the west and captures the coastal townships of Tauranga and Whakatāne. On the landward side, the region is mostly bounded by the watersheds of the catchments that flow into the Bay of Plenty; this includes the lakes in the Rotorua district. On the ocean side, the region includes 18 offshore islands including the volcanically active White Island, and the sea extending out to the 12-nautical-mile boundary. The area of the region is 21,740 square kilometres, comprising 12,231 square kilometres of land and 9,509 square kilometres of coastal marine area.



2.2.2 Natural environment

The Bay of Plenty region has a number of prominent features and landmarks. The prominent features of the region include islands such as Matakana, Tuhua (Mayor) and an active volcano; Whakaari (White Island). Other distinctive landmarks in the region include the numerous lakes of the Rotorua district and the distinctive peaks of Mount Tarawera and Putauaki, the Tauranga and Ohiwa Harbours and Mauao (Mount Maunganui).

The region is volcanically active with the Taupo Volcanic Zone crossing the area between Whakaari (White Island) and Lake Taupo. The two major features of this zone include a number of extensive geothermal areas (for example those found in Rotorua) and a number of earthquake fault lines that run parallel to each other within this zone.

Eight major rivers flow into the Bay - these are the Raukōkore, Mōtū, Waioeka, Whakatāne, Rangitāiki, Tarawera, Kaituna, and Wairoa rivers. In addition, there are seven large estuaries - the Maketu, Little Waihi, Whakatāne, Waiotahe, Waioeka/Otara, Tauranga, and Ōhiwa. The abundance of waterways in the area combine to enhance the active lifestyle opportunities for the Bay's residents and visitors and also presents a number of challenges regarding provision of access to waterways whilst protecting the surrounding areas from extreme flooding events.

The region extends inland, generally to the ridge of the catchments that drain into the Bay of Plenty. The furthest point from the coast is the top of the Rangitāiki River Catchment which is 139 kms from the sea.

2.3 Overview of services covered

Council owns, manages, operates and maintains assets with a replacement value of $424.4 million.

This SAMP provides guidance on Council assets which are grouped into the following asset activity areas:

Asset Activity Area	Services Provided	Location
Rivers and Drainage	Flood protection and land drainage.	Rivers and drainage schemes: • Kaituna Catchment Control Scheme • Rangitāiki-Tarawera Rivers Scheme • Whakatāne-Tauranga Rivers Scheme • Waioeka-Otara Rivers Scheme • Rangitāiki Drainage Scheme
Regional Parks	Recreational and open spaces areas for the benefit of the community.	• Pāpāmoa Hills Regional Park • Onekawa Te Mawhai Regional Park
Rotorua Te Arawa Lakes	Rotorua lakes water quality improvements.	Rotorua Lakes Catchment area.
Maritime	Provides a 24/7 navigation safety and maritime oil spill response across the region.	Region's harbours and navigable waterways including: • Tauranga, Ōhiwa and Whakatāne Habours • Rangitāiki, Kaituna, Whakatāne, Tarawera, Waioeka and Motu rivers • Aniwhenua and Matahina Dams • Pacific Ocean regional boundary.
Property	Work spaces for staff and its customers. Equipment and plant storages for service purposes.	Offices, depots, carparks in Whakatāne, Tauranga, Rotorua, Ōpōtiki, and Edgecumbe.

3 Strategic environment

3.1 Council's strategic direction

This SAMP aligns with and takes direction from the draft Strategic Direction (SD) in Council's Long Term Plan 2021-2031. The draft SD has been developed to support the well-being of our community and ties together our vision, community outcomes, our strategic proprieties and the way we work.

Council's vision is **"Thriving Together – mō te taiao, mō ngā tāngata".** To support and deliver this vision, Council has agreed on four community outcomes: A healthy environment; Freshwater for life; Safe and resilient communities; and A vibrant region. It is critical that Council has the infrastructure assets that will enable it to deliver its functions, services and activities to achieve these community outcomes.

Our biggest challenge is ensuring we match the work we do to immediate needs but in a way that is mindful of likely future requirements, so as to maximise the community return on its infrastructure investment. The draft Strategic Direction shown in the diagram below.

3.1.1 How asset activity areas contribute to Strategic Direction

The diagram below illustrates at a high level the links between the asset activity areas and Councils Strategic Direction.

Asset Activity areas						
		Rivers and Drainage	**Regional Parks**	**Rotorua Te Arawa Lakes**	**Maritime**	**Property**
Council Outcomes	A Healthy Environment		■	■		
	Freshwater for Life			■		
	Safe and Resilient Communities	■			■	
	A Vibrant Region	■	■			■
Community Wellbeing	Social	■	■	■	■	
	Cultural			■		
	Economic	■	■		■	
	Environmental	■	■	■		
Strategic Priorities	Regional recovery					
	Climate change	■				
	Partnerships with Māori	■	■	■		
	Land use and transport				■	
	Community participation and constructive relationships					
	Delivering on the ground					
	Making best use of our resources					■

3.2 Asset Management Maturity

For assessing asset management maturity and for setting continual improvement, consideration needs to be given to the size, complexity, value and risk associated with each asset activity area, as outlined in the International Infrastructure Management Manual (IIMM). Maturity level needs to be appropriate for the nature and risk of the activity.

The level of asset management maturity for each of Council's Asset activity areas is set below.

Asset activity area	IIMM maturity level*
Rivers and Drainage	Intermediate to Advanced
Rotorua Te Arawa Lakes	Core
Regional Parks	Core
Maritime	Core
Property	Core

* IIMM maturity level categories include Aware, Basic, Core, Intermediate and Advanced.

3.3 Rationale and benefits for asset ownership

The rationale for Regional Authorities being responsible for the provision and control of significant Council assets stems from provisions in the Local Government Act.

Asset Activity Area	Rationale for asset ownership and service delivery
Rivers and Drainage	• Assets contribute to a mix of public and private benefits. Private benefits accrue to individual landowners and occupiers through the protection of lives, livelihoods and property. Local benefits occur because a range of public facilities, infrastructure and services receive security from flooding. Regional and national benefits arise because productive land, in flood prone areas provides an economic benefit through the multiplier effect to the wider region and nation. • Council's Significance and Engagement Policy lists the rivers and drainage assets as strategic assets. This means that any transfer of ownership of the assets would be a significant decision and would require a full analysis of options and consideration of community views and preferences in Council's decision-making process.
Rotorua Te Arawa Lakes	• National and regional benefits include the protection of nationally significant bodies of water, and local benefits arise for those who live close to protected waterbodies. The wider community and future generations will get enhanced economic, environmental, social and cultural value from these improvements.
Regional Parks	• Assets provide benefits across the region. Visitors to the region also benefit from being able to enjoy and use the regional parks.

Maritime	• Assets contribute to a mix of national, regional, local and individual benefits. National and regional benefits arise from minimising the likelihood of maritime accidents that have an impact on people and the natural environment, including oil pollution response. Local and individual benefits arise because navigation aids help commercial and recreational vessels to avoid accidents and the associated financial and personal costs.
Property	• Rationale of asset ownership as a result of the Local Government Act provisions whereby Regional Authorities are responsible for the provision and control of significant Council assets. Property provides a supportive function for all of Councils activities in the LTP as a corporate overhead.

3.4 Significant negative effects

The LGA requires an outline of any significant negative effects (not positive effects) that the activity may have on the social, economic, environmental and cultural well-being of the (local) community. These are set out in the table below. Other negative effects, and mitigations are contained in individual AMPs.

Asset Activity Area	Significant Negative effects	Mitigation
Rivers and Drainage (GOA: Flood Protection and Control)	• Potential negative effects on the environment as a result of Council's delivery of flood control and land drainage functions. • Restrictions on land use through the Floodway and Drainage Bylaw.	• Civil construction works must comply with all relevant RMA Plans, and resource consent processes with appropriate public consultation occur frequently to ensure that effects of concern to the community are understood and adverse effects are avoided, remedied or mitigated. • All activities undertaken by the Rivers and Drainage Team of Council comply with our environmental code of practice and relevant industry design standards. • Where a significant change to an activity is proposed, clear opportunities are provided to the community to express their views via the engagement processes set out through Council's Significance and Engagement Policy.
Rotorua Te Arawa Lakes (GOA: Integrated Catchment Management)	• Making the change to more sustainable land uses and land use practice may have economic, cultural and social costs for individual landowners, and possibly the regional economy.	• As part of our planning processes, we ordinarily carry out cost benefit analysis that is proportionate to the type of proposal or plan being considered. • Where a significant change to an activity is proposed, clear opportunities are provided to the community to express their views the engagement processes set out through Council's Significance and Engagement Policy.
Regional Parks (GOA: Integrated Catchment Management)	• There are no significant negative effect of providing this service.	• N/A

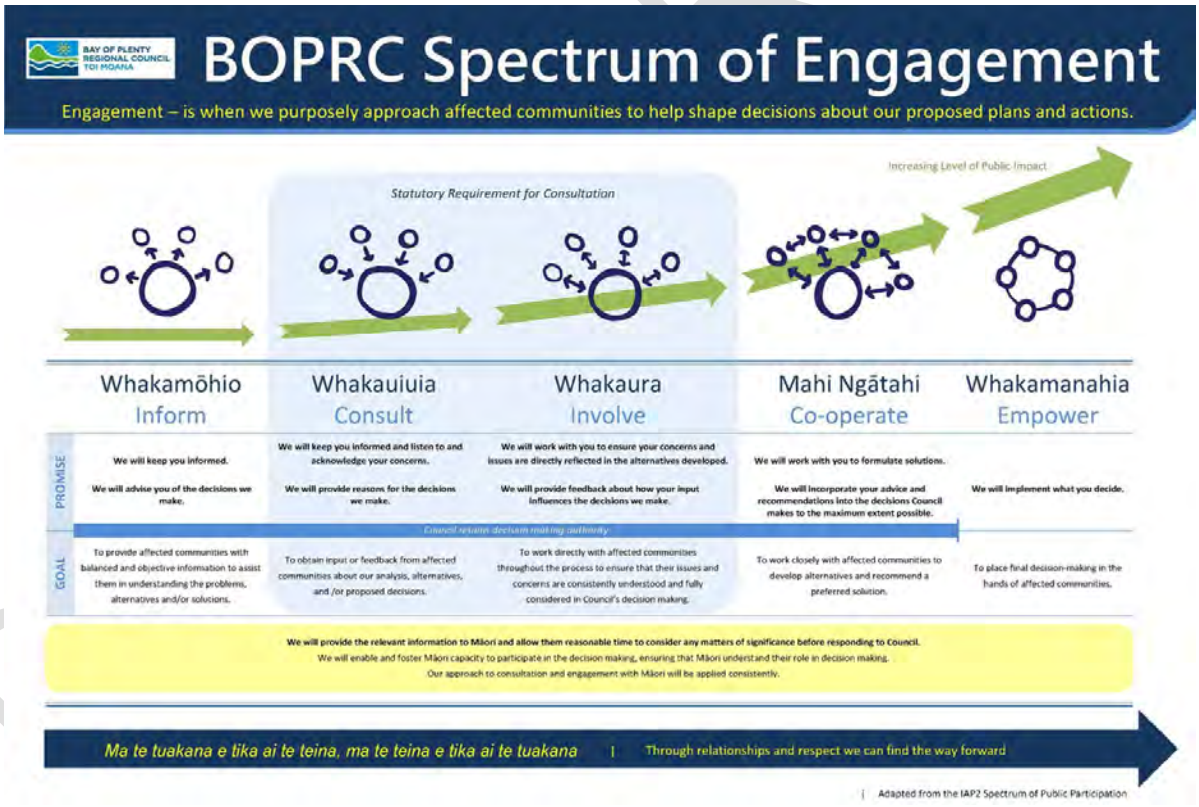
Maritime (GOA: Resource Regulation and Monitoring)	• There are no significant negative effect of providing this service.	• N/A
Property (GOA: Support Services)	• There are no significant negative effect of providing this service.	• N/A

3.5 Engaging with key stakeholders, partners and customers

3.5.1 Our engagement processes

Councils Significance and Engagement Policy sets Council's approach to identifying the significance of decisions and our approach to engaging with the community this is available at: www.boprc.govt.nz/significance-and-engagement-policy

Community engagement occurs across a spectrum of engagement and different engagement methods may be used depending on the type of engagement that is appropriate. The BOPRC Spectrum of Engagement is set out below.



3.5.2 Our Community and external stakeholders

Members of the community in our region are our primary stakeholders, our community contributes to the funding of our assets and asset maintenance through rates, fees and changes and are involved in the decisions for the management of assets and our community is also the main beneficiaries of the services.

There are a range of other individuals, groups and organisations with external stakeholder interests, some of these are listed below.

Community and external stakeholders		
• **Our community – citizens and ratepayers**	Local Iwi and Hapū	Emergency service providers (Police, Ambulance, Fire, Civil Defence)
• **The region's territorial authorities (TA's) and neighbouring TA's**	• Central Government Ministers and Agencies	• Regional and sub-regional economic development agencies.
• **Co Governance Forums including; Te Maru o Kaituna River Authority, Rangitāiki River Forum, Rotorua Te Arawa Lakes Strategy Group**	• Te Arawa Lakes Trust	• Environmental Care and Education Groups
• **Financial Institutions, Insurers, Regulatory Authorities.**	• Pāpāmoa Hills Advisory Committee	• Rivers Scheme Advisory Groups.

3.5.3 Māori Partners

The Bay of Plenty has a long and proud Māori heritage with more than one quarter (25%) of the population of the region identifying themselves as Māori at the 2013 Census. This is in comparison with only 14.9% of New Zealand's total population identifying themselves as Māori.

Council acknowledges the unique status of the relationship between the Crown and Māori under the Treaty of Waitangi. Council also acknowledges that the relationships it has with Māori are central to the fulfilment of its statutory responsibilities and will continue to utilise a range of different mechanisms to engage with the wider Māori community and ensure their views are appropriately represented in the decision-making process. Council is committed to providing relevant information in a suitable format and through suitable appropriate forums to inform Māori participation contribution and improve their access to Council's engagement and decision-making processes.

Council recognises the importance of mātauranga Māori and the value of it to inform council decision making processes. Through He Korowai Mātauranga, Te Hononga, and the pending Māori Responsiveness Framework, incremental changes to the way Council works with Māori will yield more productive and meaningful relationships that will inevitably benefit the wider regional community.

3.5.4 Internal stakeholders

Key internal stakeholders for developing the Asset Management approach and delivery and their respective roles and responsibilities are outlined below:

Who	Role
Councillors	Sets strategic direction of the Council including vision, community outcomes and strategic priorities, and approval of the Asset Management framework.
Leadership Team	Responsible for management of Bay of Plenty Regional Council and ensuring asset management plans are consistent with the strategic direction.
Asset Management Steering Group.	Responsible for the development of the asset management plans to deliver on the Strategic Direction
Asset Activity Managers	Responsible for the implementation of the Asset Management plans

3.6 Legislation, Policies and strategies

3.6.1 Statutory Requirements

There is a range of legislation that impacts delivery of Council Services. Key legislation setting requirements informing Asset management requirements are:

Legislation	Summary
Local Government Act 2002	The Local Government Act 2002 provides councils with a framework of powers to carry out democratic decision-making and action for and on behalf of its community. It also imposes accountability for prudent management and stewardship of community assets in the present and into the future.
Resource Management Act 1991 (RMA) and Amendments	The RMA 1991 is New Zealand's primary legislation dealing with the management of natural and physical resources. The Regional Water and Land Plan is a vehicle used to meet the requirements of the RMA and this plan then in turn sets the water quality goals for Council to achieve by way of setting Trophic Level Indices for each lake. These impact the Levels of Service of the Rotorua Te Arawa Lakes AMP.

3.6.2 Policies and strategies

Bay of Plenty Regional Council has developed various policies and works in partnership with other agencies, to fulfil its role and align its activities to other agencies and organisations throughout the region. This means that in establishing its programmes, Council must be aware of the following policies, strategies and guidelines. A list of some of the key Policies, Plans and Strategies is included in Appendix 1.

4 Assets we own

4.1 Overview

Council owns, operates, and maintains assets valued at $424.4 million replacement value. This SAMP provides guidance on all Council assets, which are grouped into the following asset areas:

Asset Area	Asset type	Value $m	%
Rivers and Drainage	• Erosion protection • Pump stations • Stopbanks • Structures • Waterways	$368.7	86.9%
Regional Park	• Fencing and styles • Pathways/walkways car parks • Dams • Farm buildings, dwellings and toilets • Water supply-tanks and pumps • Park furniture • Timber plantations • Signage	$11.5	2.7%
Rotorua Te Arawa Lakes	• Phosphorous Locking plants: Rotoehu, Rotorua • Nitrogen Reduction (Tikitere Zeolite Pilot Plant) Rotorua • De-stratification plant: Rotoehu • Koaro Fish pass • Monitoring buoys: Rotorua, Rotoiti, Rotoehu and Tarawera, • Wetlands: Okaro and Rotoehu (floating) • Groundwater monitoring bores: Rerewhakaaitu, Tarawera, Rotokakahi, Tikitapu and Okareka • Aquatic weed harvester trailer: Rotorua • Outlet Structure: Okareka • Diversion wall: Rotoiti. • Pioneer Pump Canopy unit: Okareka	$7.45	1.8%
Maritime	• Beacons • Buoys • Markers • Signs	$1.55	0.4%
Property	• Offices • Depots • Carparks	$35.24	8.3%
		$424.44	100%

4.2 Asset Condition

Asset condition is a measure of the physical state of an asset which is visually assessed by staff and contractors on a regular basis. Consistency between assessors is achieved through the application of guidance documents.

Monitoring asset condition enables us to:

- Predict and plan maintenance.
- Forecast renewal requirements.
- Develop effective and proactive work programmes.

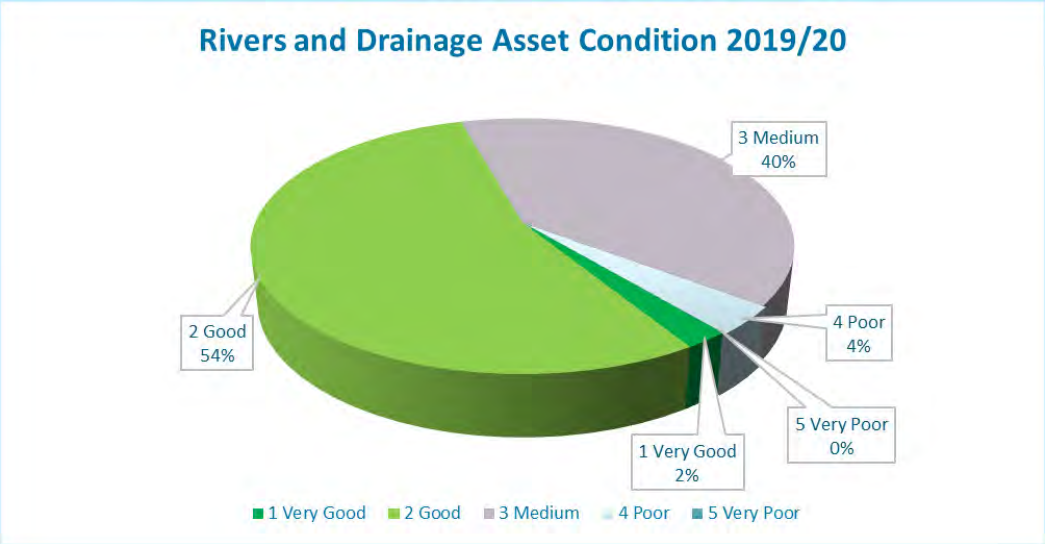
4.2.1 Rivers and Drainage Performance and Condition

Asset performance is a measure of confidence that an asset or group of assets will provide the required level of service, while assessing intrinsic strength, capacity, asset condition and consequence of failure. When assessing the performance of BOPRC's river schemes critical assets, the national Asset Performance Assessment Code of Practice and Tool is used. This provides an overall asset performance expressed as a risk profile grading between 1 (very low) and 5 (very high).

As part of the 2019/20 performance assessment, the condition of the assets is also determined where a grade between 1 (very good) and 5 (very poor) is applied. The results of the asset condition is shown in the above graph for critical assets in the schemes.

The condition assessments for the non-critical stopbank infrastructure assets commenced in early 2020/21, this was 75% progressed in November 2020 and will be completed by 30 June 2021.

Frequency of assessments and remedial actions are addressed through the R&D AMP.



4.2.2 Core Maturity level asset activity areas

For core asset activity areas relevant best practice guidelines are followed. Refer to individual AMPs.

5 Growth and demand

5.1 Overview of drivers

5.1.1 Current population and projections

The Bay of Plenty is the second-fastest-growing region in New Zealand according to the 2018 Census.

The Bay of Plenty Region currently has a population of 313,380 (2018 Census). This is projected to grow by approximately 6.6% to 2033, a rate slightly slower than that for New Zealand as a whole (8.5%). The largest urban area in the region is Tauranga City and 84% of the population live in the areas of Tauranga City, Rotorua District, and Western Bay of Plenty. 1

The region's communities have quite different population densities, varying topography and geomorphology, and thus varying flood protection requirements and levels of community-derived levels of service. The provision of the Rivers and Drainage activity is considered essential to ensuring the safety of these varied communities.

More detailed demographic analysis is used to identify and quantify specific areas within the region that are likely to experience significant pressures relating to the interaction of inhabitation with hydrological considerations. The increased frequency and severity of recent flood events has, and will continue to have, impacted the willingness with which insurers have insured properties in high-risk areas, whether with specified conditions or at all. This trend, alongside pressures to release land for development, is likely to create further future risk.

For other asset-related activities, population growth has differing effects. Increased population, and related increased recreational water-use, will likely drive increased demand for the Maritime Operations and Regional Parks activities, but will not have such a direct influence on the Rotorua Lakes and Corporate Support activities and property needs. Development in Ōpōtiki involving the harbour entrance there may drive increased demand for Maritime Operations services, including navigation aids.

5.1.1.1 Population projections

Population projections to 2033 for the territorial authorities in the Bay of Plenty region indicate that there will continue to be strong population growth in Tauranga City. Growth in Western Bay of Plenty and Rotorua districts will continue, population will be relatively stable in Whakatāne and decline in Ōpōtiki and Kawerau districts. Projections are shown in the table below.

[1] Source: https://www.stats.govt.nz/tools/2018-census-place-summaries/bay-of-plenty-region

Table 1 Population estimates for Bay of Plenty region

Dataset: Subnational population projections, by age and sex, 2013(base)-2043 update						
Regional council area	Population at 30 June					
	2013	2018 Census(1)	2023	2028	2033	2038
New Zealand	4,442,100	4,793,358	5,082,363	5,310,768	5,513,061	5,685,3
Bay of Plenty region	279,700	313,380	328,765	340,536	350,449	358,1
Western Bay of Plenty district	45,500	51,018	53,389	55,450	57,202	58,6
Tauranga city	119,800	137,781	149,246	158,561	167,466	175,7
Rotorua district	68,400	75,915	77,607	78,241	78,347	77,8
Whakatane district	34,200	35,844	36,244	36,445	36,345	35,8
Kawerau district	6,650	7,053	6,836	6,568	6,218	5,7
Opotiki district	8,780	9,288	9,024	8,676	8,222	7,6

(1) The table uses the Subnational population projections, characteristics, 2013(base)-2043 updat rebasing 2018 to the census result.

Data extracted on 04/08/2020. Source: http://nzdotstat.stats.govt.nz/

Rivers and Drainage

Population trends are important for flood management because scheme affordability is closely related to population, with rates being the key source of funding for scheme management. Community expectations lead the delivery of flood protection services and assets. Development can threaten the integrity of Rivers and Drainage scheme assets and the ability of the assets to meet levels of service.

High growth areas require good flood risk management policy and town planning that incorporates sound flood risk management principles. In areas where population is expected to increase, there will likely be greater demand for business and residential development and therefore greater population densities.

Where population is expected to decrease, there will be a reduction in ability to pay as population ages and distribution of population changes within the region.

Regional parks

Population growth has an impact on increasing visitor numbers to Regional Parks. Increased visitors will have the added benefit of raising the profile of the park, and conversely also the expectations of what the park delivers. By maximising the use of the existing parks there is likely to be more public involvement and potential opportunities for external funding.

5.1.2 Technology

For the Maritime Operations activity, there is increasing customer demand based on evolving technical capabilities when it comes to real time monitoring of conditions. This is in line with broader population expectations across all facets of modern life, when it comes to the availability of real time information. The cost of the technology that enables this is now also more affordable, and therefore both components drive the push for Maritime to include new assets such as bar cameras and wave buoys.

Technology, including scientific analysis of water quality trends and drivers, is a key driver of the Rotorua Lakes activity. New technology is consistently trialled, which has led to key successes such as in-lake monitoring buoys, alum dosing, and remote sensing.

5.1.3 Environmental

Environmental factors are the key driver for flood control works. Environmental change resulting from climate change, particularly through increases in the frequency and intensity of storm events and extremes in weather, including droughts and raised sea levels, will make maintaining existing levels of service more difficult. As well as climactic considerations, flood control works need to consider a range of other environmental considerations, including wetland restoration, erosion protection, and other conservation needs.

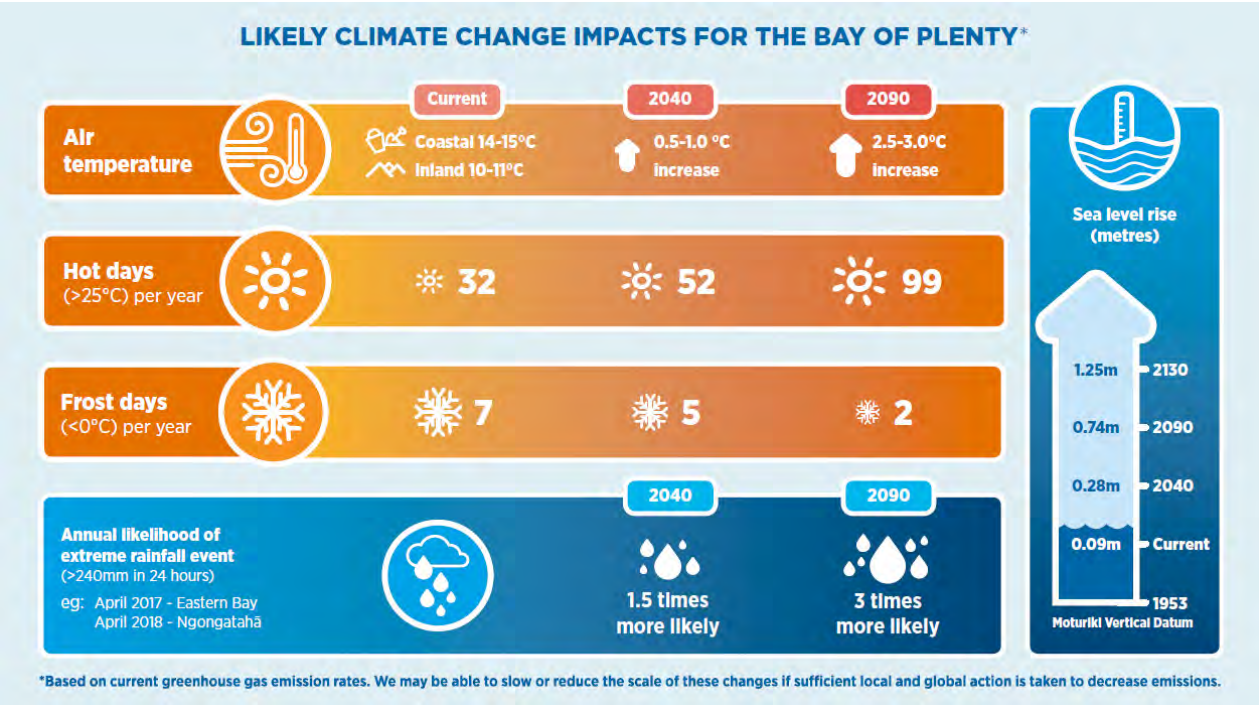
Environmental factors also influence the Maritime Operations activity, primarily due to the activity's role in clearing hazards in and around coastal environments. An increase in extreme rainfall events will likely lead to an increase in debris, such as trees, being washed out to the coast.

Environmental factors also drive significant demand for the Rotorua Lakes Activity.

For the Corporate Support activity, the primary environmental factor is community, Councillor, and staff expectations that the corporate property footprint will have reduced carbon emissions.

5.1.4 Climate and implications of a changing climate

In June 2019, Bay of Plenty Regional Council declared a climate change emergency alongside the adoption of our first Climate Change Action Plan. Indications of climate change by the Intergovernmental Panel on Climate Change (IPCC) are that the Bay of Plenty region may receive less rainfall in future, however the intensity and frequency of high rainfall events will likely increase. Sea level is predicted to rise with increased magnitude of tidal storm surges. Likely Climate Change impacts for the Bay of Plenty are summarised in the infographic below.



Climate change may mean that the lifespan of our assets is shorter than planned, or that maintenance costs increase. It may also mean that repairs are needed more frequently or that material deteriorate more quickly.

Council has a programme to provide for adaptation to the changes we are facing with future climate change and the potential impacts on some of the region's environments and sectors. These adaptations are based on the climate change projections outlined in the report "Climate Change Projections and Impacts for the Bay of Plenty Region", NIWA, October 2019.
https://atlas.boprc.govt.nz/api/v1/edms/document/A3434328/content

Adaptation information is included into existing capital improvement and maintenance programmes. By integrating climate information into programme development and investment decisions, Council can avoid dysfunctional projects e.g. investing in a stopbank that is likely to be inundated by rising sea levels.

5.1.5 Legislative

Key legislation affecting the delivery of the various asset-related services includes:

5.1.5.1 Resource Management Act 1991 and Amendments

Safeguarding the life-supporting capacity of air, water, soil and ecosystems; and avoiding, remedying or mitigating any adverse effects of activities on the environment. This is a primary driver of the work of the Rotorua Lakes Activity.

5.1.5.2 Local Government Act 2002 and amendments

Schedule 10 of the Act sets out the requirements for local authorities as to how they will assess and manage the implications of demand and service provision levels and standards.

5.1.6 Motiti Protection Areas

In April 2020, the Environment Court released its financial decision directing Bay of Plenty Regional Council to create protection areas around Motiti Island prohibiting the taking of all plants and animals. These new maritime protection areas will drive increased demand for Maritime Operations activities.

5.1.7 National Policy Statements and Natural Resource Plan

The Natural Resource Plan (NRP) has driven landuse change, and facilitated agreements to reduce landuse impacts, that support the improvement of water quality in the Rotorua Lakes. The upcoming National Policy Statement – Freshwater Management will require additional action in relation to water quality in the Rotorua Lakes.

[Flood Control and Protection? Maritime Transport Act?]

5.2 Summary of analysis

From an asset management perspective, the key growth and demand driver over the next ten years will be environmental (climactic) change. This is because Regional Council's largest asset group involves flood control, an activity determined more by rainfall than by other factors, such as demographic growth. Climate change will also drive demand for the Rotorua Lakes Activity through rainfall effects on water quality, and might also drive increased maritime debris.

[Comment here about detailed hydrological etc. analysis]

5.3 Projection uncertainty

For demographics, our assumption is that the Statistics NZ medium-level projection is accurate.

For hydrological modelling, we use [Add information here about the type of modelling used]

5.4 Non-asset demand management options

The objective of demand management planning is to actively seek to modify customer demands for services, in order to maximise utilisation of existing assets or to reduce or defer the need for new assets or services, including non-asset solutions. We primarily employ demand management in relation to our Rivers and Drainage activity, where types of management include:

Demand component	Management Approach
Legislation/regulation	• Manage resources and supporting infrastructure in line with legislation e.g. regulating and monitoring of gravel extraction rates and water take quantities. • Incorporating alternative designs into new subdivisions and other development, for example setting minimum floor levels • Monitoring development and providing incentives to develop in less flood prone areas • Provide a maritime patrol programme to reduce demand on Maritime safety assets.

Education	• Educating the community around River and Drainage related activities in order to manage expectations and reasons for undertaking activities. • Educating water users to improve safety and reduce demand on Maritime safety assets. • Educating the community on land use and effects on water quality in Rotorua Lakes
Incentives	• Provision of small landowner environmental grants to promote minor works activities that complement Council activities, i.e. out of scheme channel improvements.
Operation	• Continual improvements to assets through stakeholder ownership of assets, i.e. landowners who have assets on their land are more likely to look after them when that asset benefits them either directly or indirectly. • Regional Parks seeks to increase demand (visitor numbers) by enhancing the visitor experience, for example via facilities, wayfinding and interpretation, and improving access
Demand sub	• Maximum use of alternative and/or ‘soft’ materials (i.e. tree plantings) for erosion protection and channel training activities.

6 Levels of service

6.1 Overview

Asset management planning enables the relationship between levels of service (LOS) and the cost of the service (the price/quality relationship) to be determined. This relationship is then evaluated in consultation with the community to determine the levels of service they are prepared to pay for.

Defined LOS can then be used to:

- Inform customers of the proposed LOS.
- Develop asset management strategies to deliver LOS.
- Measure performance against defined LOS.
- Identify the costs and benefits of services offered.
- Enable customers to assess customer values as accessibility, quality, safety, and sustainability.

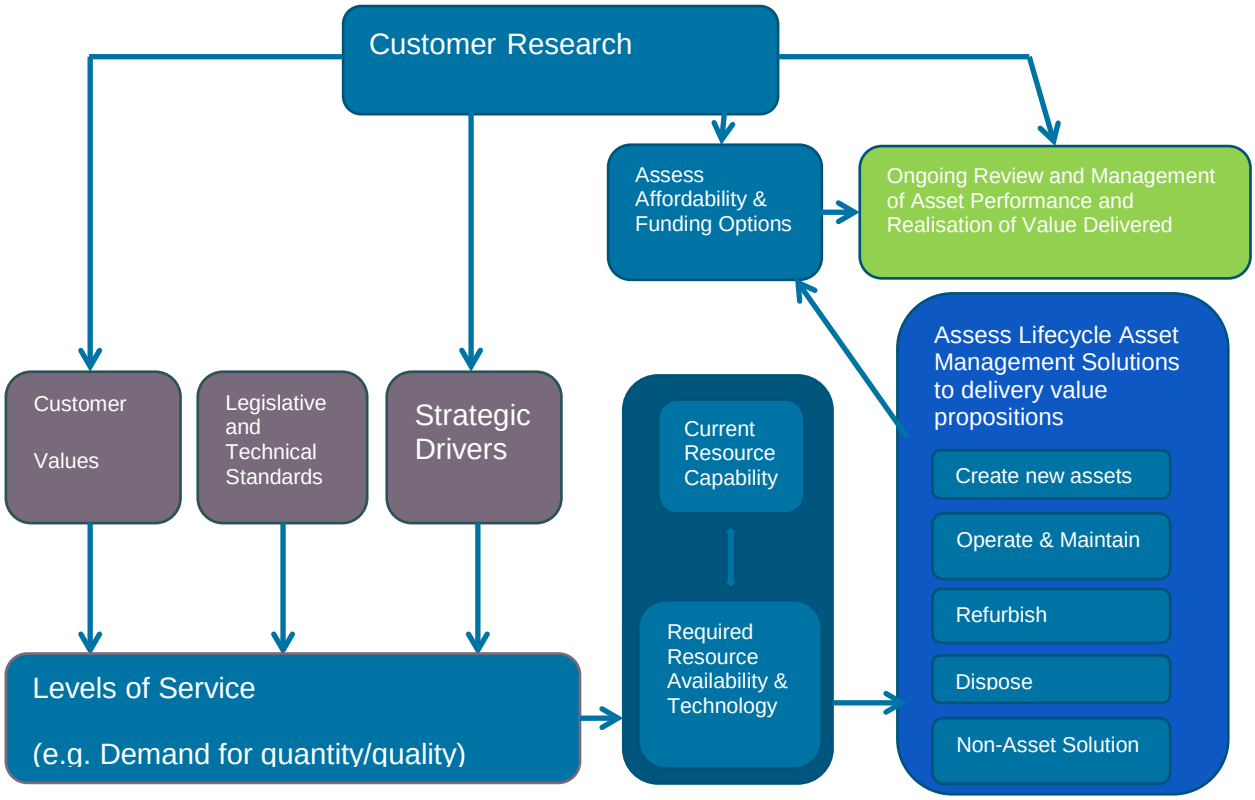
In this context LOS define the quality of delivery for a particular activity or service against which service performance can be measured.

6.1.1 LOS relationship to asset managing planning

One of the basic cornerstones of sound asset management is: To provide the levels of service that the current and future community want and are prepared to pay for.

LOS therefore provide the platform for all decisions relating to infrastructure management (as illustrated in the following diagram). Before developing detailed asset management strategies, Council needs to agree the LOS with the community with consideration given to the following:

- Required planned outcomes.
- Minimum legislative requirements.
- Technical constraints.



Source: The Developing Levels of Service and Performance Measures Manual 2007.

Figure 1 LOS relationship to asset management planning

6.2 LOS development process

LOS are developed as part of the development of the Long Term Plan 2021-2031 which sets the LOS that Council will deliver to the community. This is a multi-stage process and involves:

- Review and reset of the Council Strategic Direction including Community Outcomes, this is carried out with Council, and endorsed by Councils Strategy and Policy Committee
- Staff led Goal setting workshops that review and update existing LOS to create a set of clear LOS and measures/targets designed to deliver on Councils Strategic Direction.
- A series of Council workshops where Councillors consider draft LOS and measures alongside work programmes and financial implications and refine these for Consultation.

The outcome of the above process is a defined a set of high level LOS statements and measures that are be included in the draft LTP. This set of LOS and measures is then subject to consultation with the community on service delivery options and their associated costs as required by the Local Government Act 2002 through the Special Consultative Procedure.

The individual tactical Asset Management Plans may contain additional LOS statements specific to individual AMPs that support the delivery of the strategic LOS in the Long Term Plan.

6.2.1 Changes in LOS

A change in LOS will either be reflected as a requirement to increase or decrease the LOS.

Any significant change will need to be consulted on with key stakeholders and the community. The outcomes of this consultation are then incorporated into the decision making process.

6.2.2 LOS delivery process

Bay of Plenty Regional Council delivers its asset-related levels of service through various delivery mechanisms:

- Internal staff – for the Maritime Operations and a large proportion of the Rivers and Drainage activities;
- External contractors – for the delivery of work associated with the maintenance and renewal of Rivers and Drainage and Rotorua Lakes assets;
- Government and other agencies such as Department of Conservation – for work associated with the Rotorua Lakes activity

6.2.3 Levels of Service from the (Draft) Long Term Plan 2021-2031

The table below sets out the LOS contained in the draft Long Term Plan 2021-2031 for the Activities that have AMPs. The assets held by Council are expected to support the delivery of these LOS.

The individual tactical Asset Management Plans may contain additional LOS statements specific to individual AMPs that support the delivery of the strategic LOS in the Long Term Plan.

Asset Management Plan	Level of Service	Measure	Target
Rivers and Drainage	Provide flood protection and drainage	Percentage of maintenance and repairs completed in accordance with the Rivers and Drainage Asset Management Plan	Year 1-10: 85%
		Percentage of capital works completed in accordance with the Rivers and Drainage Asset Management Plan	Year 1-10: 75%
Regional Parks		The number of visitors to Regional Parks	Yr1: 121,635 Yr2: 124,068

	Manage our Regional Parks sustainably		YR3: 126,549 Yr4-10: 131,662
		Visitor satisfaction for visitors to Regional Parks	Yr1: 75% Yr2: N/A Yr3: 80%
Rotorua Te Arawa Lakes	Improve the indigenous biodiversity and waterbodies in the Bay of Plenty catchments	Number of Rotorua Lakes that have reached their Trophic Level Index (TLI), based on the three year rolling TLI	Year 1-10: 3
Maritime	Minimising risks and effects of maritime oil spills and navigation hazards	The percentage of navigation aids of "good" quality or higher	Year 1-10: 95%
Property	Reduce/minimise carbon emissions through (TBC)	Placeholder – Potential goal regarding Corporate Property Energy Efficiency or Greenhouse Gas Emissions	TBC

6.3 Challenges in achieving levels of service

The following sets out key challenges in achieving levels of service by activity group:

6.3.1 Rivers and Drainage

- The AMP identifies a small list of assets that are known to not meet design standard as of August 2020. The AMP include a Capital plan showing budgets and timing of works to meet the desired design standard for those assets.

6.3.2 Rotorua Lakes

- Activity outcome is heavily influenced by environmental factors outside of Council control. So in making Levels of Service (LOS) targets we need to be mindful that the outcomes may not be achieved at times, simply due to prevailing weather conditions or ongoing Climate Change.

6.3.3 Regional Parks

- No issues identified.

6.3.4 Maritime Operations

- No issues identified.

6.3.5 Corporate Support

- No issues identified.

7 Life cycle and financial planning

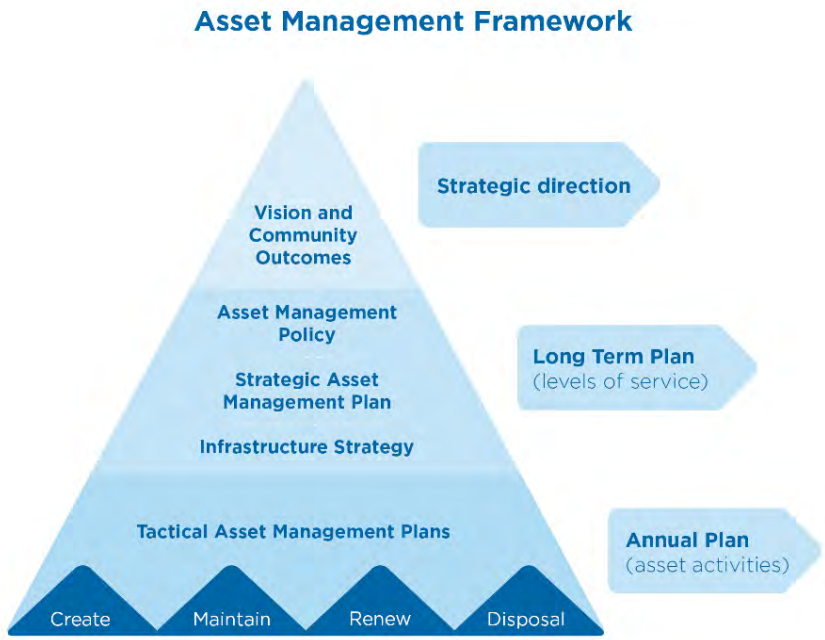
7.1 How we make decisions

7.1.1 Asset Management Framework

Councils Asset Management framework is in place to ensure that agreed levels of service are provided in the most cost effective manner. This includes lifecycle planning and providing the framework for delivering Asset Management decisions.

As shown in the diagram below, Councils Strategic Direction provides direction to and informs the Asset Management Policy, and Councils Infrastructure strategy, this SAMP and the tactical AMPs.

The infrastructure Strategy and SAMP are reviewed every three years through the regular Long Term Plan development cycle while tactival AMPs may be updated more regularly.



7.1.2 Roles and Responsibilities

Role	Responsibility
Council	Setting Strategic Direction and overall Governance including setting of plans and budgets including through Long Term and Annual Plans to enable delivery of Councils Infrastructure Strategy and Asset Management activities.
Leadership Team	Overall responsibility for delivery of Councils Infrastructure Strategy and Asset Management activities. Approval of internal Asset Management Policy,
General Managers	Delivery of asset management improvement programmes within their areas

Asset Management Steering Group (AMSG)	An internal centre of expertise for sharing asset management best practice and drive consistency of practice across BOPRC. Ensures the delivery of asset management improvements identified in each group's AMP and the production of AMPs in time for each AP/LTP cycle. Also provides advice to the Leadership Team on asset management.
Activity Managers	Operational delivery of Asset Management Plans, responsibility for maintaining and updating AMPs, members of ASMG

7.2 AMP Life Cycle development and summary

7.2.1 Rivers and Drainage Asset Management Plan (AMP)

This is Council's largest physical asset portfolio with an optimised replacement value of $368 million (as at 1 July 2020). The Rivers and Drainage AMP is a 50-year plan that provides information about the assets and how they are maintained and managed to provide agreed levels of service.

Rolling 10-year capacity reviews and geotechnical investigations of each of the schemes determines whether the assets are providing agreed levels of service and informs whether upgrades are required. Additional capital works may flow on from this process and the cost estimates for this work are provided to the proposed LTP capital budget as indicative placeholder figures.

Specific workshops are held with River Scheme Advisory Groups focused on the LTP and AMP financial planning and proposed budgets. This enabled the group members to provide comment and input into the proposed capital and operations budgets.

These placeholder figures are formulated by depreciation modelling of each asset type using unit rate values. This is an accepted best practice principle when forecasting costs prior to completion of the capacity reviews when estimates can then be updated based on the more detailed investigation and design.

The risk of underestimated future capital works is high due to:

- The complexity of the assets e.g. greater loss of service – more rapid stopbank settlement than expected.
- The unknown requirements until capacity reviews have been completed.
- Vulnerability to floods and other natural disasters.

7.2.2 Rotorua Te Arawa Lakes Asset Management Plan

This AMP focuses on the in-lake and in-stream interventions to improve water health. Operational projects in the Rotorua Lakes Catchment programme are generally short to medium term projects which support improvements in water quality. As a result, the majority of these assets do not require future capital renewal. However, the programme's longer term assets like the Ohau Diversion Wall and environmental monitoring bores require ongoing capital renewal and maintenance.

Maintenance is a relatively fixed spending regime with the activity continuing to maintain existing performance levels. This will continue until these short to medium term projects cease.

7.2.3 Maritime Asset Management Plan

The focus of the Maritime AMP is primarily the Council owned aids to navigation (beacons, buoys, markers and signs) assets. The Maritime Operations activity has a relatively fixed capital spending regime associated with the navigational aid assets.

Regular maintenance is undertaken on the navigational aid assets to ensure each asset is regularly inspected for condition defects. This is also a relatively fixed spending programme and the activity is maintaining existing performance levels.

7.2.4 Regional Parks and Coastal Catchments Asset Management Plan

The assets that supported under the Regional Parks and Coastal Catchments AMP are unlike other infrastructure e.g. significant trees, regenerating native bush, significant archaeological and cultural sites. The majority of the tangible assets have come from the legacy of farming on the land prior to becoming parks e.g. fencing, tracks and farm buildings. The Regional Parks activity also contains a number of the Kaituna Re-diversion assets including the salinity block, boat ramp, a floating pontoon and fixed pier.

The Regional Parks activity has a relatively fixed capital and operational spending regime that is associated mostly with new farm assets (e.g. new fencing), asset upkeep (e.g. track maintenance) and landscape restoration (e.g. land retirement and native replanting). However, projects may be proposed to help meet levels of visitor growth as well as enhance visitor experience.

7.2.5 Corporate Property Asset Management Plan

The Corporate Property AMP outlines the management of land and buildings that staff use to deliver Council's core services from. This long-term planning approach is necessary given the large capital and operating expenditure, the long lives of the assets and the lead times in planning for upgrades of new assets when required.

7.3 Financial planning

The Asset Management Steering Group (ASMG) ensures the production of AMPs in time for each LTP or Annual Plan cycle including financial forecasts, the ASMG includes Councils Finance Manager (or delegate). Individual Asset Activity Managers are responsible for updating their respective draft AMPs drawing in specialist expertise as required from the AMSG or external parties. AMSG provides the draft AMPs, including budgets to the Leadership Team and to Council.

8 Assumptions

8.1 Overview

The draft LTP 2021-2031 includes updated significant forecasting assumptions that inform the development of the LTP and section 5 of this report sets out a set of core assumptions such as population projections, implications of a changing climate along as well as a range of range of other drivers.

Statutory financial reporting requires Bay of Plenty Regional Council to revalue its fixed assets at least every five years. In most cases this will occur more frequently as set out in the individual AMP.

All infrastructure assets valued have been done so in accordance with the methodology prescribed in the New Zealand Infrastructure Asset Valuation and Depreciation Guidelines 2006.

8.2 General assumptions

There are a number of principles, legislative and policy requirements that apply across Councils asset management planning, these include:

- Use best currently available information.
- Where completed use the most up to date Condition assessments.
- Seek to maintain the existing levels of service.
- Comply with:
  - Legislative requirements;
  - Council's funding, financial and operational policies and strategies;
  - Relevant financial reporting standards issued by the New Zealand Institute of Chartered Accountants;
  - Industry best practices and norms; and
  - Generally Accepted Accounting Practice (GAAP).

In addition to the assumptions described above, individual AMPs will draw on information specific to the particular asset class and at different levels of comprehensiveness depending on the maturity of the AMP (refer to section 3.2). The greater the maturity of the AMP, i.e. the greater the level of information drawn on to inform the AMP.

9 Audit and improvement

9.1 Our approach to this

Council is committed to applying and improving sound management practices in alignment with industry best practice. This is important to provide fiscally prudent and reliable services that our communities can have confidence in. This involves continually reviewing the efficacy of systems and procedures and working towards improvement in a cost-effective manner.

External review of our business is conducted systematically, with review by Audit New Zealand of our budget planning processes as part of the Long Term Plan process being a good example. This involves reviewing the methodology for budget generation, including how budgets relate to the AMPs and the processes used in AMP budget development. External peer review is standard practice with the auditing of our annual valuations. Financial expenditure reporting is conducted on a regularly basis including regular *typically quarterly) reporting to Council and through the Annual Report which is audited externally.

The Asset Management Steering Group provides enables sharing of knowledge and best practice to ensure the way we manage our assets effectively and efficiently and to coordinate documented reviews and communication with Council and Advisory Groups.

9.2 Past audits

The vast majority of our assets are managed through the Rivers and Drainage AMP, through this review cycle as part of the development of the LTP, the Rivers and Drainage Assets and Engineering teams reviewed the improvement plan from the previous version of this AMP (2018-2068). Overall there was considerable progress made against the previous improvement plan. The following sub-headings capture the key improvement areas (those items that are still a work in progress are captured in the improvement plan section below).

9.2.1 Condition assessments

Assets covered by this AMP now have a systematic regime for condition assessment which is consistent with national best practice. This is a significant improvement in terms of risk management and asset replacement decision-making. To add to this, Council's in-house capability for geotechnical analysis has developed and built significant data about the geomorphological characteristics of soils in critical areas.

9.2.2 Technology One

Council has implemented this system and it is operational. Staff are competent at a functional level and are familiar enough with the system to provide a foundation for further learning. Tech 1 'champions' are in development and will continue to lead the realisation of further system functionality. The asset register which previously was held solely in spreadsheets is now maintained through Tech 1 and links directly with Council's mapping and financial systems. Further functionality will be realised as part of the implementation of this AMP's improvement plan below.

9.2.3 Project management

Council has strengthened our capability, capacity and systems in this respect. This ensures projects are appropriately managed, have a high success rate, and are fiscally prudent. The Commercial Team has fostered Council's development in this respect, working with staff that manage projects to apply good management practices.

9.3 Improvement plan

9.3.1 Overview

The purpose of an Improvement Plan is to document the key actions that the Bay of Plenty Regional Council can undertake to maintain and improve the asset management practices that assist in optimising service provision to the Community.

Council has adopted a strategic management approach to improvement planning, continually developing AMPs, and implementing improvement processes and practices. This is reflected by the establishment of Council's Strategic Asset Management Plan as part of the Long Term Plan 2021-2031 process, and Council's historic and ongoing commitment to sound asset management practices and planning procedures.

This improvement plan is integral to that approach, reflecting current business practice and identifying improvement actions to progress the AMP goals of this plan. Providing a better service to our customers and optimising resource use.

The following section provides an overview of the continual improvement process that is underway. Further detail is contained within the individual AMPs and in particular the Rivers & Drainage AMP.

9.3.2 What are the key improvement areas?

Asset management work has been grouped into key asset management process areas for the purposes of improvement planning in Table 50 below. Improvement in these areas is critical to achieving sustained performance of the organisation at the lowest lifecycle cost.

Table: Key asset management process areas

Core business process	Key elements
Asset management/information systems	• Asset register • Plans and records • Financial system • GIS • Modelling • Project management • System Integration • Availability/usability

Asset data and knowledge processes	• Asset hierarchy • Maintenance records • Condition assessments • Performance monitoring and utilisation • Lifecycle cost data • Asset age/lives • Risk data (critically)
Operations and maintenance processes	• Maintenance management. • Contract monitoring and control • Operational expenditure analysis/review
Demand analysis and strategic planning processes	• Demand analysis • Failure prediction • Risk assessment • Renewal optimisation • Levels of Service reviews • Long Term Plan
Asset capital processes	• Project identification/priorities • Capital expenditure evaluation • Contract monitoring and control (capital works) • Construction/design standards • Asset handover • Asset rationalisation/disposal
Organisational/commercial	• Asset management review and improvement • Contracting policies • Internal quality assurance processes • Corporate commitment • Asset management roles • Corporate asset management team • Training programme

9.3.3 Improvement goals and projects

The tables that follow consider the key improvement areas described above and identify improvement goals. The improvement goals are grouped together into improvement projects. Currently the improvement goals all have equal priority and the intention is that the goals will be addressed through the development of improvement project plans as shown in the table below Refer to the Rivers and Drainage AMP for further detail).

Table: Improvement goals and projects

Project name	Project code	Project lead	Project resourcing
Tech 1 integration and optimisation	Tech 1	Rivers and Drainage Assets	$45,000 per annum additional
Business processes review and improvement	BPR&I	Rivers and Drainage Assets	Existing internal resource
AMP implementation and improvement	AMP I&I	Rivers and Drainage Assets	Existing internal resource
Engineering business improvement	EBI	Engineering	Existing internal resource
River Scheme Sustainability	RSS	Engineering	Existing internal resource
Training and support	T&S	Rivers and Drainage Assets	$20,000 per annum additional

Additional annual resourcing required identified in the table above will be funded by distributing the cost across the Rivers and Drainage schemes covered by this AMP. Optimising the use of Tech 1 and training staff so that they are confident in its use is critical to delivering fiscally prudent asset management. This additional cost is an investment that has the intention to save river and drainage schemes money by optimising life-cycle costs of assets and better managing the asset portfolios.

10 Appendix 1: Key Council Policies, Plans and Strategies

Bay of Plenty Regional Council has developed various policies and works in partnership with other agencies, to fulfil its role and align its activities to other agencies and organisations throughout the region. This means that in establishing its programmes, Council must be aware of the following policies, strategies and guidelines. A list of some of the key Policies, Plans and Strategies is included in Appendix 1.

Table 2 Polices and guidelines

Policy/guideline name	Status
Statement of Significant Accounting Policies (LTP)	Current
Funding Impact Statement (including Rating Policy)	Current
Policy on Determining Significance	Current
Liability Management Policy	Current
Revenue and Financing Policy	Current
Policy on Partnerships between the Council and the Private Sector	Current
Erosion and Sediment Control Guidelines for Land Disturbing Activities	Current
Hydrological and Hydraulic Guidelines	Current
River Gravel Management Guidelines	Current
Environmental Code of Practice for River and Drainage Maintenance Activities	Current (to be reviewed)
Stopbank Design and Construction Guidelines	Current

Table 3 Plans and strategies

Plan and Strategy name	Status
Regional Policy Statement	Operative
Regional River Gravel Management Plan	Operative
Regional Coastal Environment Plan	Operative
Regional Water and Land Plan	Operative
Waioeka-Otara Floodplain Management Strategy	Adopted
Whakatāne-Tauranga Floodplain Management Strategy	Staged
Rangitāiki-Tarawera Floodplain Management Strategy	Staged
Regional Plan for the Tarawera River Catchment	Operative
Kaituna River and Ongatoro/Maketu Estuary Strategy	Adopted

Kaituna Floodplain Management Strategy	Planned
Ngā Whakaaetanga-ā-Ture ki Te Taiao ā Toi Statutory Acknowledgements (included in RPS)	Operative
Rivers and Drainage Asset Management Plan	Operative
Infrastructure Strategy (flood protection and control works) (LTP 2021-2031)	Draft
Finance Strategy (LTP 2021-2031)	Draft
Invest Bay of Plenty Plan	Adopted
Te Ara Whanui o Rangitāiki – Pathways of the Rangitāiki.	Adopted
Regional Parks Policy	Adopted
Kaituna River Document	Adopted

Rivers and Drainage Asset Management Plan 2021-2071

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Document control

Document information

Document name:	Rivers and Drainage Asset Management Plan 2021-2071
Programme responsibility:	Rivers and Drainage Asset Team
Status:	Draft

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Author	Description of change	Date	Version
Hemi Barsdell	Final adopted document		

Future review

Review timeframe:	In line with the requirements of Council's Long Term Plan 2021/22–2030/31

Distribution control

Person	Role	Date of issue	Version
Hemi Barsdell	Asset Management Specialist		

Approved for issue:

Signed: ..... Date: .....

Hemi Barsdell

Asset Management Specialist – Rivers and Drainage Assets

Signed: ..... Date: .....

Kirsty Brown

Rivers and Drainage Asset Manager

Signed: ..... Date: .....

Chris Ingle

General Manager Integrated Catchments

Contents

1 Executive Summary

The Rivers and Drainage activity encompasses five separate river and drainage schemes within the Bay of Plenty region (shown in the figure below). Bay of Plenty Regional Council (BOPRC) is responsible for the provision and management of these Rivers and Drainage schemes (Kaituna Catchment Control Scheme, Rangitāiki-Tarawera Rivers Scheme, Whakatāne-Tauranga Rivers Scheme, Waioeka-Otara Rivers Scheme and Rangitāiki Drainage Scheme). These schemes contain a mix of flood protection and drainage assets (e.g. stopbanks, floodways, level control structures, erosion control structures, pump stations, canals and drains) to which this plan applies.

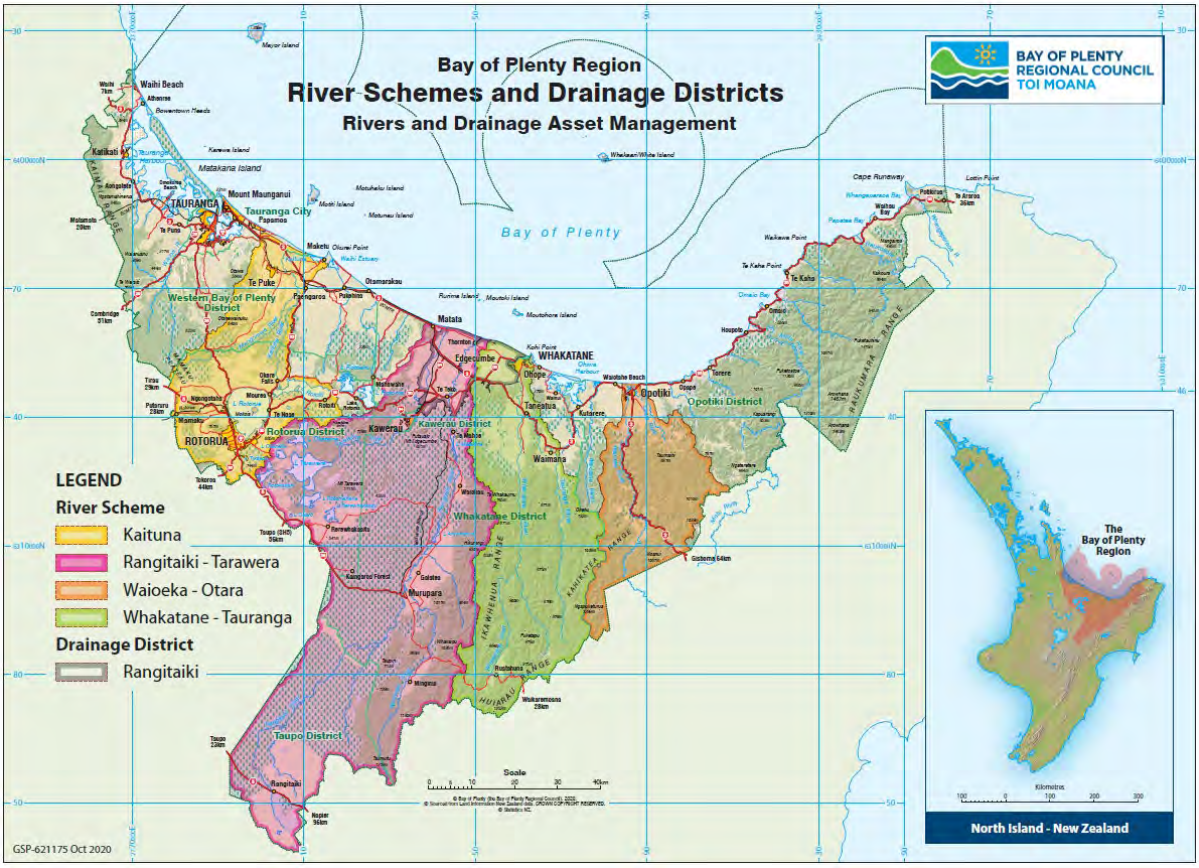


Figure 1 Overview map of river schemes

Provision of Rivers and Drainage schemes is a fundamental service provided to the community by BOPRC. The schemes have been developed over many decades and provide essential services to keep our communities safe from the harmful effects of flooding. For example, the urban settlements of Whakatāne, Ōpōtiki and Edgecumbe rely heavily on the existence and performance of flood protection assets. Without the network of stopbanks, pump stations, erosion protection and other flood protection assets, these townships would be inundated at unsustainable levels by floodwaters.

Scheme provision is also a critical enabler of regional wellbeing and economic prosperity, with the provision of scheme services enabling activities such as farming, regional access, housing and amenity areas. Our economy relies to a large extent on the provision of the river and drainage scheme services and this Asset Management Plan is a critical component in scheme management.

This Asset Management Plan sets out a 50 year plan to ensure the flood protection and drainage assets (collectively valued at $368M at 1 July 2020) are appropriately managed, to achieve agreed levels of service in a cost-effective and reliable manner. It is important to plan for the future, and this plan provides a tangible and accessible means for all parties, with a stake in Rivers and Drainage schemes to view and discuss scheme management.

This plan gives a detailed overview of the key elements involved in scheme management and is a key guiding document for all staff involved. It provides all of the necessary background to scheme management, as well as operational guidance, financial forecasts, risk management and improvement planning.

This asset management plan is modelled off best practice. It has been developed and improved over the past 15 years, with the current edition being developed in liaison with Tonkin and Taylor and subject to internal and external review. This plan has been developed using material and guidance from the following nationally and internationally recognised authorities:

- National Asset Management Support: International leaders in asset management.
- Institute of Public Works Engineering Australasia.
- Association of Local Government Engineering New Zealand.
- International Infrastructure Management Manual: The IIMM manual was developed with public and private sector input from New Zealand, Australia, United States, United Kingdom and South Africa.

Implementation of this plan will be reviewed on an ongoing basis. Monitoring and reporting of progress against this plan will be completed by internal review. Reporting to Council, Council Committees and River and Drainage Scheme Advisory Groups, will be the primary means of providing accountability to our communities. Formal review of this plan, including reporting of improvement plan project progress, will align with BOPRC's annual and long-term planning cycles.

2 Introduction

2.1 Purpose of the AMP

The purpose of this Plan is to formally document the management philosophy that is applied to the Rivers and Drainage infrastructure assets and services. This approach ensures that acceptable levels of service are provided in the most cost effective manner and contributes to the achievement of the Long Term Plan (LTP).

This long-term planning approach is considered necessary given the large capital and operating expenditure, the long lives of the assets, and the lead times in planning for upgrades or new assets when required. The sequencing and timing of works are developed through discussions with key stakeholders and this Plan is prepared in consultation with them.

The key purpose of this plan is to:

- Provide a long-term strategy, in alignment with Council's Strategic Asset Management Plan and Infrastructure Strategy, for the management of the Rivers and Drainage assets and services.
- Improve understanding of service level standards, options and costs to smooth peak funding demands, while improving customer satisfaction.
- Manage the environmental, service delivery, health and safety, and financial risks of asset failure*.
- Identify lifecycle (long-term) costs to provide agreed level of service over the long-term.
- Explain how the long-term works programmes have been developed and how they will be funded.
- This Plan also constitutes an 'agreement with our communities' in that it describes the agreed levels of service and design standards for flood protection and drainage assets owned or under the control of Council.

*The 2017 Edgecumbe stopbank collapse is a significant example of the reality that critical flood defences can fail. This AMP and the business of Council aim to reduce such risk to an acceptable level.

2.1.1 Rivers and Drainage at a glance

Major Rivers and Drainage schemes within the regional boundaries of BOPRC include:

- Kaituna Catchment Control Scheme
- Whakatāne-Tauranga Rivers Scheme
- Rangitāiki Drainage Scheme
- Rangitāiki-Tarawera Rivers Scheme
- Waioeka-Otara Rivers Scheme

There are also a number of minor Rivers and Drainage schemes that complete the Rivers and Drainage network in the Bay of Plenty (Huntress Creek, Rangitāiki Pump Stations, Waiōtahe). The minor drainage schemes are not part of the Rivers and Drainage Asset Management Plan (AMP), as BOPRC does not own these assets, but does manage them on behalf of customers. Each of these private schemes has the discretion to use Council or others to manage their scheme.

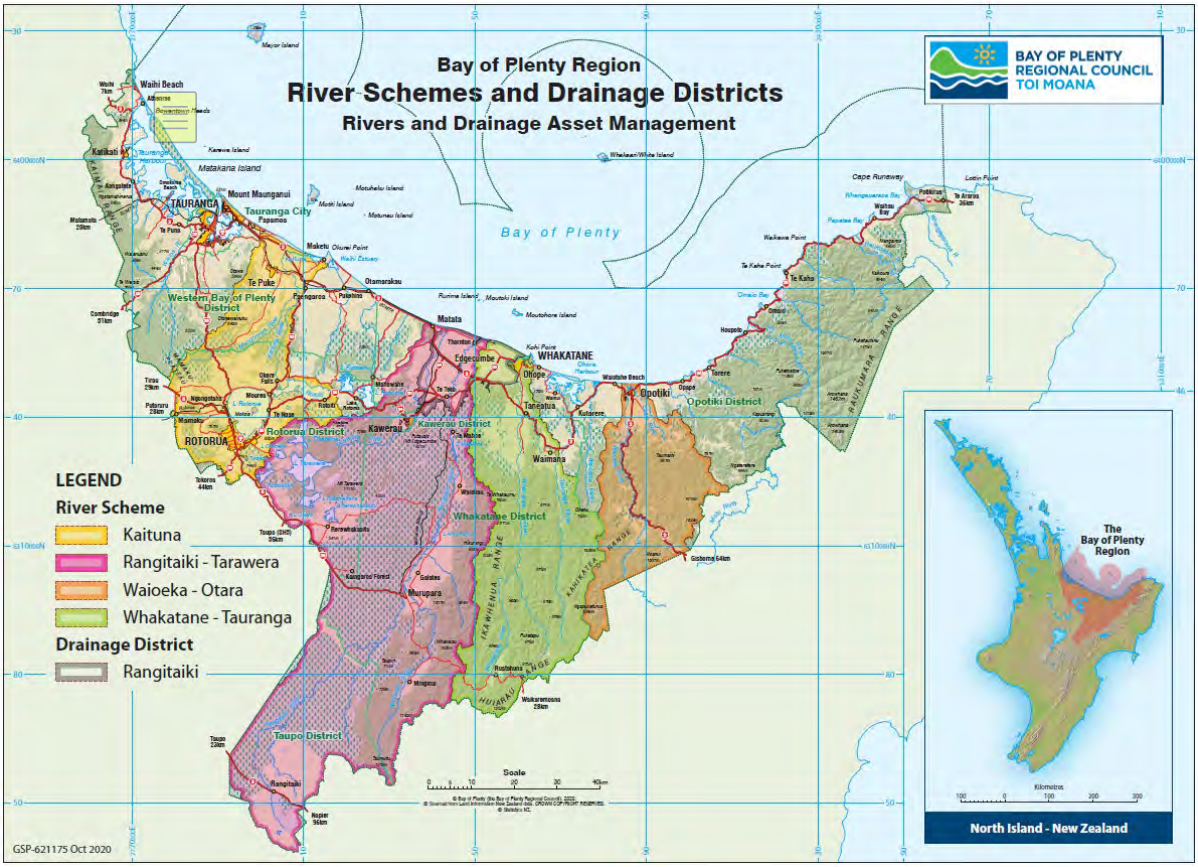


Figure 2 Overview map of river schemes

2.1.2 Asset management planning objectives

Bay of Plenty Regional Council recognises that the Rivers and Drainage Asset Management Plan (AMP) is a fundamental key management tool for flood protection in the river and drainage schemes. This AMP represents the fourth review of the combined AMP for all Rivers and Drainage. The first Rivers and Drainage AMPs for each scheme were completed in 1996–1998 and were originally updated in subsequent years on a five yearly cycle for each scheme. The AMP is now reviewed annually and updated on a three yearly cycle in conjunction with the LTP.

In order to fulfil the Community Outcomes, Vision, Goals and Objectives outlined in the Strategic Environment (next section), BOPRC have adopted a systematic approach to the long-term management of its assets and services by preparing this AMP for all the schemes assets.

Bay of Plenty Regional Council is committed to best practice asset management in order to achieving the following key objectives:

- Meet the levels of service agreed with the community in a cost-effective manner.
- Ensure capital projects and maintenance activities achieve efficient results with optimal benefits.
- Demonstrate Council's approach to managing risk and meeting growth requirements towards a sustainable future.
- Assets are constructed and maintained in alignment with Council's climate change policy.
- Comply with all statutory requirements.

2.1.3 Plan timeframe

This AMP covers a 50-year timeframe. The main focus of the Plan is determining the work programmes required for maintaining, rehabilitating and renewing components over the next 10 years. This AMP provides the detail underlying the LTP and is revised concurrently every three years with the LTP.

2.2 Relationship with other plans and documents

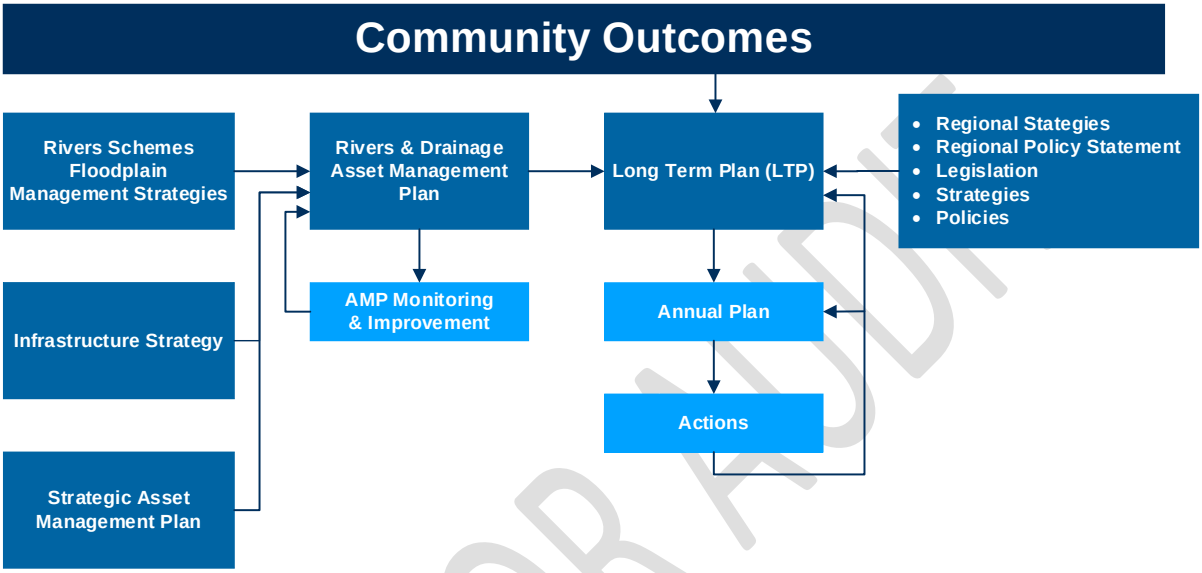


Figure 3 Integrated planning framework/linkages

Bay of Plenty Regional Council has a number of key strategic documents in place that govern many of its activities. These relate to, and will assist in, working towards the achievement of the community outcomes. The relationship between this AMP and other documents is shown in Figure 3 and Table 1.

Table 1 Cycle planning relationships with other plans, reports and documents

Plans/documents	Description	Frequency
Long Term Plan (LTP) 2021-2031	The LTP sets out an agreed vision and community outcomes for BOPRC. The framework of this plan is in line with the requirements of the Local Government Act 2002 (LGA 2002). This Plan assists in promoting sustainable practices as well as assisting the community to determine over time what 'outcomes' need to be achieved.	Must be produced every three years. Consultation for community outcomes must be undertaken every six years.
Annual Plan	The works identified in the AMP become the basis on which Annual Plans are prepared (as well as the LTP above).	Must be produced in the intervening years between LTPs. Every third year the Annual Plan is embedded in the LTP.

Plans/documents	Description	Frequency
Annual Report	The Annual Report is the mechanism to report back to the community, showing Council's achievement against Annual Plan and LTP targets.	Must be produced every year to report progress.
Strategic Asset Management Plan (SAMP)	Sets out the long-term approach Council will take to manage its assets and links Council's organisational objectives (strategic direction) and asset management objectives. Provides overarching guidance to AMPs.	Reviewed and aligned every year prior to the Annual Plan process and a major update every three years prior to the LTP process.
Asset Management Plan (AMP) 2021-2071	Documents the life cycle activities (create, maintain, renew and dispose) to be undertaken so that assets are able to provide a defined level of service in the most cost effective way.	Reviewed and aligned every year prior to the Annual Plan process and a major update every three years prior to the LTP process.
Contracts	The service levels, strategies and information requirements contained in AMPs are translated into contract specifications and reporting requirements.	Contract performance should be reviewed on a monthly basis.
Infrastructure Strategy	Sets out issues and implications that Council faces over the next 30 years with regards to flood protection and control works, as required by the LGA 2002 Amendment Act 2014.	Incorporated in LTP from 2015. Produced every three years.
Triennial Agreement	Sets out the agreement concerning communication and coordination with the other local authorities of the region.	Reviewed every three years with local authorities.
Regional Policy Statement 2014	Promotes the achievement of the purpose of the Resource Management Act (RMA) 1991 through the integrated management of natural and physical resources, and identifies the significant resource management issues of the region. Contains objectives, policies and methods for land, air, fresh water, heritage, energy and geothermal resources, the coastal environment, hazardous substances and waste management, natural	Produced on a 10-year cycle.

Plans/documents	Description	Frequency
	character and indigenous ecosystems and the built environment.	
Regional Natural Resources Plan (previously known as the Regional Water and Land Plan) November 2017	Sets out the objectives, policies and methods for the sustainable management of water, land and geothermal resources. Aims to maintain or improve land and water quality. Allows for the use and development of these resources where consistent with other aims. Aims to maintain or enhance the Maori cultural values of these resources.	Operative. Produced on a 10-year cycle.
Regional Coastal Environment Plan 3 December 2019	Sets out the objectives, policies and methods for the sustainable management of the coastal environment. Provides water classifications for all areas of the Bay of Plenty coastal marine area. Provides for development within the Port Zone and Harbour Development Zones. Provides for preservation of heritage sites in the coastal environment.	Produced on a 10-year cycle.
Regional Air Plan 26 April 2016	Sets out the objectives, policies and methods for the sustainable management of discharges of contaminants into air throughout the region to ensure clean air is available for present and future generations.	Produced on a 10-year cycle.
Regional Plan for the Tarawera River Catchment Plan February 2004 Reviewed in 2014	Promotes the sustainable management of natural and physical resources within the Tarawera River Catchment. Aims to ensure that the mauri of the Tarawera River is restored and the balance maintained.	Produced on a 10-year cycle. Reviewed in 2014.
Rotorua Geothermal Regional Plan 2010	Promotes the integrated and sustainable management of Rotorua's geothermal resource with all other resources in the Rotorua environment. Aims to ensure that the Rotorua geothermal resource retains its values and potential, while, for example, protecting tikanga	Produced on a 10-year cycle. Review completed April 2010. To be amalgamated into the Regional Natural Resources Plan.

Plans/documents	Description	Frequency
	Maori, and providing for the allocation of this economically significant resource.	
Regional River Gravel Management Plan 2001 Reviewed in 2011.	Aims to manage the extraction of gravel from the beds of the region's rivers primarily for flood and erosion control purposes. Gravel extraction has economic benefits as a source of construction and roading aggregate, and contributes to the avoidance and mitigation of flood hazards.	Produced on a 10-year cycle. To be amalgamated into the Regional Natural Resources Plan.
Ngā Whakaaetanga-ā-Ture ki Te Taiao ā Toi	Statutory Acknowledgements in the Bay of Plenty.	Addendum to the Operative Regional Policy Statement and Plans. Updated December 2012.
Rangitāiki River Document Te Ara Whanui o Rangitāiki – Pathways of the Rangitāiki River February 2015	The Rangitāiki River Forum was formed in May 2012 to protect and enhance the mauri (live-giving capacity) of the Rangitāiki River and tributaries. This document guides how resources and conservation areas are managed.	Reviewed at least every 10 years.
Kaituna, he taonga tuku iho – a treasure handed down (The Kaituna River Document) 22 June 2018	The Kaituna River Document contains the vision, objectives and desired outcomes for the Kaituna River and its tributaries. Produced by Te Maru o Kaituna River Authority, the statutory document is a tool that empowers local iwi and councils to guide the better care of the awa and its tributaries.	Reviewed at least every 10 years.

2.3 Overview of services covered

2.3.1 What do we do?

2.3.1.1 Rivers and drainage schemes

Bay of Plenty Regional Council is responsible for the provision and management of five Rivers and Drainage schemes (Kaituna Catchment Control Scheme,Rangitāiki-Tarawera Rivers Scheme, Whakatāne-Tauranga Rivers Scheme, Waioeka-Otara Rivers Scheme and Rangitāiki Drainage Scheme). These schemes contain a mix of assets including stopbanks, floodways, level control structures, erosion control structures, pump stations, canals and drains.

The management of the Rivers and Drainage schemes activity involves:

- Capital works and renewal projects as required.
- Undertaking an ongoing programme of maintenance in accordance with the AMP.
- Design and investigation projects.
- Administering and enforcing the BOPRC Flood Protection and Drainage Bylaw 2020.
- Reviewing the AMP.

Physical works on the schemes are carried out in accordance with the Environmental Code of Practice for River and Drainage Maintenance Activities and the Regional Natural Resources Plan. Some works require special authority through resource consents – capital works are the primary example of this.

The following sections give an overview of the each of the schemes. For detailed tables of the assets contained within each scheme, refer to section 5 – 'Assets We Own' and Appendix A4.

2.3.1.1.1 Kaituna Catchment Control Scheme

Scheme overview

The Kaituna Catchment Control Scheme encompasses the Kaituna River, Lake Rotorua and Lake Rotoiti catchments. The scheme consists of two discrete areas divided at Okere: Upper Kaituna (Lakes Rotorua, Rotoiti and tributaries) and Lower Kaituna (the Kaituna River, tributary streams, canals and drainage network).

The scheme provides flood protection, drainage and conservation of soil resources within the scheme's catchment area, as well as lake level control for Lakes Rotorua and Rotoiti.

The Upper Kaituna area includes:

- 10 km of stopbank through the Rotorua urban area.
- Level control structures on Lakes Rotorua and Rotoiti.
- Excavated channels and spillways.
- Diversion and grade control structures.
- Erosion protection – planting and rock rip-rap.

The Lower Kaituna area consists of a drainage scheme and flood protection scheme:

- 69 km of stopbank.
- 99 km of canals and drains.
- Nine operative pump stations.
- Flood-gate, culvert and weir structures.
- Erosion protection – planting and rock rip-rap.
- A groyne structure at the river mouth (Kaituna Mole).

The Kaituna scheme boundaries and location are shown in Figures 4-6 below.

Figure 4 Overall Kaituna Catchment Control Scheme

Figure 5 Upper Kaituna Catchment Scheme Area

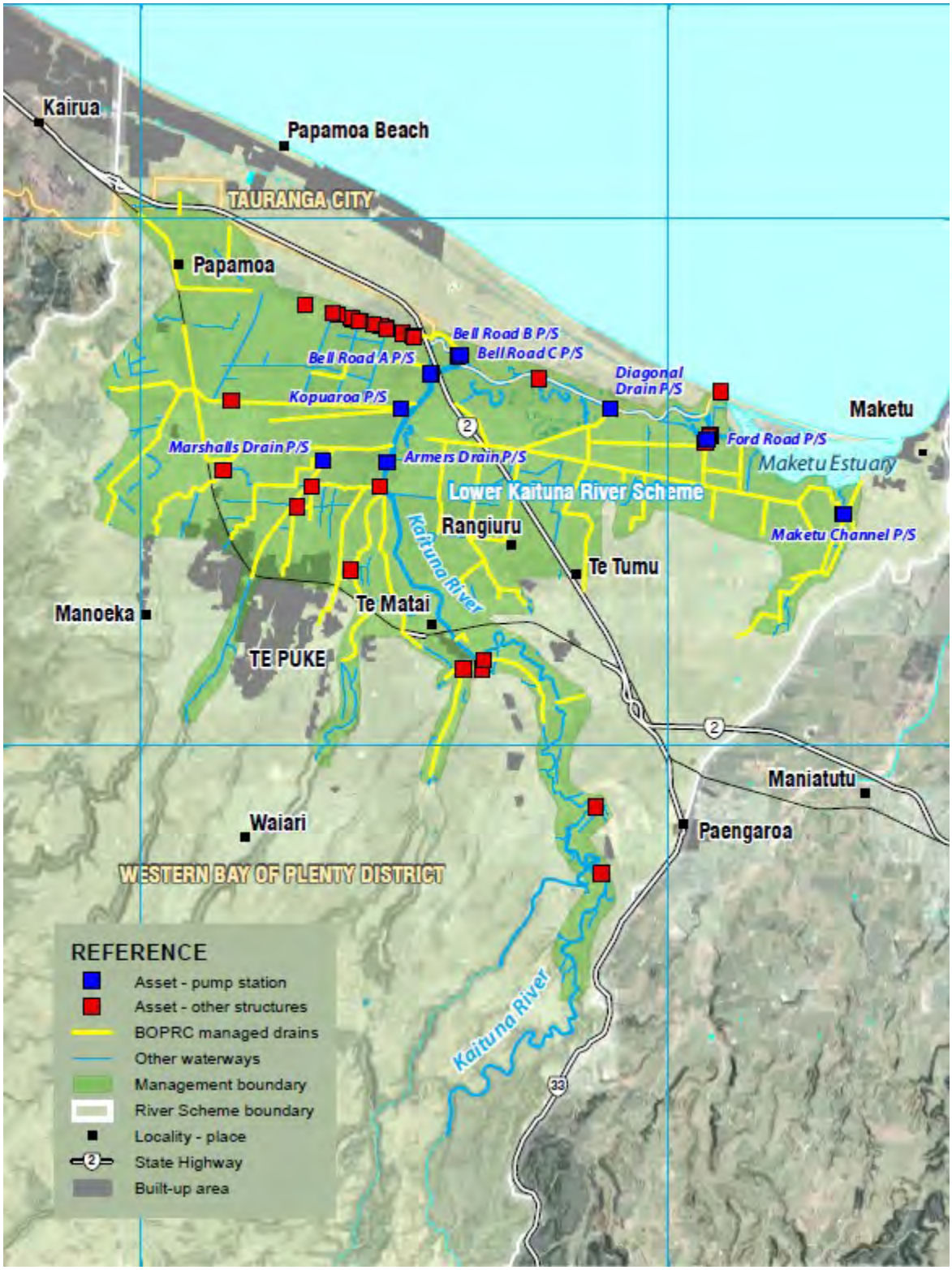


Figure 6 Lower Kaituna Catchment and maintenance area

2.3.1.1.2 Rangitāiki Drainage Scheme

Scheme overview

The Rangitāiki Drainage Scheme provides gravity drainage to much of the Rangitāiki Plains, an area of approximately 29,000 ha between Matata, Whakatāne and Kawerau.

The Plains are predominantly dairying land with small areas of wetland reserve and urban development. The scheme has 88 km of major canals (arterial) and 240 km of drains which drain excess water from the Rangitāiki Plains into the Tarawera, Rangitāiki and Whakatāne rivers.

Rangitāiki Drainage Scheme communal pumps are not covered under this AMP as Council does not own these assets, although they do manage them. These assets belong to the communal pump schemes.

The Rangitāiki Drainage Scheme boundaries and location are shown in Figure 7 below.

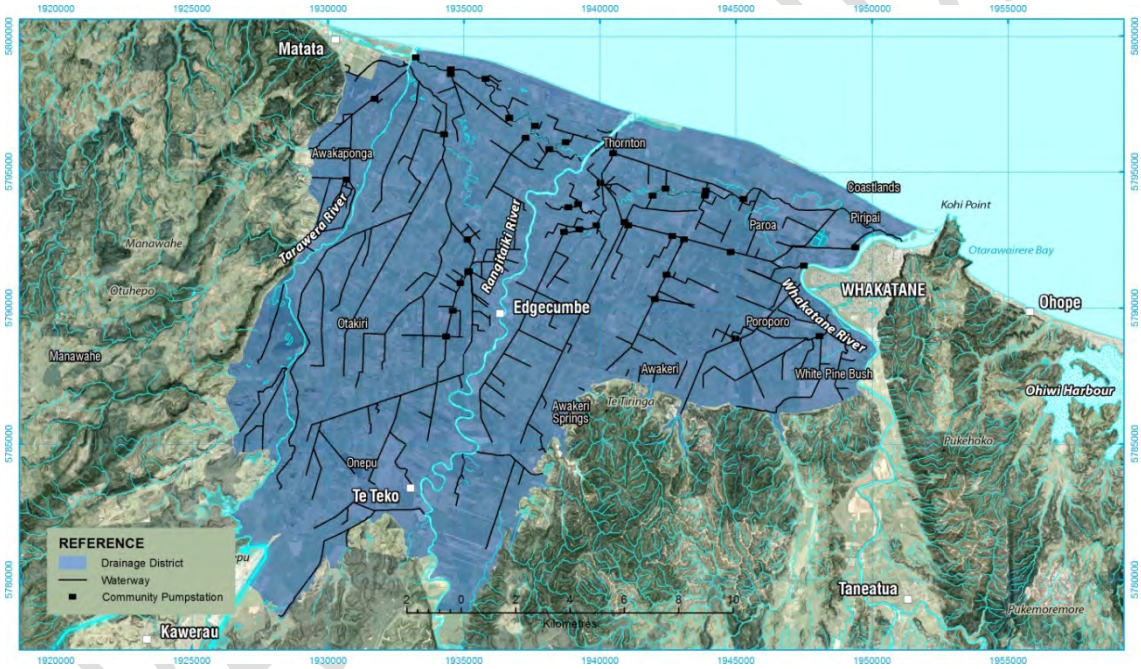


Figure 7 Rangitāiki Drainage Scheme

2.3.1.1.3 Rangitāiki-Tarawera Rivers Scheme

Scheme overview

The Rangitāiki-Tarawera Rivers Scheme includes the two adjoining catchments of the Rangitāiki River and the Tarawera River.

The scheme provides flood protection for urban areas in the lower parts of the catchments. Stopbanking, edge protection and geotechnical interventions are important to the settlements of Kawerau, Te Teko and Edgecumbe, and to rural communities on the Rangitāiki Plains through the management of flood risk. Further Rivers and Drainage assets across the wider area provide important community services, particularly in the arable Rangitāiki Plains, Galatea and Waiohau Plains.

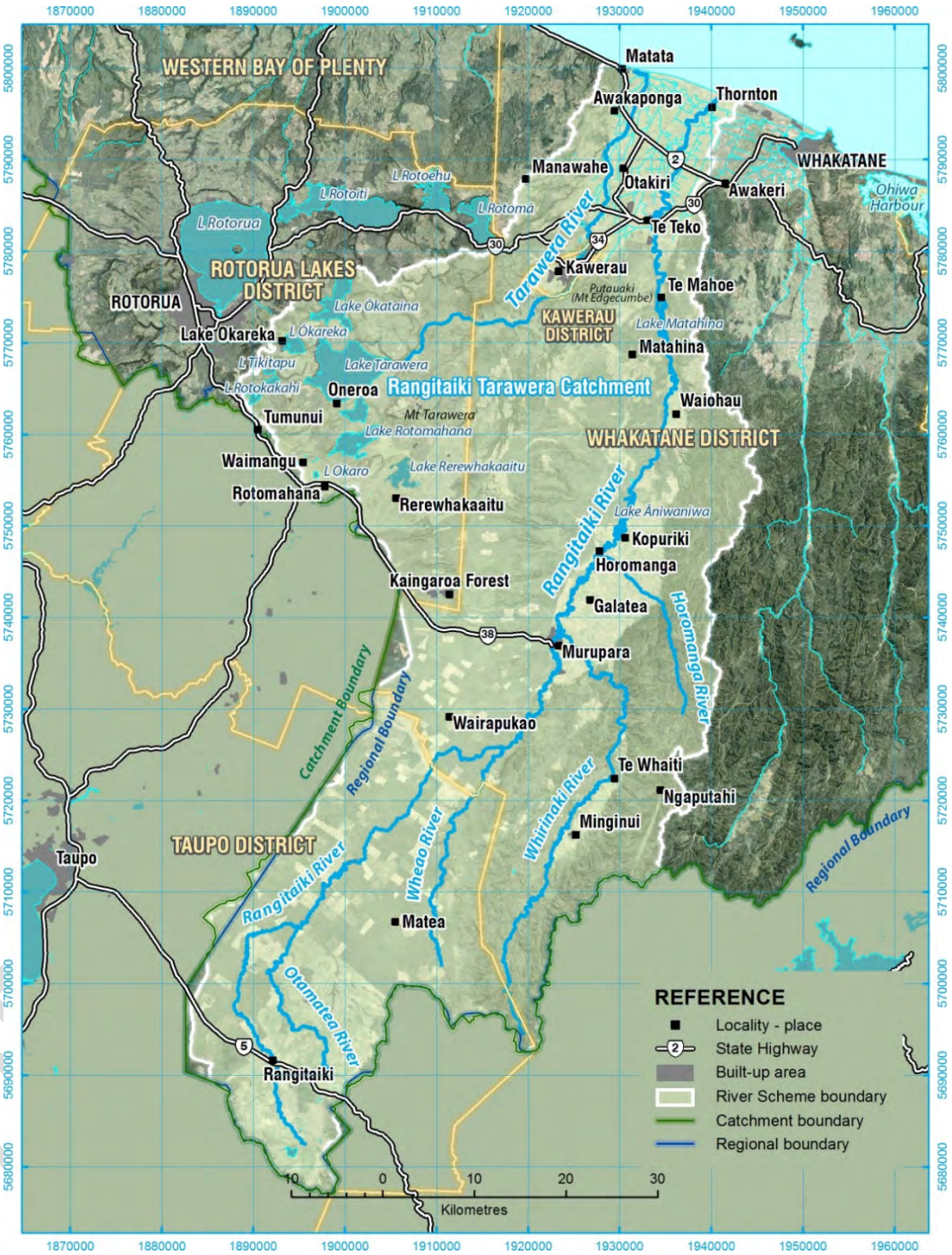
Edgecumbe/Lower Rangitāiki flood mitigation

Flooding in 2004 caused significant damage to private and public property and also raised concerns regarding the integrity of the stopbanks surrounding the town. Whakatāne District Council and BOPRC worked together to investigate options to protect the town from future flooding (four quadrant project). Upgrades to the Rangitāiki Floodway constitute the last outstanding work to complete this project.

The 2017 Flood Repair Project is nearing completion. By the end of the project, approximately $25M will have been spent in the scheme area, approximately $16M of which will have been spent on flood damage from Te Teko downstream.

The Rangitāiki-Tarawera Rivers Scheme boundaries and location are shown in Figure 8 below.

Figure 8 Rangitāiki-Tarawera Rivers Scheme



2.3.1.1.4 Waioeka-Otara Rivers Scheme

Scheme overview

The Waioeka-Otara Rivers Scheme encompasses the Waioeka and Otara Rivers including their confluence at Ōpōtiki. The scheme provides flood protection, channel edge stability and some drainage and flood pumping within the catchment area, including the town of Ōpōtiki. Flood protection (and some drainage works) to the land adjoining Mill Stream and its tributaries is also provided by this scheme. The Waioeka-Otara Rivers Scheme boundaries and location are shown in Figure 9.

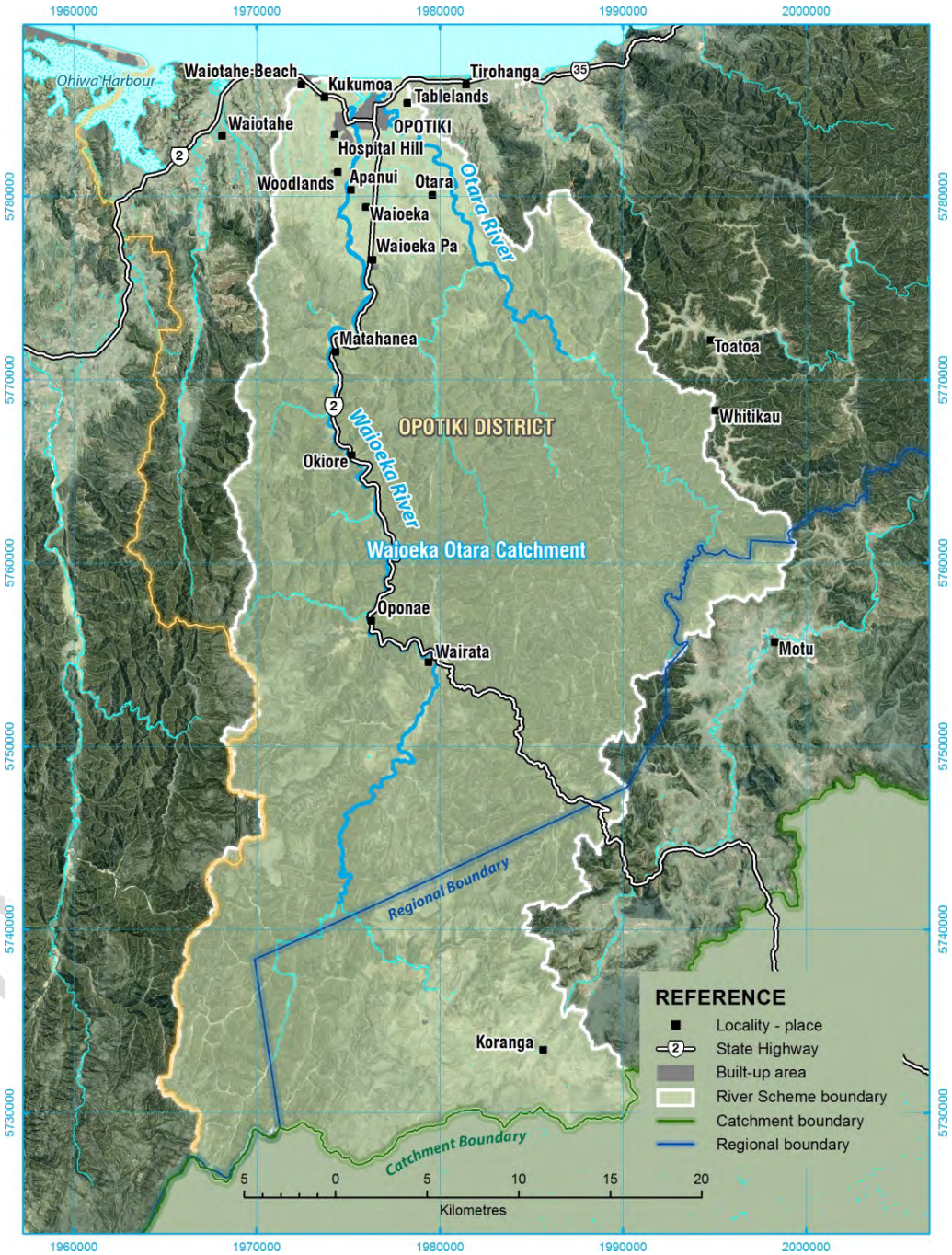


Figure 9 Waioeka-Otara Rivers Scheme

2.3.1.1.5 Whakatāne-Tauranga Rivers Scheme

Scheme overview

The Whakatāne-Tauranga Rivers Scheme comprises the Whakatāne River Catchment and includes the Tauranga River (previously known as the Waimana River prior to 2014 Tūhoe Settlement). The scheme provides flood protection, channel edge stability, some drainage and flood pumping within the catchment, including the town of Whakatāne.

Note that within the urban area of Whakatāne, flood protection works (excluding the stopbanks that adjoin the Whakatāne River) are managed by Whakatāne District Council. The Whakatāne-Tauranga Rivers Scheme boundaries and location are shown in Figure 10 below.

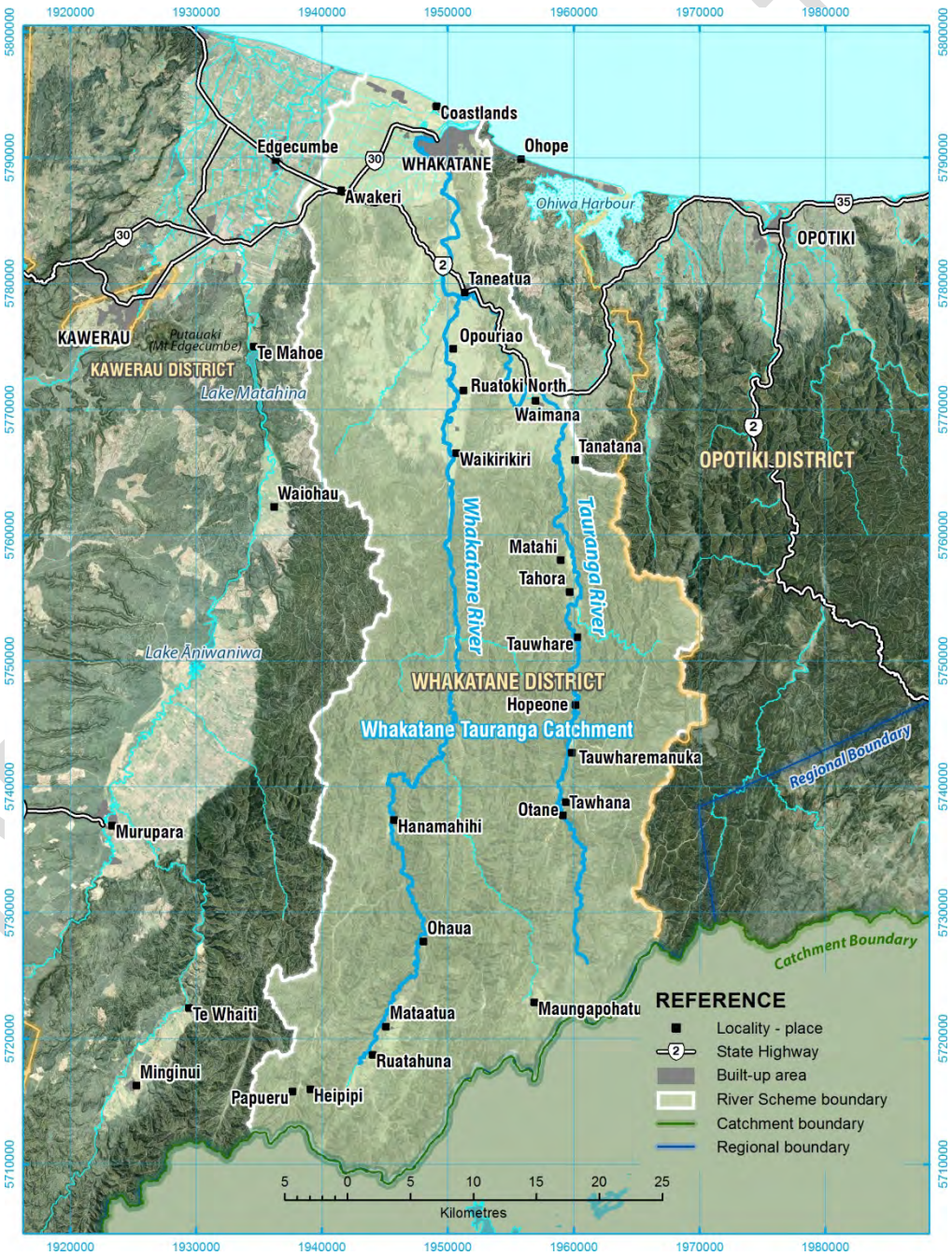


Figure 10 Whakatāne-Tauranga Rivers Scheme

Kopeopeo Canal Remediation Project

The Kopeopeo Canal Remediation Project was a significant restoration project involving a tributary of the Whakatane River (i.e. part of the Whakatane-Tauranga River Scheme). The Kopeopeo Canal flows from the Rangitāiki Plains from the west of State Highway 30, joining the Orini Stream and discharging into the Whakatāne River opposite the Whakatāne Township. The Canal was excavated during the 1920s to convey drainage and floodwaters from low-lying farmlands in the Rangitāiki Plains into the Whakatāne Estuary.

The Canal was contaminated between the 1950s and late 1980s as a result of stormwater discharges and the dumping of waste material from a former sawmill, which treated timber using Pentachlorophenol (PCP). While unknown at the time, PCP imported into New Zealand for use in the timber processing industry also included a percentage of impurities that contained dioxins.

The Kopeopeo Canal Remediation Project involved dredging of approximately 35,000 m^3 of contaminated sediment from the Canal. The dredged sediment was transferred (via pipeline) to two secure containment sites – (on Kope Drain Road and Keepa Road respectively). The stored sediment has been inoculated and treated with fungal material to enable natural bioremediation processes to break down the dioxins. Monitoring the dioxin breakdown in accordance with the resource consent will be ongoing.

The final cost of the Project was $22M, which was funded $14M from BOPRC and $8M from Ministry for the Environment (MfE), Contaminated Sites Remediation Fund. The BOPRC share was from funded general rates, not targeted scheme rates.

Bay of Plenty Regional Council's Integrated Catchments Group managed the project in partnership with representatives from the Whakatāne-Tauranga Rivers Scheme Advisory Group, Te Rūnanga o Ngāti Awa, Sawmill Workers Against Poisons and MfE.

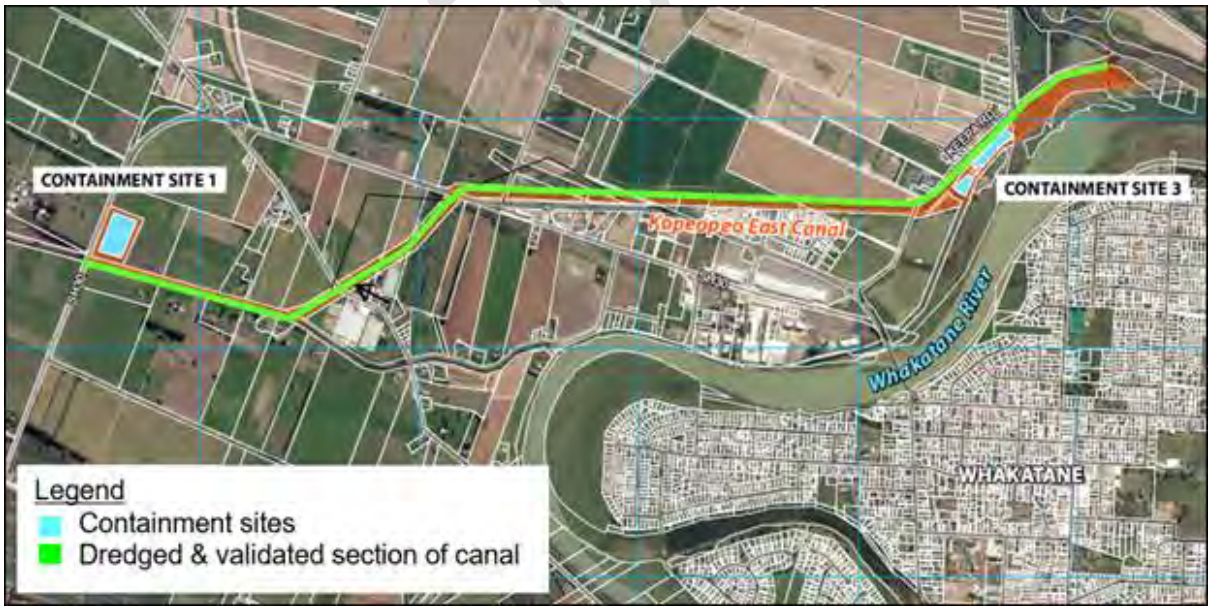


Figure 11 Kopeopeo Canal Remediation Project location

2.3.1.2 How Rivers and Drainage contribute to community outcomes

The LTP outlines the community outcomes that relate to the provision of protection works for the Rivers and Drainage networks. The outcomes that are interlinked with flood protection and operation of the Rivers and Drainage schemes are outlined below, combined with specific objectives for the activity.

Table 2 Contribution to community outcomes

Community Outcome	Contribution to Community Outcomes	Objectives	Section of AMP it is addressed in
Kia haumaru, kia pakari te hapori **Safe and resilient communities** – Our planning and infrastructure supports resilience to natural hazards so that our communities' safety is maintained and improved.	• Maintain flood protection schemes to agreed levels for major rivers and floodplains across the region.	• Identify potential hazards and develop ways to mitigate flood risks to protect people, property and their livelihoods. • Manage the effect of development upon the existing Rivers and Drainage schemes and provide a sustainable solution for future requirements. • Provide protection of public health and property by providing flood protection and mitigation. • Protecting the environment from flood damage using flood protection measures.	• Strategic Environment, Assets We Own, Growth and Demand, Levels of Service, Capital Planning, Operational Maintenance Planning and Delivery, Risk Management, Financial Planning.
Toitu te rohe **A vibrant region** We work with our partners and communities to achieve integrated planning and good decision-making. We support economic development, understanding the Bay of Plenty region and how best we can add value.	• Providing protection to the region's floodplains to enable resources to be used efficiently and effectively so the community can benefit.	• Provide sustainable, safe, ongoing, and cost effective Rivers and Drainage schemes. • Create safe conditions for new business through the management of potential Rivers and Drainage hazards. • Provide robust maintenance, renewal and capital programmes. • Provide protection of critical public infrastructure and regionally significant industries by providing flood protection and mitigation.	• Strategic Environment, Growth and Demand, Levels of Service, Risk Management, Financial Planning.

Community Outcome	Contribution to Community Outcomes	Objectives	Section of AMP it is addressed in
He taiao ora **A healthy environment** We will maintain and enhance our air, land, freshwater, geothermal, coastal resources and biodiversity for all those who live, work and play within our region. We support others to do the same.	• Providing protection to the region's floodplains to enable resources to be used efficiently and effectively so the community can benefit.	• Provide sustainable, safe, ongoing, and cost effective Rivers and Drainage schemes. • Create a catchment based collaborative approach to managing flood risk.	• Environmental Stewardship.
Te Mana o Te Wai **Freshwater for Life**	• Our work in managing Rivers and Drainage schemes enhances Te Mana o Te Wai.	• Ensure that scheme management aligns with the principles of Te Mana o Te Wai.	• Environmental Stewardship, Assets We Own, Levels of Service.

2.3.2 How do we manage the activity

2.3.2.1 Organisational structure

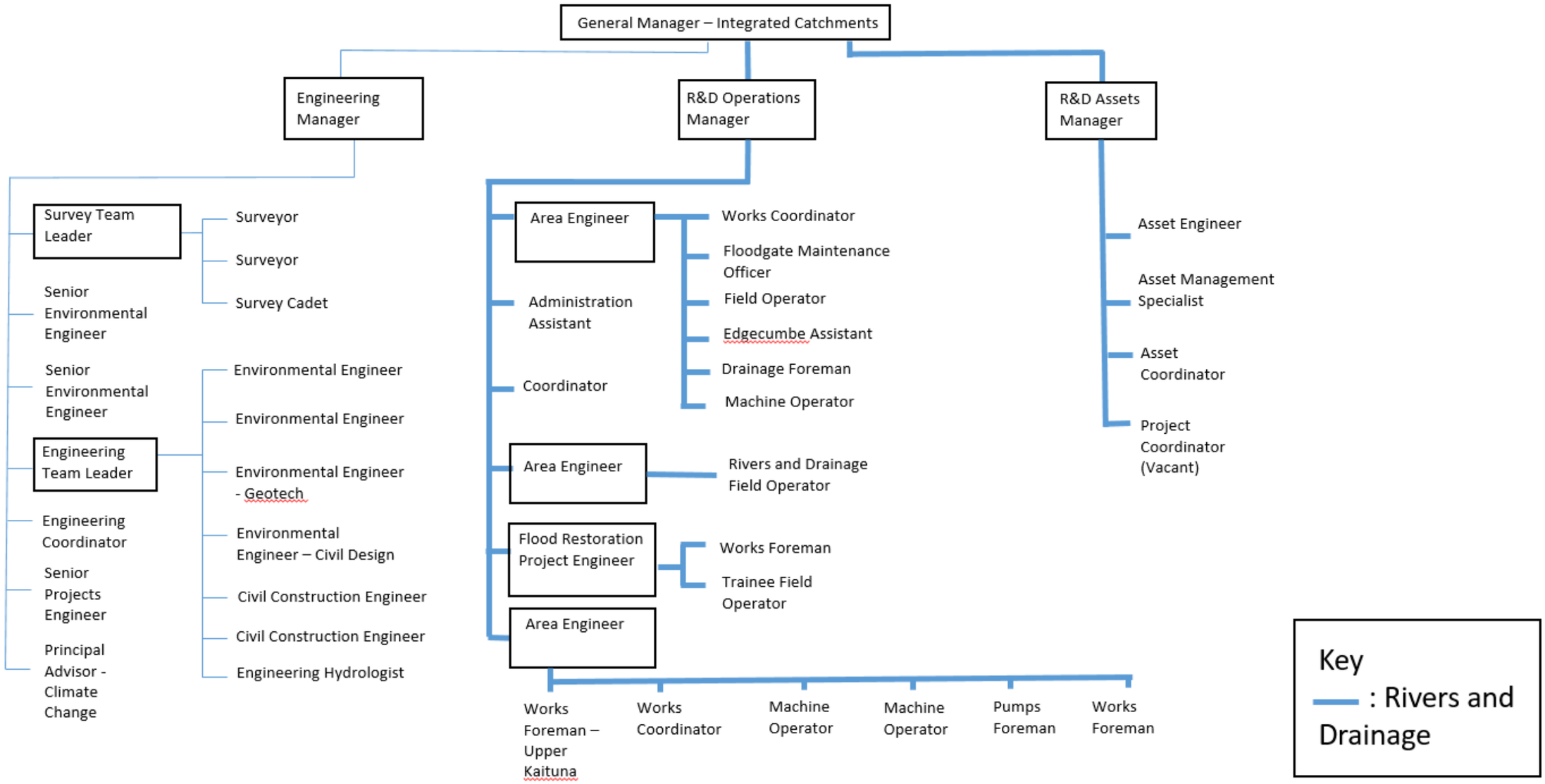


Figure 12 Rivers and Drainage and Engineering Organisational Structure (as at October 2020)

2.3.2.2 Relationships with key service providers

Table 3 Roles and responsibilities

Specific responsibilities	Relationships	Party
Maintenance	Internal	Rivers and Drainage Operations Manager
Capacity/design	Internal	Engineering Manager
Valuations	Internal	Engineering and Rivers and Drainage Asset Manager
Valuation peer reviews	External consultant	External Consultant
Performance monitoring	Internal	Engineering and Rivers and Drainage Asset Managers
Condition assessments	Internal	Engineering and Rivers and Drainage Asset Managers
Rate collection	External contractor	Territorial authorities
Asset management	Internal	Rivers and Drainage Asset Manager
Capital works	Internal - Pump station works, culvert, floodgate replacements	Rivers and Drainage Operations Manager
	Larger scale projects	Engineering Manager
Asset Management Plan implementation and review	Internal	Rivers and Drainage Asset Manager
Annual and Long Term Plan budget	Internal	Rivers and Drainage Asset Manager

2.3.2.3 IT infrastructure

Bay of Plenty Regional Council has developed its IT infrastructure around a number of key products that provide a platform for all IT applications. The table below sets out BOPRC's cornerstone IT applications used by the Rivers and Drainage Team.

Table 4 Cornerstone applications

Function	Product	Group responsible
Microsoft software	Microsoft Office Suite	Information Communication Technology
Design tools River modelling, Surveying micro-station for drawing, Microsoft Excel spreadsheets. Numerous specific hydraulic software tools.	DHI - Mike 11 Mike Flood Hilltop/Aquarius Water ride	Information Communication Technology, Engineering
Financial accounting and reporting Microsoft Excel spreadsheets, Tech One, Budget Module.	Tech One	Information Communication Technology, Finance & Corporate Planning
Corporate Planning Microsoft Excel spreadsheets, internal memos, Tech One.	Tech One	Continuous Improvements
Electronic document and record management	Objective	Information Communication Technology
Geographical Information System GeoView for Corporate GIS viewing, ArcMap for Rivers and Drainage.	GeoView/ArcMap	Information Communication Technology/ Rivers and Drainage Assets
Asset Management System Technology One module and Asset Register (including integration with Arc for spatial data).	Spreadsheet/ Tech One module/Arc	Information Communication Technology/ Finance & Corporate Planning/Rivers and Drainage Assets
Complaints Details entered into Fulcrum. After hours have answer companies for Pollution Hotline and flood warning services.	Fulcrum app	Information Communication Technology/ Rivers and Drainage Operations and Assets
Consents management	CS-Vue	Information Communication Technology/ Regulatory Services
Business continuity Entire network backup completed daily and stored at an offsite location. Business Continuity Plan outlining procedures during a major or catastrophic event.	N/A	Information Communication Technology
Information requests	Job Tracker	Information Communication

Function	Product	Group responsible
Requests to Engineering Team on flood risk and minimum floor levels logged into Job Tracker.		Technology/ Engineering
Information from the field Mobile data collection and reporting from the field. Includes works orders, work action reporting and condition assessment.	Fulcrum app and Tech 1	Rivers and Drainage Operations and Assets
Flood Protection and Drainage Bylaw applications	Job Tracker	Rivers and Drainage Assets

2.3.3 Why do we do it?

2.3.3.1 Rationale for Councils' involvement in the Rivers and Drainage activity

The rationale for the existing ownership is as a result of the LGA 2002 provisions, whereby regional authorities are responsible for the provision and control of the asset. In common with other similar river schemes throughout New Zealand, these schemes were established under the auspices of the Soil Conservation Rivers Control Act 1941. This legislation had its genesis earlier this century and was, for its time, far reaching; Government recognised that flooding and drainage problems were best dealt with on a large-scale (catchment) basis.

Major catchments frequently traversed more than one existing territorial authority. The magnitude of the problem was such that the authorities of the day determined special purpose (ad hoc) authorities, with specialist engineering and soil conservation skills, were required to administer these functions and hence the creation of catchment boards and catchment commissions. The Eastern Bay of Plenty Catchment Commission was created in 1962 in response to flood problems in the region. In 1964 it became the Bay of Plenty Catchment Commission.

This Plan has been developed on the basis that Council intends to be responsible for the provision of the Rivers and Drainage activity (specifically excluded from this AMP are private drainage systems, or those owned and managed by other councils within the region), for the Bay of Plenty, and considers the provision of the Rivers and Drainage activity to be an essential function of the Regional Council.

2.3.3.2 Potential significant negative effects of this activity

The LGA 2002 requires that the local authority must outline any significant negative effects any activity within the group of activities may have on the social, economic, environmental, or cultural wellbeing of the local community.

This sub-section provides information to meet this legislative requirement.

The purpose of identifying significant negative effects is to ensure that Council activities are conducted in accordance with the principles of sustainability. The possible negative effects are outlined in the table below:

Table 5 Possible significant negative effects

Significant negative effect	Cultural	Social	Economic	Environmental	Mitigation of negative effects	Addressed in
Lack of infrastructure to convey runoff safely and to prevent flooding.		□	□	□	Consult with the community on all costs and options for LoS through the LTP process.	Levels of Service, Risk Management.
Inadequacy of existing assets to cope with large rainfall events causing flooding, which could result in social and economic hardship.		□	□	□	Compliance with Council's Hydrological and Hydraulic Guidelines.	Levels of Service, Risk Management.
Health and safety risks associated with the operation, maintenance, or construction of infrastructure.		□	□		Ensure compliance with legislation and Health and Safety Management Plans. Maintain an Incidents Register.	Risk Management.
Economically, the cost of desired infrastructure improvements may exceed the community's ability to pay.		□	□		Consult with the community on all costs and options for LoS through the LTP process.	Levels of service, Risk Management, Financial Planning.
Potential impacts on customer satisfaction due to service failure/ delays/responsiveness.		□	□		Monitor and report on LoS and in service provider contracts. Seek to resolve customer complaints "close the loop".	Levels of service, Risk Management.
Access to waterways.	□	□	□		Monitor requirements for access and liaise with the community as appropriate.	Levels of Service.
Site specific effects on habitat values.	□		□	□	Identify opportunities to enhance habitat when programming upgrading or refurbishment works.	Environmental Stewardship, Levels of Service.
Disruption to wildlife.				□	Programme works to minimise wildlife disruption avoiding fish spawning and bird nesting seasons. Project to improve fish passage.	Environmental Stewardship.
Damage due to de-silting etc.		□		□		Operational Maintenance Planning and Delivery.

Significant negative effect	Cultural	Social	Economic	Environmental	Mitigation of negative effects	Addressed in
Gravel extraction.			□	□	Cross-section monitoring process.	Growth and Demand. Levels of Service.
Over drainage.			□	□	Regular monitoring of channel capacity and drainage standards. Regular review of design standards and economically optimum levels of drainage.	Capital Planning.

The significant negative effects identified above can be managed and/or mitigated by effective risk management, options assessments, asset management and operational procedures.

3 Strategic environment

Bay of Plenty Regional Council has established a strategic context and framework that helps achieve the vision and goals of the organisation. The Rivers and Drainage activity operates within this and the wider national strategic environment that includes legislation, policy, plans and national standards. This strategic context is expanded on further in the SAMP along with the broader legislative, policy and planning environment that effects all BOPRC activities. This section therefore covers the legislation, policy, plans and national standards that are relevant to Rivers and Drainage.

3.1 National standards

The national standards that provide guidance on flood risk and flood risk management are noted below.

3.1.1 New Zealand Standard for Flood Hazard Risk Management (NZS9401:2008)

The New Zealand Standard – "Managing Flood Risk – A Process Standard" was developed under the Standards Act 1988 and published in November 2008. The standard is a voluntary tool that provides a set of principles to help decision making and promote good practice in flood risk management.

The standard originates from the "Managing Flood Risk – Draft New Zealand Protocol" published in 2006. The protocol was developed by Local Government, with help from the Institute of Professional Engineers New Zealand and Central Government.

3.1.2 Managing Flood Risk – Draft New Zealand Protocol

The Draft Flood Risk Management Protocol was developed by the Flood Risk Management Governance Group – comprising representatives of local and Central Government (Ministry for the Environment and the Department of the Prime Minister and Cabinet) and the Institute of Professional Engineers New Zealand. Bay of Plenty Regional Council was a member of the Flood Risk Management Governance Group. The draft protocol provides regional and unitary councils with an improved framework for managing their flood risk management responsibilities.

3.2 National legislation and policy

The role of Central Government is one of setting policy for environmental management across New Zealand. This is achieved through the following key statutes:

The Resource Management Act (1991)

The Resource Management Act 1991 promotes the sustainable management of natural and physical resources. It specifies the roles and responsibilities in terms of managing effects on the environment.

In relation to Rivers and Drainage management, the RMA would require the adverse effects associated with the activities such as flood stopbanks or gravel extraction to be avoided, remedied or mitigated. This will be imposed through the regional and district plans.

Local Government Act 2002 (LGA 2002) and amendments

Specific to environmental stewardship the LGA 2002 includes the principles of making itself aware of community views; providing opportunities for Māori to participate in decision-making processes; collaborating and cooperating with other local authorities as appropriate; ensuring prudent stewardship of resources; and taking a sustainable development approach.

The LGA 2002 outlines the responsibilities of local authorities and the decision making process for activities undertaken on behalf of their community, primarily through the requirement to adopt a Long Term Plan (LTP). Councils are encouraged by the LGA 2002 to identify overall long-term priorities and to plan for the future.

National Policy Statement for Freshwater Management 2020

The purpose of the National Policy Statement for Freshwater Management is to set out objectives and policies in relation to freshwater management and to specify what local authorities, in their governance and management roles, must do to help achieve those objectives and policies. The fundamental concept within the policy is 'Te Mana o te Wai' – the mana of the water. Which refers to the fundamental value of water and the importance of prioritising the health and wellbeing of water before providing for human needs and wants. Te Mana o te Wai will have increasing importance for Rivers and Drainage activities moving forward as Council works with Bay of Plenty communities to implement the policy.

Long Term Plan (LTP) 2021-2031

Bay of Plenty Regional Council has specified the following community outcomes as part of the LTP 2021-2031 which relate to Rivers and Drainage management:

Kia haumaru, kia pakari te hapori - Safe and resilient communities:

Our planning and infrastructure supports resilience to natural hazards so that our communities' safety is maintained and improved.

Toitu te rohe - A vibrant region:

Our stewardship of natural resources and the connections we make provides for sustainable economic development across our region.

He taiao ora - A healthy environment:

We protect and enhance our air, land, freshwater, geothermal, marine, coastal resources, and biodiversity for our communities. We support others to do the same.

Te Mana o Te Wai – Freshwater for life:

Our water and land management practices maintain and improve the life giving ability of the region's freshwater resources.

Local Government (Rating) Act 2002

The Local Government (Rating) Act 2002 (LGRA) provides councils with powers to set, assess and collect rates to fund Local Government activities. It updates and simplifies previous rating powers to meet the needs of modern local authorities. There are three main purposes of the LGRA:

- To provide local authorities with flexible powers to set, assess, and collect rates.
- To ensure rates reflect decisions made in a transparent and consultative manner.
- To provide for processes and information to ensure ratepayers can identify and understand their liability for rates.

One of the prime objectives of the LGRA is to establish clarity, certainty, and stability in rating matters.

Mechanisms are set out in the LGRA to allow local authorities to raise revenue from the community generally, specified groups or categories of ratepayers, and those who use or generate the need for particular services or amenities.

Land Drainage Act 1908

Legislation under the Land Drainage Act 1908 provides the structure to form legal drainage areas that operate as a co-operative venture between multiple land owners with engineering and administrative support from Council.

Soil Conservation and Rivers Control Act (SCRCA) 1941

The overriding purpose of the Act is to make provision for the conservation of soil resources, the prevention of damage by erosion and to make better provision for the protection of property from damage by floods. In order to achieve the Act's purpose and objects, Catchment Boards were established under the Act. Sections 126 and 133 of the SCRCA set the roles and responsibilities of Catchment Boards in relation to flooding and flood protection. In essence, regional councils, for the purposes of the SCRCA, are Catchment Boards.

Treaty Settlement Acts

Ngāti Manawa Claims Settlement Act (2012) and Ngāti Whare Claims Settlement Act (2012).

Relates to Rangitāiki River co-governance through the Rangitāiki River Forum. The purpose of the Forum is the protection and enhancement of the environmental, cultural, and spiritual health and wellbeing of the Rangitāiki River and its resources for the benefit of present and future generations.

Tapuika Claims Settlement Act (2014)

Relates to Kaituna River and tributaries and establishment of Te Maru o Kaituna (Kaituna River Authority). The purpose of the Authority is the restoration, protection, and enhancement of the environmental, cultural, and spiritual health and well-being of the Kaituna River. In seeking to achieve its purpose, the Authority may have regard to the social and economic well-being of people and communities.

Other Settlements

An array of settlements across the Bay of Plenty relate to the business of Rivers and Drainage at different levels.

Civil Defence and Emergency Management (CDEM) Act 2002

This Act updates and redefines the duties, functions, and powers of Central Government, Local Government, emergency services, lifeline utilities, and the general public.

The CDEM Act improves and promotes:

- The reduction of risks through partnerships with communities.
- The reduction of community disruption from avoidable hazards and risks.
- The reduction of fiscal risks from the costs of disruption.
- More effective and efficient emergency readiness, response and recovery through the integrated activities of responsible agencies and relevant disciplines.
- A culture, processes and structures that encourage and enable people and communities to: - undertake risk management, build operational capabilities for response, and recover from emergencies.

3.3 Bylaws

The BOPRC Flood Protection and Drainage Bylaw 2020 provides statutory protection to the river and drainage scheme assets. The Bylaws primary purpose is to protect and control flood protection and drainage assets owned or managed by BOPRC.

Table 6 Bylaws

Bylaw	Status
BOPRC Flood Protection and Drainage Bylaw 2020	Adopted (renewal process to commence 2029)

3.4 Policies and strategies

Bay of Plenty Regional Council has developed various policies and works in partnership with other agencies, to fulfil its role and align its activities to other agencies and organisations throughout the region. This means that in establishing its programmes, Council must be aware of the following policies, strategies and guidelines.

Table 7 Relevant guidelines

Policy/guideline name	Status
Erosion and Sediment Control Guidelines for Land Disturbing Activities	Current
Hydrological and Hydraulic Guidelines	Current
River Gravel Management Guidelines	Current
Environmental Code of Practice for River and Drainage Maintenance Activities	Current
Stopbank Design and Construction Guidelines	Current
Flood Protection Assets – Performance Assessment Code of Practice	Current

Table 8 Plans and strategies

Plan and Strategy name	Status
Regional Policy Statement	Adopted
Regional River Gravel Management Plan	Adopted
Regional Coastal Environment Plan	Adopted
Regional Natural Resources Plan	Adopted
Waioeka-Otara Floodplain Management Strategy	Adopted
Regional Plan for the Tarawera River Catchment	Adopted
Kaituna River and Ongatoro/Maketu Estuary Strategy	Adopted
Infrastructure Strategy (flood protection and control works)	Adopted
Te Ara Whanui o Rangitāiki – Pathways of the Rangitāiki.	Adopted
Kaituna River Document	Adopted

River Scheme Sustainability Project

The River Scheme Sustainability Project sets the direction for management of the four major river schemes for the next 100 years, adapting to a changing climate. The goal is to reduce the long-term risk of flood hazards while encouraging environmentally and economically sustainable land-use practices.

The project will include preparing a floodplain management strategy for each scheme. Flood risk strategies may include retreat, adapt or defend. Flood management options in the longer term may or may not include the structural solutions currently employed. Non-structural and other alternative solutions will be evaluated.

4 Environmental stewardship

4.1 Overview

This section pulls together the many elements that contribute to good environmental management as relevant to the wider Bay of Plenty community. It also demonstrates BOPRC's commitment to environmental stewardship through the inclusion of environmental impact assessment and mitigation as a key Council consideration. The environmental legislative obligations that Council has are discussed earlier in Section 2 – Strategic Environment.

A list of consents and permits held by Rivers and Drainage can be viewed in Appendix B.

4.2 Environmental drivers

There are a number of mechanisms aimed to avoid or mitigate potential adverse environmental effects associated with Rivers and Drainage management. These are set at national, regional and district levels. The following subsections expand on those drivers earlier identified in Section 2 – Strategic Environment.

4.3 Consents

Consents are a requirement for some Rivers and Drainage works due to the potential impact on receiving environments. Consent is required for activities that are not permitted by a rule in a regional plan, as outlined in Part III of the RMA 1991.
Bay of Plenty Regional Council's consent requirements are specified in the Regional Natural Resources Plan. The majority of Rivers and Drainage management activities are permitted by the Regional Plan. Where this is not the case, particularly where capital works are concerned, resource consent is sought.

Land use consents may also be required from the relevant district council for some activities as prescribed in the District Plan.

Both regional and district councils provide advice to perspective applicants and facilitate the consenting process within their regional or territorial boundaries. Part of the consenting process involves the applicant developing an Assessment of Environmental Effects (AEE).

An AEE is required to support the resource consent applications to the respective councils when seeking approval to implement projects.

The AEE process involves the identification and assessment of both potential and perceived physical, social and cultural impacts that the proposed works may have on the existing environment, and includes the examination and comparison of options and alternatives for mitigating any identified adverse effects, and the confirmation and recommendations on the preferred options and methodology to carry out the works.

The critical environmental factors requiring consideration include; the impact of earthworks and structures on the integrity of natural environments particularly in the coastal, river or lake environments; the ecological effects associated with vegetation removal and site development, the cultural, archaeological and social effects and contamination and discharge issues. A number of these factors may require specialist input and consultation with the local community and asset users.

Positive effects associated with Rivers and Drainage management, particularly flood protection need to be balanced against the adverse effects identified in the AEE.

A best practice review of resource consent processes where the Council has multiple roles under the RMA 1991 was carried out by Opus International Consultants in 2016. The report considered the scope and cost associated with renewing any existing consent held by Rivers and Drainage Section due to expire in the next 20 years. The estimated costs have been included in the Capex planning schedule.

4.3.1 Land Use Consents

Bay of Plenty Regional Council and the relevant district councils both issue land use consents. The Regional Natural Resources Plan will often require consent for:

- Land disturbance: earthworks and vegetation clearance.

The following activities in watercourses:

- Using, placing, altering or removing any structures.
- Disturbing the bed, including the excavation of gravel.
- Planting.
- Reclaiming or draining part of the bed.

District councils address sub-division and geo-technical aspects of earthworks, including matters relating to the Building Act, land use, and such matters as landscape, natural character, amenity values, and protection of heritage sites. Construction of buildings such as pump stations generally require land use consent from a district council.

Land use consents have been obtained where works are required for the river and land drainage assets. These include works such as excavations, stopbank protection construction, disturbance or structures in a riverbed, channel realignment and bank protection works.

As both a consent holder and consenting authority, BOPRC is responsible for ensuring compliance with the conditions of the consent and also for monitoring whether the conditions of any self-issued consents have been met. The conditions are generally those required to mitigate the effects of the works. Many conditions are only relevant at the time the works are being undertaken, however, some may require ongoing monitoring.

Conditions of consent may include sediment control measures and reinstatement requirements.

4.3.2 Water Permits

Section 14 of the RMA requires consent for damming, diverting, taking or using natural water. Instances may include land drainage, construction of structures in a channel, channel realignment, damming or diversion of flow and bank protection works. Water permits are issued by BOPRC and may be relevant to both the construction and operation phase of assets.

As both a consent holder and consenting authority, BOPRC is responsible for ensuring compliance with the conditions of its consents, and also for monitoring whether the conditions have been met.

Conditions are generally those required to mitigate downstream effects such as:

- Flooding.
- Security of water supply and quality for downstream users.
- Ecological effects from disturbance and flow regime changes.
- Erosion.

4.3.3 Discharge Consents

Discharge Consents are required for discharges to water or land and are issued by BOPRC. The consents that have been obtained include discharges from land drainage schemes.

These consents contain a number of conditions relating to monitoring of the discharge. These conditions include:

- Conditions restricting the rate of the discharge.
- Monitoring of the pH and flow of the receiving river at the time of discharge.
- Requirement to keep a record of the rate, volume, duration, date, time of the discharge and the pH and flow of the river.
- Requirement for a monitoring manual or programme to be prepared.
- Requirement for an annual report summarising monitoring.

4.3.4 Coastal Permits

The Bay of Plenty Regional Coastal Plan covers the entire coastal environment including the coastal marine area:

- Of which the landward boundary is the line of mean high water springs, except where that line crosses a river, the landward boundary at that point shall be whichever is the lesser of –

  (i) One kilometre upstream from the mouth of the river; or

  (ii) The point upstream that is calculated by multiplying the width of the river mouth by five.

It includes Rules to regulate some activities in the coastal marine area. This includes building of structures, disturbance of the foreshore or seabed, reclaiming the sea, discharging contaminants and other activities.

As both a consent holder and consenting authority, BOPRC is responsible for ensuring compliance with the conditions of its consents, and also for monitoring whether the conditions have been met.

Conditions are generally those required to mitigate effects such as:

- Water quality.
- Ecological effects from disturbance and flow regime changes.
- Erosion protection.

4.4 Floodplain Management Strategies

Floodplain Management Strategies (FMS) look at an entire catchment and determine the way flood waters will be managed using various strategies including flood defence assets. The following FMS are currently in place:

- Waioeka-Otara Floodplain Management Strategy.
- Whakatāne-Tauranga Floodplain Management Strategy.
- Rangitāiki-Tarawera Floodplain Management Strategy.

Flood Management Strategies are being reviewed and updated as part of the River Scheme Sustainability Project. Each of the major river schemes FMS will be analysed in a multi-year process that considers:

- Options,
- Feasibility and costing,
- Affordability,
- Decision-making.

Table 9 below gives the expected timeline for FMS reviews.

Table 9 Expected timeline for FMS update adoption

Scheme	FMS Operative
Whakatāne-Tauranga	2023-2024
Rangitāiki-Tarawera (including Rangitāiki Drainage)	2024-2025
Waioeka-Otara	2025-2026
Kaituna	2027-2028

4.5 Environmental considerations

There are a number of environmental considerations to be made when planning or undertaking the Rivers and Drainage activities. The information provided below outlines some of the considerations.

4.5.1 Water quality effects

Sediment from urban and rural land use, contaminants from roads and stormwater discharges combines with runoff that is suspended in water, can have significant impacts on the flora and fauna living within the receiving environment. Apart from increased turbidity, water quality can also be affected by increases in nutrients and other contaminants attached to the sediment particles.

The key to safeguarding environmental and human health in the foreseeable future is through implementation of monitoring, regulations and education. Bay of Plenty Regional Council in conjunction with local authorities, currently monitors stormwater around the district and will continue into the future to ensure compliance with legislation and to safeguard the environment as far as practicable against adverse effects.

Mitigation measures

The following mitigation measures may be considered in the control of discharges:

- Evaluate receiving waters to determine background water quality.
- Monitoring of the mixing zone.
- Investigate options to treat stormwater.
- Retention dams, swales, wetlands, and rain gardens, which may remove contaminants and suspended material.

4.5.2 Sediment runoff

Sediment runoff from development works is generally controlled via sediment control techniques. Sediment from exposed areas of land can enter waterways, streams and rivers, potentially causing adverse effects to fauna and flora.

Mitigation measures

The following mitigation measures will be used in the control of sediment runoff:

- Undertaking works in accordance with:
  - Environmental Code of Practice for River and Drainage Maintenance Activities;
  - Erosion and Sediment Control Guidelines for Land Disturbing Activities; and
  - Erosion and Sediment Control Guidelines for Forestry Operations.
  - River Gravel Management Guidelines.

4.5.3 Ecological effects

River water quality can be impacted by stormwater as it collects contaminants from surfaces it flows over or land it flows through. Ecosystems are particularly vulnerable to increases in toxicity, heavy metals or nutrients entering the water. The natural habitat of fish can be impacted by structures restricting access. The potential adverse ecological effects may include:

- Groundwater and soil contamination.
- Suspended sediment in water reducing water quality and clarity.
- Ecosystem and habitat changes.
- De-oxygenation of waterways.
- Eutrophication (nutrient enrichment).
- Bioaccumulation (accumulation of contaminants in flora and fauna).
- Fish habitat reduced.

Mitigation measures

- Monitoring including indicator species.
- Management of flow velocity and quality through engineering and landscape management.
- Include fish and ecological flow passage in design of new and retrofitting existing structures.
- Acknowledge benefits of wetlands and design accordingly.

4.5.4 Archaeological and cultural heritage

Physical works can expose and result in damage to archaeological and or cultural heritage sites.

Mitigation measures

- Accidental discovery protocols (these are location specific).
- Consultation with key stakeholders including tangata whenua.

- Development of protocols.
- Due diligence prior to works.

4.5.5 Māori environmental management

Water is of particular significance to Māori as it is considered the source of life and sustenance. This is reflected through the Te Mana o te Wai policy from the National Policy Statement for Freshwater Management 2020 and is apparent in the Rangitāiki and Te Maru o Kaituna River documents. Working with Māori to deliver on the principles of the Treaty of Waitangi is essential.

Issues to consider

- Treaty settlements, National Policy, statutory acknowledgements, River documents, Iwi/Hapū Management Plans, management agreements.
- Water quality.
- Access to mahinga kai (areas where food is gathered from the river).
- Access to rongoa (medicinal plants).
- Wahi tapu sites, areas set aside for cultural practices such as baptisms.
- Native species and their ecosystems e.g. whitebait spawning area, fish passage.

Mitigation measures

- Consultation and relationships with key tangata whenua.
- Awareness of statutory parameters, including Treaty settlements.
- Due diligence prior to works.

4.5.6 Climate change

The Bay of Plenty's climate is changing, and these changes will continue for the foreseeable future. It is internationally recognised that human greenhouse gas emissions are the dominant cause of recent global climate change, and that further changes will result from increasing amounts of greenhouse gases in the atmosphere. The rate of future climate change depends on how fast greenhouse gases increase.

Climatic variation can influence storm intensity, wave conditions, sediment supply and erosion. Current and future changes in climate will have implications for Rivers and Drainage asset management in the coastal and lower river environments in particular.

Bay of Plenty Regional Council recently commissioned NIWA to analyse climate changes for the Bay of Plenty. The following bullet points outline some of the key findings:

- The projected Bay of Plenty annual average temperature may change by up to 1˚C by 2040 and up to 3.5˚C by 2090 (under RCP 8.5);
- The average number of hot days (>25˚C) per annum will increase, with up to 25 more hot days by 2040 and up to 90 more hot days by 2090 in some areas;
- Extreme rare rainfall events are projected to become more severe in the future; and significantly that;
    - Short duration rainfall events will have the largest relative increases compared to longer duration rainfall events. With the depth currently projected for a 1-in-100-year rainfall event being more likely to become a 1-in-34-year event by 2090 under RCP8.5.

The MFE has published a number of guidance and information documents on climate change aimed at supporting and assisting local, Regional and Central Government. The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change. The IPCC's Fifth Assessment Report is internationally recognised in climate change forecasting.

Bay of Plenty Regional Council's management of the Rivers and Drainage assets covered by this plan is consistent with MFE guidance and uses the IPCC's RCP (representative concentration pathway) 8.5 scenario, and RCP 8.5+ in tidal areas. The RCP 8.5 and 8.5+ scenarios relate to the worst case scenario – where greenhouse gas concentrations are at very high levels. Where temperature changes and impacts on climate change will be most extreme. Using these worst case scenarios ensures that as we install, replace, upgrade and maintain flood protection assets, we are doing so with a high level of confidence that the assets will be fit for purpose for their expected lives.

Mitigation measures

The following mitigation measures will be considered when taking into account climate change:

- Using IPCC projections during planning phases (e.g. for augmentation of infrastructure and also determining ongoing capacity of assets).
- Maintenance activities to maintain current asset capacities.
- Capital work programmes align with asset life-cycle requirements (new assets, renewals, upgrades, stopbank top-ups) and account for RCP 8.5 and 8.5+ (for tidal areas) climate change scenarios.
- Cognisance of areas located as being potential hazard zones.
- Capacity modelling of rivers to incorporate future climate change scenarios.
- Using soft engineering options (i.e. planning zones), ahead of hard/structural engineering options (i.e. stopbanks).

4.5.7 Hazards

The Bay of Plenty region is exposed to a number of natural hazards. From an activity point of view, hazards have the potential to cause major disruption and damage and therefore need to be taken into account.

Key impacts that are relevant to the Rivers and Drainage activity have been outlined below.

4.5.8 Flooding

Flooding is a commonly occurring major natural hazard that results when the natural and modified drainage systems fail to contain a particular rainfall event. The risk of flooding is influenced by a number of factors such as:

- Weather systems (intensity, low pressure, duration).
- Hydrological factors (catchment size, rainfall intensity and infiltration).
- Geotechnical conditions.
- Rivers and drainage asset condition and level of service.
- Hydraulic factors.
- Soil type.
- Land use.

- Ground saturation.
- Other natural hazards, i.e. earthquakes, tsunami.

Storm events and the resulting flooding can result in significant adverse effects on both residents and the environment. These effects may include:

- Personal injury or loss of life, property and possessions or livelihood.
- Disruption of utilities and transportation networks.
- Impacts on the environment may include vegetation and habitat loss, erosion and sedimentation in waterways, and soil and water contamination.

Bay of Plenty Regional Council undertakes ongoing monitoring of river levels and river flows and has alarms in place to identify rivers at risk of flooding. An example of this monitoring information is shown below for the Whakatāne River.

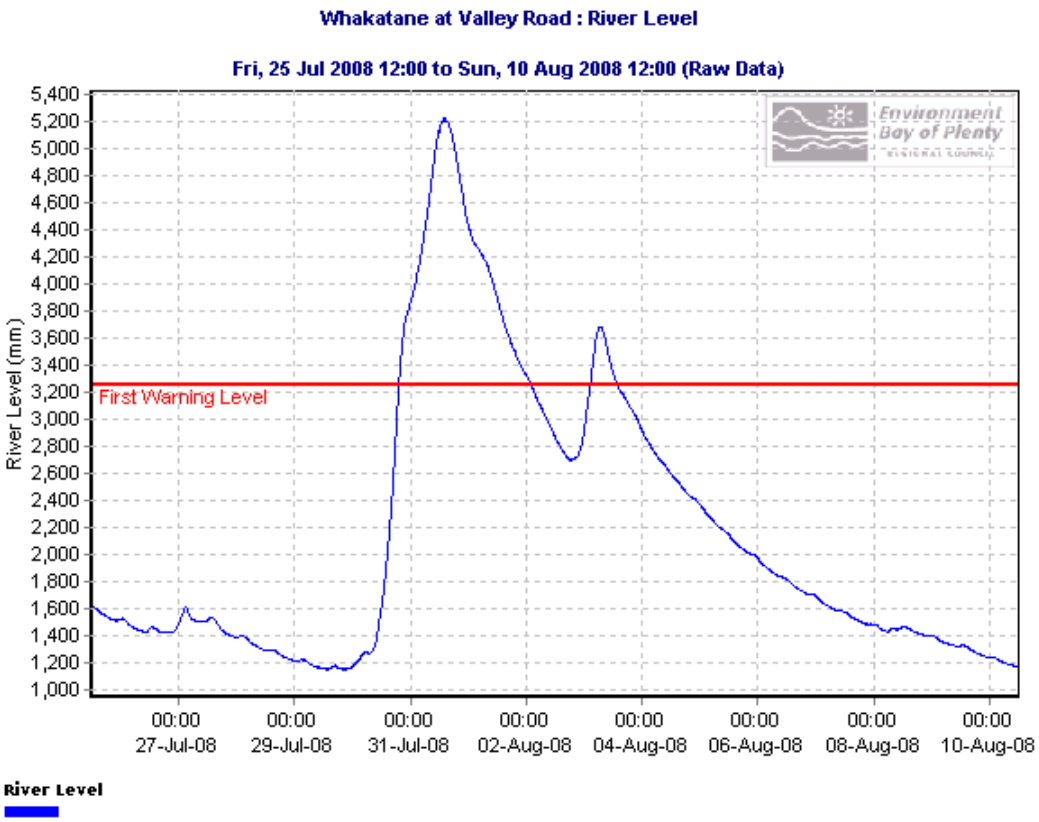


Figure 13 Example of BOPRC flood monitoring data

The Bay of Plenty region was affected by severe flooding in 2004, 2005, 2011, 2014, 2017 and 2018. The most recent severe event was in April 2018 primarily affecting the Ngongataha area.

During the July 2004 event, flood waters covered much of the Rangitāiki Plains and part of the Whakatāne Township. Work was undertaken to repair the consequential damage to stopbanks, streams and rivers throughout the region.

In 2005, Matatā and Tauranga were particularly badly hit by extreme storms. In 2011 and 2012 the river schemes suffered extreme flood damage to riverbanks, particularly in the Eastern Bay of Plenty. A program to undertake repairs to these schemes commenced in the 2012 AMP and 2012-22 LTP. This program extended over a number of years.

The region was inundated again with rain and severe weather from ex-Tropical Cyclone Debbie from 3-6 April 2017, with the eastern Bay of Plenty receiving the most significant impact. Record rainfall was recorded with unprecedented lake/river levels and flows across the region.

Significant damage resulted from ex-Tropical Cyclone Debbie to river scheme works and assets. A local State of Emergency was declared 6 April 2017 in response to the breach of the Rangitāiki River stopbank at College Road in Edgecumbe which caused wide-spread evacuations and damage to the township.

Around a week after ex-Tropical Cyclone Debbie, ex-Tropical Cyclone Cook made landfall in the Bay of Plenty which subjected the region to high winds and high seas, again resulting in considerable damage to the region.

The 2017 Flood Repair Project was established to repair flood damage to river scheme works and assets as a result of cyclones Debbie and Cook. The project is expected to conclude in 2021/2022 at a total project cost of circa. $45M.

Flood management was traditionally based around river controls; this has changed now to incorporate softer non asset solutions such as floodplain management, education and development restrictions in floodplain areas.

Bay of Plenty Regional Council is preparing floodplain management strategies for its major floodplains and these will incorporate traditional measures in combination with flood warnings and flood hazard awareness and preparedness. Additional measures that can be incorporated to help mitigate against flooding include:

- Modelling to determine capacity, sediment deposition and maintenance strategies.
- Managing land use in floodways and natural overflow areas
- River gravel extraction to maintain flow capacity.

4.5.9 Earthquakes

New Zealand is considered amongst the most seismically active places on earth as it is located on an active boundary of two tectonic plates.

The Bay of Plenty is a zone of active tectonics with earthquakes occurring on a regular basis, although most are not strong enough to be felt. However, the region has experienced significant earthquakes in the past that have resulted in widespread damage and serious injury such as the Edgecumbe Earthquake in 1987.

The average return interval for moderate to strong ground shaking for all major communities in the region is less than 50 years.

Earthquakes can result in damage to Rivers and Drainage assets which may include changes in levels of stopbanks relative to surrounding land, which could reduce the level of flood protection. To understand this effect, additional surveying and modelling to determine capacity may be required following significant earthquakes.

4.5.10 Volcanic eruption

The Bay of Plenty region is located in a highly active volcanic area, the Ōkataina Volcanic Centre. Southwest of the Bay of Plenty is the Taupō Volcanic Centre; this links with Mount Ruapehu and Mount Tongariro, active volcanoes in the central plateau. The zone from Mount Ruapehu in the south to Whakaari (White Island) in the north-east incorporates the Taupō Volcanic zone and this runs through the centre of the Bay of Plenty region.

On average, major eruptions from the Ōkataina Volcanic Centre occur every 2,000 years. A major recent event from this volcanic centre was the 1886 Mount Tarawera eruption.

Recent activity in the Taupō Volcanic Zone includes several eruptions from Mount Ruapheu over the last decade. Whakaari (White Island) has also had active periods in the last few years.

Volcanic eruptions have the potential to deposit sediment in rivers which has potential short and long-term effects on river scheme capacity.

4.5.11 Tsunami

There have been eleven recorded tsunami in the Bay of Plenty region since 1840 and they have not generally been considered a major threat to the region. Further research has highlighted the fact that tsunami risk to the region may be greater than initially thought.

There have been two major regional and four localised paleo-tsunami events recorded over the last 4,000 years. All of these have been equal or greater than the 5 m resolution level that is required for detection in the paleo record.

Some potential sources for tsunami in the Bay of Plenty region can be categorised as follows:

- Local volcanic eruption (e.g. Tūhua (Mayor Island) or Whakaari (White Island), or fault movement within the offshore Taupō Volcanic Zone) – these potential sources of tsunami are identified as low risk due to small size (GNS 2005).
- Regional origin, such as a landslide in the Hikurangi Trench, located off the east coast of the North Island.
- Distant origin, for example an earthquake in South America.

The local Bay of Plenty Civil Defence and Emergency Management (CDEM) Group works alongside BOPRC, local authorities and emergency services to determine the likely threat of a tsunami in the region and also the response required to minimise impacts and also to prepare the community for such an event.

The Rivers and Drainage assets are vulnerable to damage from tsunami, especially assets in the coastal marine area.

4.6 Future requirements

The main item that needs to be addressed from an environmental stewardship perspective will be how BOPRC addresses climate change and how it manages the non-asset solution side of the Rivers and Drainage activity to minimise potential impacts on the environment.

Understanding the current capacity of the Rivers and Drainage assets and the existing risks, particularly around flooding and resultant damage, will need to be investigated further to be fully understood.

Ongoing interaction with local authorities to identify hazard risks on floodplains, establish habitable floor levels and to ensure environmental health and safety is key. In addition to this, a constant monitoring of natural hazards and their impacts will need to be ongoing.

Future requirements are currently being investigated through the River Scheme Sustainability Project.

5 Assets we own

5.1 Overview

(Detailed asset information is provided in Appendix A).

Bay of Plenty Regional Council owns and manages a vast array of flood protection and drainage assets across the region. Some of these assets were established by predecessor organisations in the first half of the twentieth century. Over time, management of the assets has transferred amongst various agencies, with BOPRC assuming ownership and management of Rivers and Drainage schemes in the late 1980's. Prior to this, Catchment Boards had provided scheme management.

Scheme asset portfolios have been built up incrementally over time. Present day asset management tends to focus on maintaining the current asset base, as opposed to previous periods in history where there were concerted periods of significant scheme and asset growth.

Severe weather events can be a driver in modern times for the creation of new assets. This is particularly true for erosion protection assets, which become important when severe flooding causes erosion issues and increases the risk to property and livelihoods. The 2017 Flood Repair Project being a current example.

Future management of the extent and occurrence of Rivers and Drainage schemes (and assets) across the region will depend on community expectation and affordability. Bay of Plenty Regional Council will continue to have a focus on engaging with communities, to ensure the level of scheme and flood protection and drainage service we provide is closely aligned with the needs of our communities.

5.1.1 Background

Council currently has four major rivers schemes and one major drainage scheme, these are as listed below:

- Kaituna Catchment Control Scheme
- Rangitāiki Drainage Scheme
- Rangitāiki-Tarawera Rivers Scheme
- Waioeka-Otara Rivers Scheme
- Whakatāne-Tauranga Rivers Scheme

Figure 14 shows the schemes included within this AMP and their approximate boundaries.

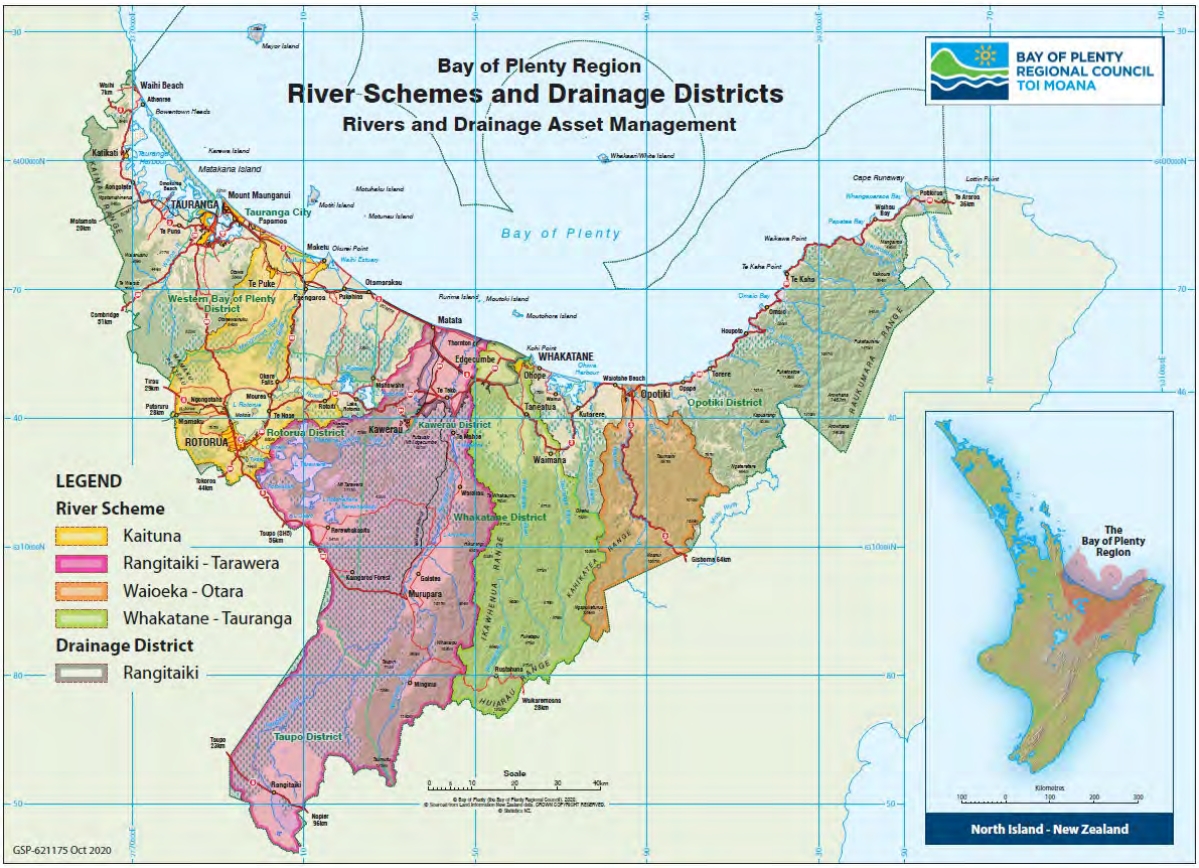


Figure 14 Rivers and Drainage Scheme location

The schemes provide flood protection for approximately 54,570 targeted ratepayers.

Table 10 River scheme total catchment areas

Scheme	Total catchment area (km²)	Total no. of ratepayers
Kaituna Catchment Control Scheme	1,246	30,538
Rangitāiki Drainage Scheme	290	4,241
Rangitāiki-Tarawera Rivers Scheme	3,995	7,998
Waioeka-Otara Rivers Scheme	1,175	2,463
Whakatāne-Tauranga Rivers Scheme	1,540	9,330

5.1.2 Asset description

All the assets associated with the Rivers and Drainage activity can be grouped under five asset group headings below in Table 11.

Table 11 Asset groups

Asset group	Asset
Erosion protection	• Buffer zone • Edge planting • Fencing • Rock work • Rubble • Trenched willows • Trenched willows and permeable groynes • Gabion
Pump stations	• Pumps • Pump station • Pump – electrical • Pump – electronics • Pump - ancillary
Stopbanks	• Stopbanks • Geotech
Structures	• Culvert • Concrete structure • Concrete wall • Drop structure • Flap gate • Flood gate • Mole • Radial gate • Sluice gate • Stop log • Timber wall • Headwalls • Gauging station • Rock groynes
Waterways	• Canals • Drains

Throughout the AMP, the assets are addressed as asset groups or individual component assets where appropriate. A detailed description of each asset type, common issues and valuations are shown in Appendix A3. Figure 15 below illustrates the physical relationship of the individual assets and how they contribute to the Rivers and Drainage activity.

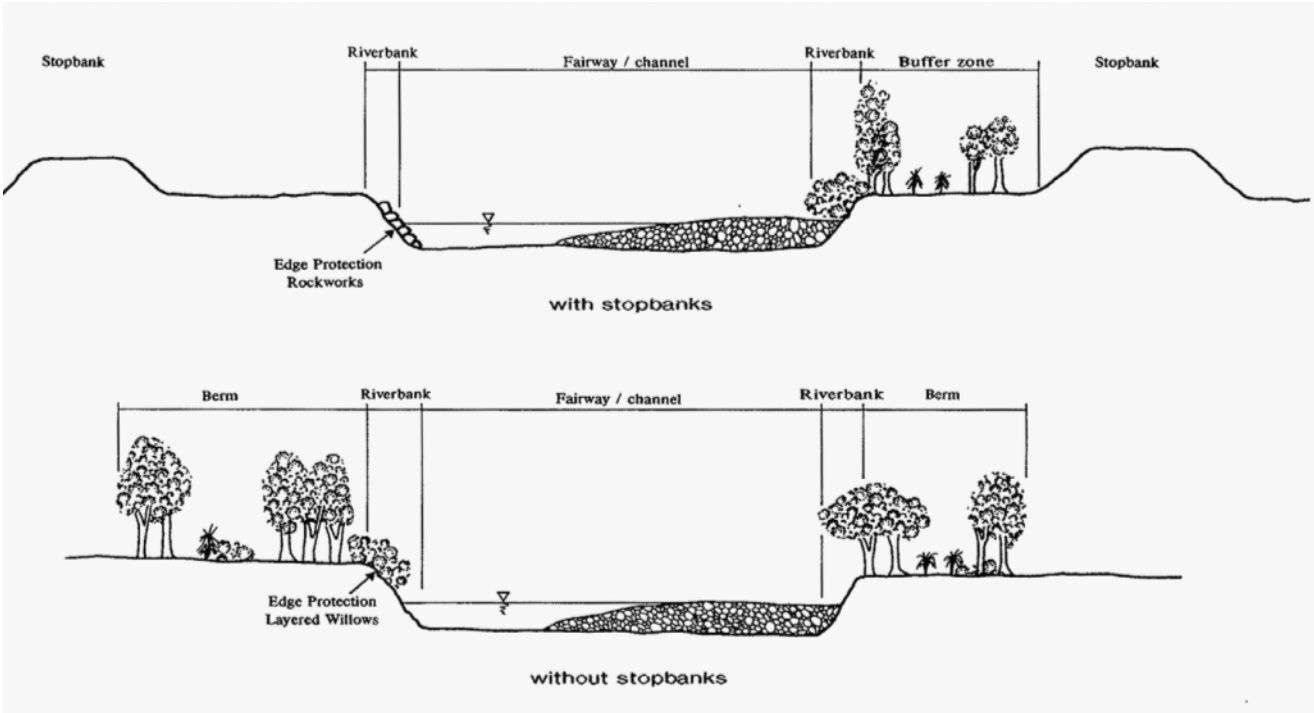


Figure 15 Typical river cross section

Asset age

Figure 16 below shows a comparison between the average age of the asset groups and the remaining useful life. The stopbank, waterways and erosion protection asset groups have an expected life of perpetuity. Planned maintenance continually renews these assets, and therefore average asset age and average remaining useful life data is not as relevant for these asset types.

Waterways have a zero depreciation rate due to their estimated life of perpetuity. Stopbanks also have an estimated life of perpetuity however a depreciation rate of 0.3% is included to account for settlement.

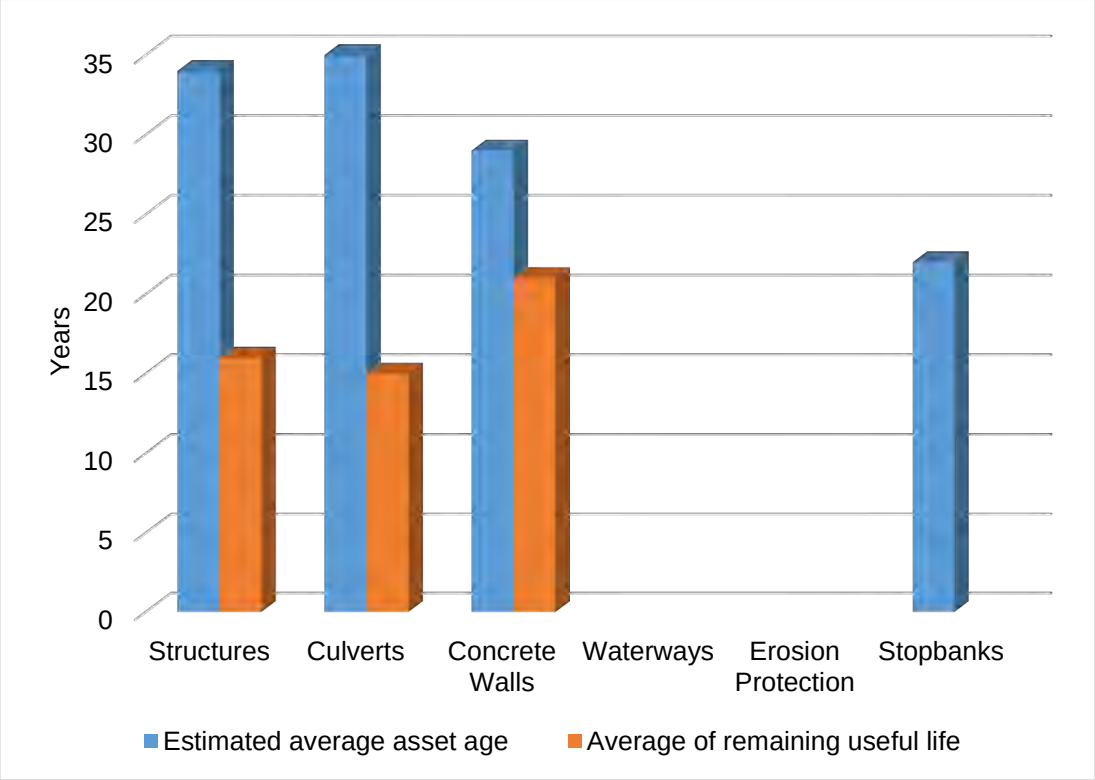


Figure 16 Asset age versus remaining life – from 1 July 2020 valuations

Figure 17 below shows the pump station asset group. On average pump station assets (pumps, pump motors, pump electrical, pump electronics, and pump station buildings) are 50% through the estimated average useful life.

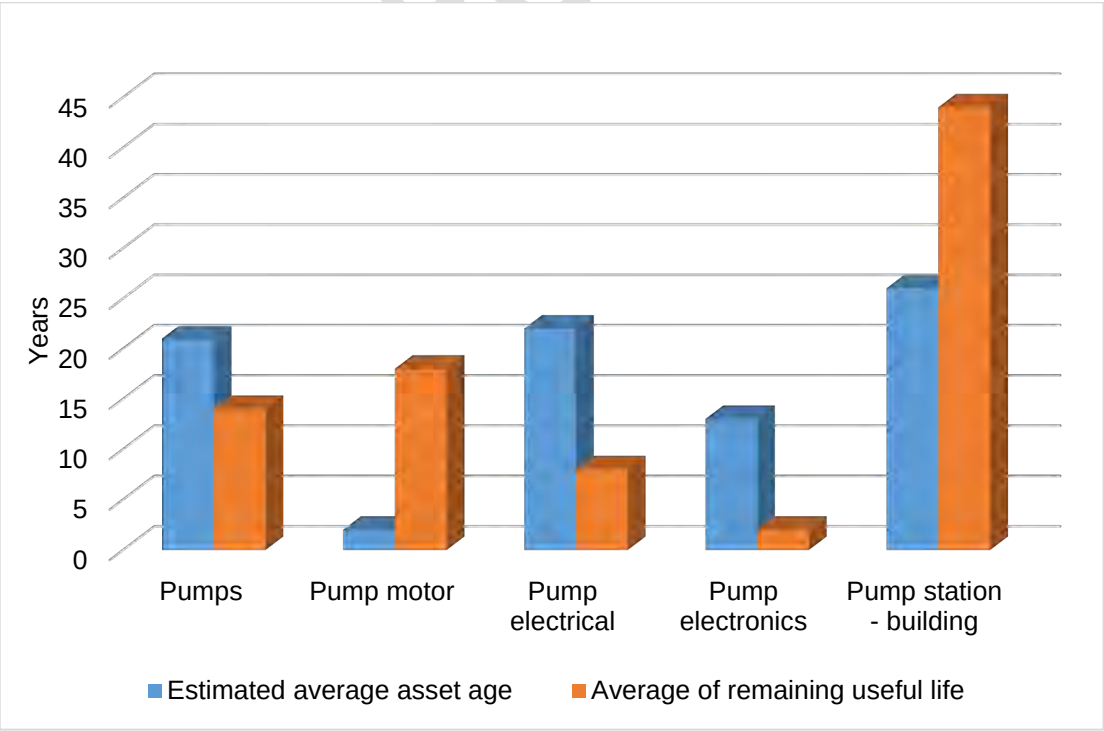


Figure 17 Pump station asset age versus remaining life – from 1 July 2020 valuations

Asset age is a key driver in asset replacement or upgrade planning. This planning uses more detailed asset information analysis, where individual asset data is analysed in conjunction with condition and performance information, as well as general observations of field operators.

5.1.3 Asset replacement costs

The replacement costs of the assets for all the Rivers and Drainage activity is outlined below. Individual scheme asset information and associated replacement costs are detailed further in Appendix - A4.

Figure 18 shows the Optimised Replacement Cost (ORC) by scheme. Optimised Replacement Cost is the minimum cost of replacing existing assets with modern equivalent assets offering the same level of service.

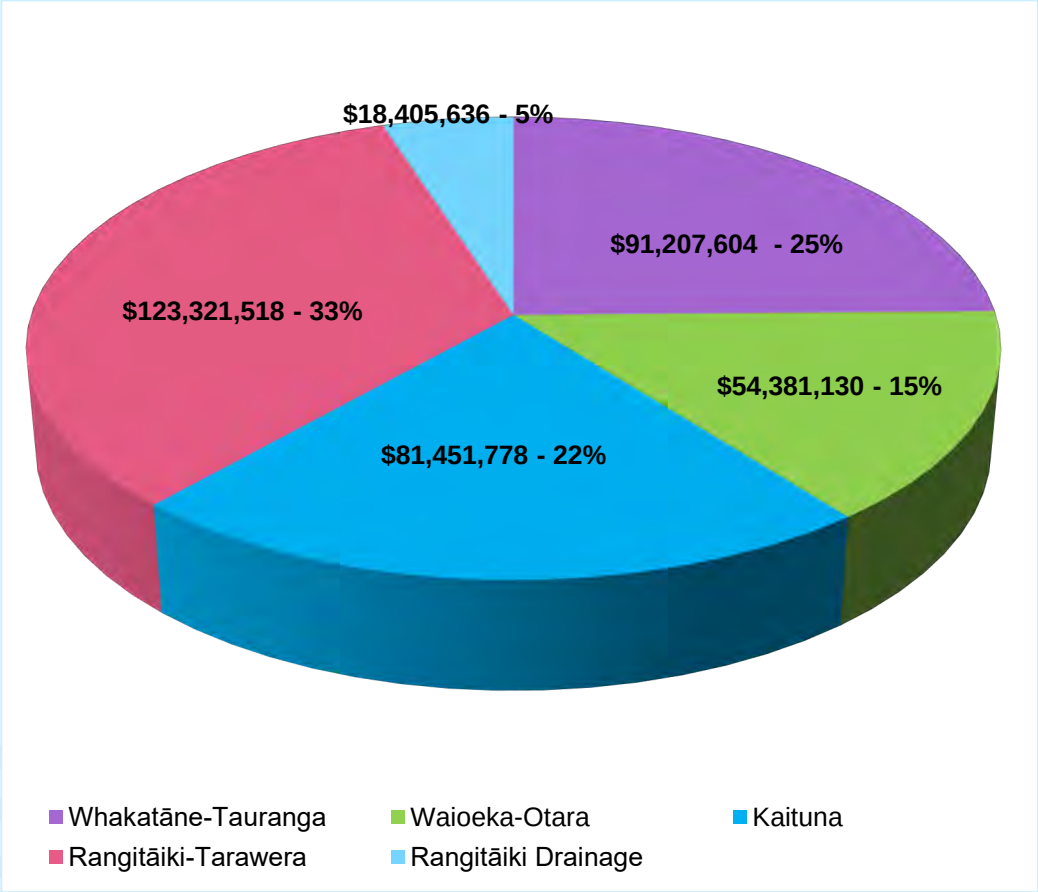


Figure 18 Optimised replacement cost (ORC) 1 July 2020 Valuation

The total ORC for the Rivers and Drainage infrastructure is $368.7M. A breakdown for each asset type is shown below in Figure 19. Stopbanks contribute to 67% of the total asset value.

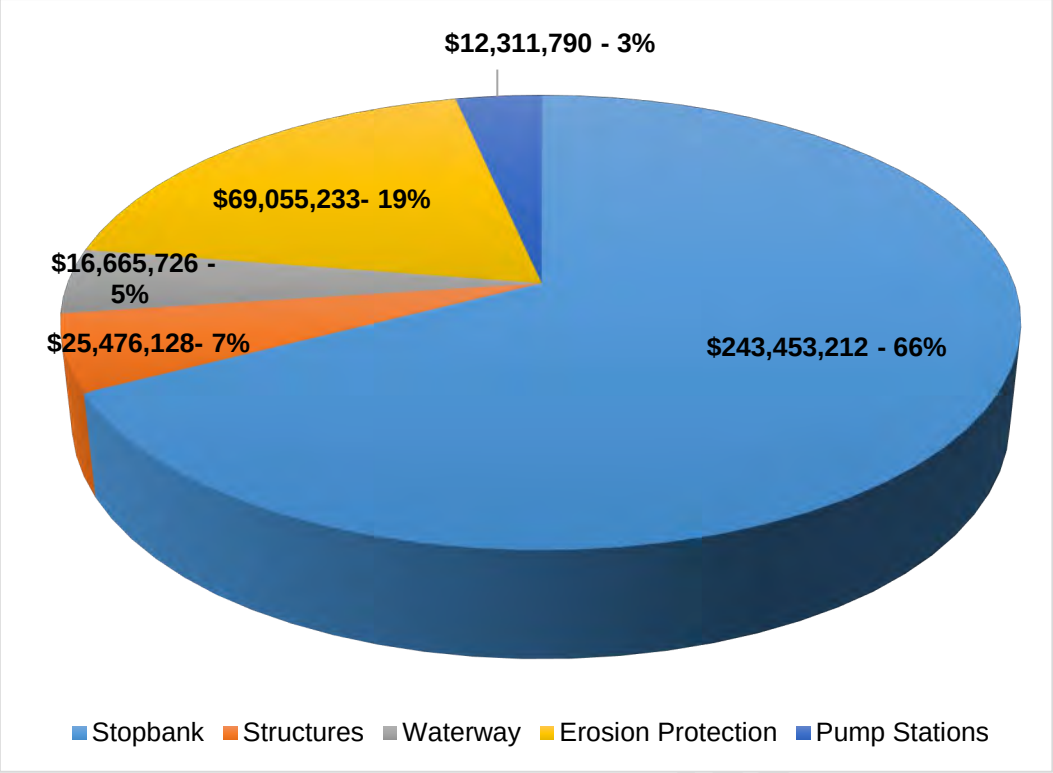


Figure 19 ORC Rivers and Drainage infrastructure by asset type - 1 July 2020 Valuation

The total Optimised Depreciated Replacement Cost (ODRC) for all assets across all schemes is $336.4M. Optimised Depreciated Replacement Cost is the cost of replacing an asset with its modern equivalent asset less deductions for physical deterioration and all relevant forms of obsolescence and optimisation. A breakdown by asset type is shown in Figure 20.

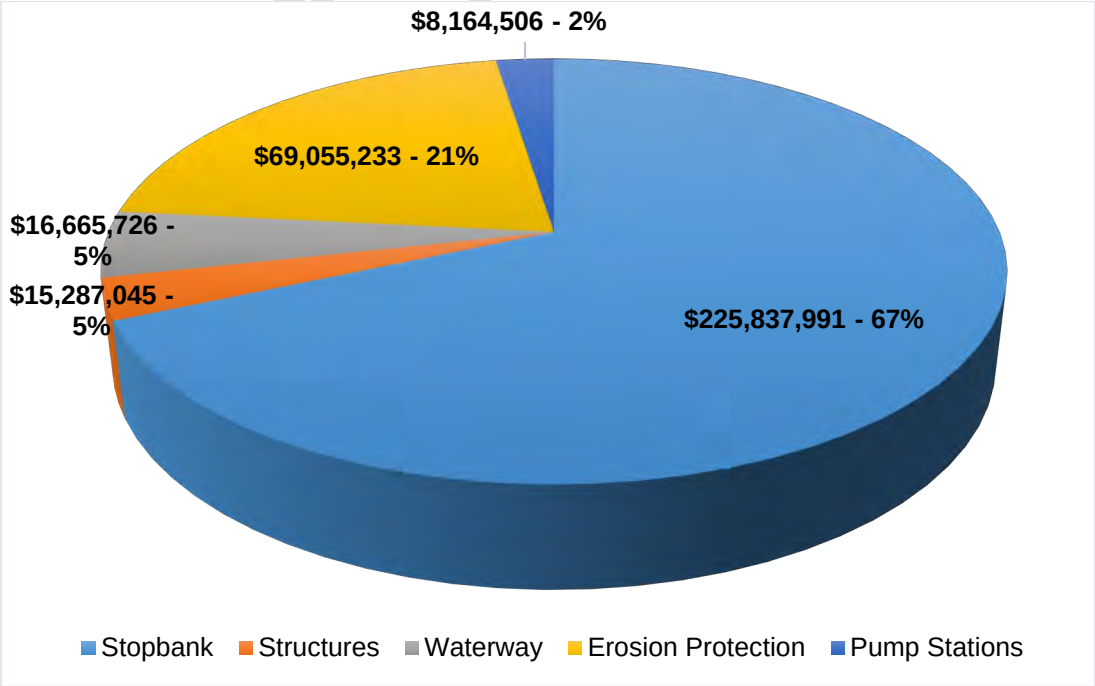


Figure 20 ODRC Rivers and drainage infrastructure by asset type - 1 July 2020 Valuation

5.1.3.1 Total depreciation

Total depreciation is the total cost of depreciation accrued against an asset. Total depreciation gives an idea of how aged an asset is, the higher the total depreciation value, the older and more impaired the asset is, and vice versa.

Figure 21 shows the total depreciation accrued against depreciated assets across all schemes.

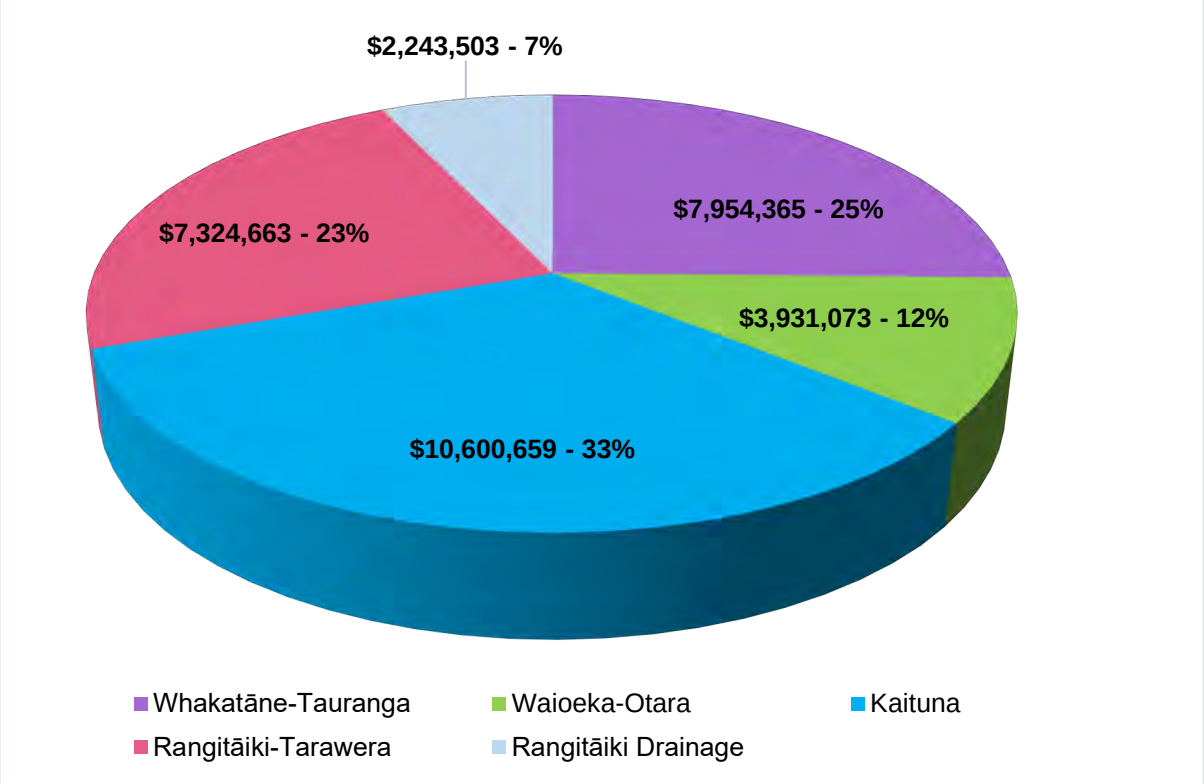


Figure 21 Total depreciation - 1 July 2020 valuation

Annual depreciation costs

Annual depreciation is the standard yearly rate at which depreciation is charged to a fixed asset. The 'straight-line' method of depreciation is used for all Rivers and Drainage assets that are depreciated. This results in annual depreciation being paid at a consistent rate across the life span of the asset. Annual depreciation is calculated by dividing the optimised replacement cost of the asset by the expected life of the asset.

The annual depreciation for all depreciated assets across all schemes is $1,415,663 (1 July 2020 valuations). Figure 22 indicates the proportions of asset types that constitute annual depreciation costs (excludes waterways and erosion protection as these assets are not depreciated).

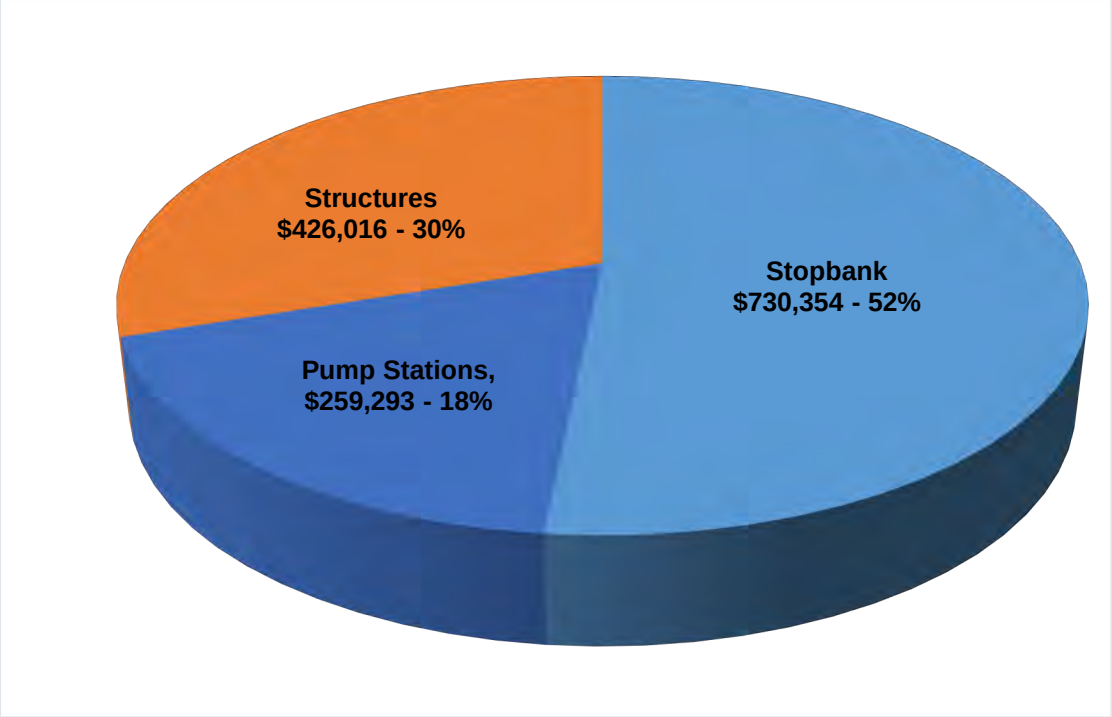


Figure 22 Annual depreciation proportions for all assets across all schemes

5.2 Asset performance and condition

5.2.1 Asset performance and condition results

Condition assessment focuses solely on the physical state of the assets. This is further explained in section 9.2. Performance assessment looks at the whole picture – river capacity, condition assessment data, consequence of failure, and soil types using the nationally adopted "Flood Protection Assets – Performance Assessment Code of Practice".

This code of practice has been developed to provide an agreed framework for assessing the performance of flood protection assets, where the assessment method and frequency is aligned to the amount of risk posed to the community. Council has initially focused on its critical assets (see section 10 for further definition of critical assets) to undertake assessments. To date, performance assessments have been completed where critical assets exist for each scheme.

Since gathering performance assessment information, a work plan with Engineering and Operations teams has been developed to action works that will reduce risk. This prioritises works in high and very high risk areas and is accounted for in planned budgets, including those depicted in this asset management plan.

Monitoring of assets in flooding events is a risk mitigation option that is used by BOPRC. Similarly, measures such as annual flood response exercises and emergency response plans further contribute to risk mitigation. BOPRC staff are also in ongoing dialogue with territorial authorities about risk management options, which include evacuations at pre-determined levels.

The following figure depicts the performance assessment process. Where risk is the key measure of performance, and is identified from 'very low 1' to 'very high 5', by quantifying probability and consequence.

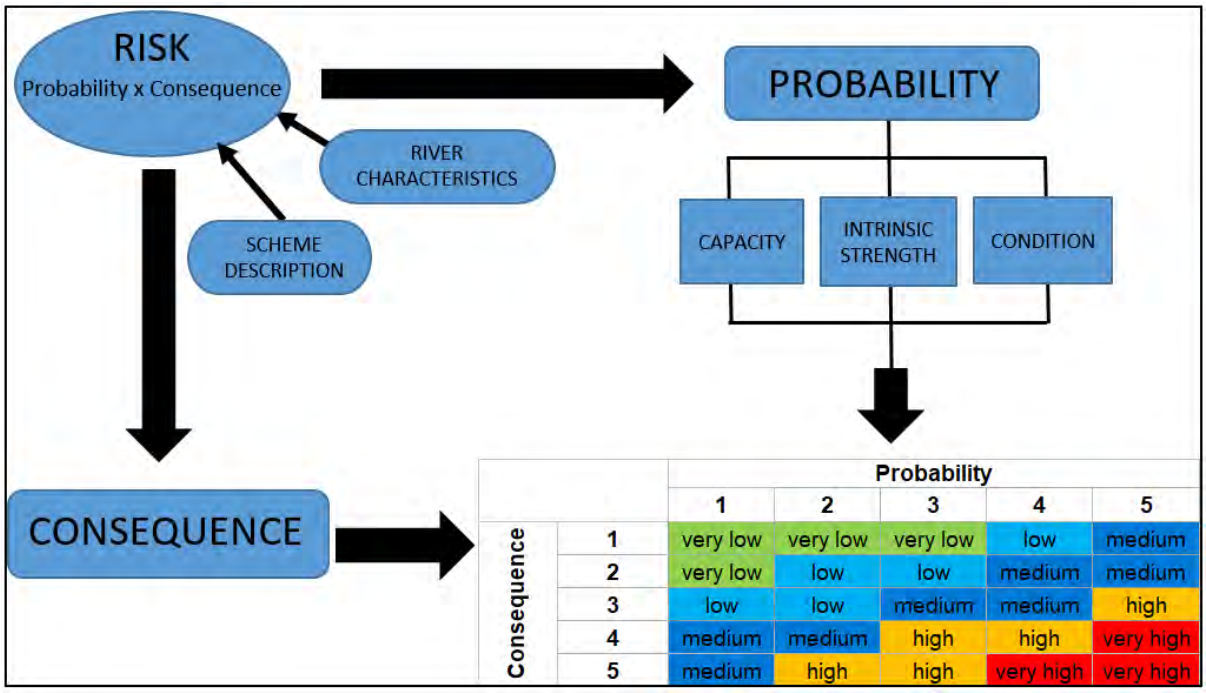


Figure 23 Critical asset performance assessment process

Probability is calculated by considering three key factors:

1 Timing and results of previous capacity reviews.

2 Asset intrinsic strength.

3 Asset condition.

Consequence is quantified by considering social (including health and safety), environmental and economic impact scenarios.

Condition assessments are being undertaken on the remainder of rural areas that have stopbanks (those stopbanks not assessed as part of the performance assessments described above), this will then be followed by scheme areas where only erosion protection exists. The frequency of inspections is defined in the code of practice with visual inspections recommended to be completed in 1-5 yearly cycles, dependent on river type and risk profiles. Timing of inspections is further explained in section 9.

Condition data collected during inspections of assets provides sound information for decisions around renewal priorities and maintenance programmes. Different inspection and maintenance regimes are used for different asset types, e.g. stopbanks, waterways and fencing, depending on criticality and life cycle management. Table 12 below gives an overview of condition profiles for the Rivers and Drainage critical assets where inspections were completed during 2019.

Table 12 Critical asset condition risk results.

Year	2019	
Critical Asset Condition Risk Results	**Ratio**	**Length (km)**
Very Low	96.3%	1
Low		24.29
Medium		17.65
High	3.7%	1.64
Very High		0
Totals	**100%**	**44.58**

Overall, these results show that the vast majority of critical flood protection assets are in an acceptable state (very low – medium risk). A work programme has been developed to undertake maintenance, repairs and additional investigations to improve overall asset condition and to address specific sites of concern.

Additional condition information for non-critical assets will be included in annual reviews of the AMP as inspections occur. Over time, condition comparison profiles will be included to show any overall improvements to asset condition.

5.2.2 Asset capacity

Table 13 outlines the different design capacities (where applicable) of the Rivers and Drainage assets across the schemes.

Table 13 Asset capacity

Asset group	Kaituna Catchment Control Scheme	Rangitāiki Drainage Scheme	Rangitāiki-Tarawera Rivers Scheme	Waioeka-Otara Rivers Scheme	Whakatāne-Tauranga Rivers Scheme
Erosion Protection	All rockwork is maintained to a minimum of 75% of design placement rate.	All rockwork is maintained to a minimum of 75% of design placement rate.	All rockwork is maintained to a minimum of 75% of design placement rate.	All rockwork is maintained to a minimum of 75% of design placement rate. Buffer zones where practical have width of the minor meander (30 m) however, where space prohibits, an average of 15 m has been adopted.	All rockwork is maintained to a minimum of 75% of design placement rate.

Asset group	Kaituna Catchment Control Scheme	Rangitāiki Drainage Scheme	Rangitāiki-Tarawera Rivers Scheme	Waioeka-Otara Rivers Scheme	Whakatāne-Tauranga Rivers Scheme
Pump Stations	9 pump stations each designed for a 5-year storm (20% AEP 37.5 mm/day).	Privately owned (not BOPRC assets).	1 pump station designed for a 5-year storm (28 mm/day).	1 pump station designed for a 10-year 24 hr storm of 160 mm.	3 pump stations each designed for a 5-year storm (28 mm/day).
Stopbanks	Maintained to the design flood level. Allowable settlement of 50% of the freeboard before reconstruction is required.	Maintained to the design flood level. Allowable settlement of 50% of the freeboard before reconstruction is required.	Maintained to the design flood level. Allowable settlement of 50% of the freeboard before reconstruction is required.	Maintained to the design flood level. Allowable settlement of 50% of the freeboard before reconstruction is required.	Maintained to the design flood level. Allowable settlement of 50% of the freeboard before reconstruction is required.
Structures	All structures in the scheme are maintained to ensure they are functioning at design standards at all times.	All structures in the scheme are maintained to ensure they are functioning at design standards at all times.	All structures in the scheme are maintained to ensure they are functioning at design standards at all times.	All structures in the scheme are maintained to ensure they are functioning at design standards at all times.	All structures in the scheme are maintained to ensure they are functioning at design standards at all times.
Waterways (including 'floodways')	Maintained to ensure hydraulic design capacity.	Maintained to ensure hydraulic design capacity.	Maintained to ensure hydraulic design capacity.	Maintained to ensure hydraulic design capacity.	Maintained to ensure hydraulic design capacity.

5.3 Overview of issues

Key issues and strategies

Table 14 below outlines the key issues and strategies for the Rivers and Drainage activity. Many of the issues are common to each scheme which means implementing appropriate strategies will address the bulk of the identified issues in the activity. The individual schemes and associated issues are outlined in Table 16. The individual scheme issues are addressed in Sections 8 and 9 which covers any capital works required and the ongoing operational and maintenance activities that address identified issues.

Table 14 Rivers and drainage key issues and strategies

Key issues	Strategies to address key issues
• Scheme affordability/sustainability	• River Scheme Sustainability Project, communication with ratepayers – particularly through scheme Advisory Groups.
• Sea level rise	• Asset upgrades in alignment with predicted sea level rise, consultation with ratepayers around alternatives.

Key issues	Strategies to address key issues
• Increased frequency and magnitude of flooding due to climate change	• Procedures in place for design and modelling to include climate change.
• Interdecadal Pacific Oscillation	• To be considered in any future review of flood protection assets.
• Damage to critical assets.	• Condition monitoring to assess asset condition and defect remediation. Flood Protection and Drainage Bylaw to manage integrity risks through development activities.
• Stopbank alignment – too close to river channel increasing risk of undermining.	• Additional edge protection works. • Maintenance of existing edge protection works and buffer zones.
• Stopbank narrowness in some rural locations.	• Stability analysis. 10-20 yearly programmed upgrades to improve issues.
• Aggradation of river bed through the natural movement of river metal.	• Monitoring. Gravel management.
• Degradation of river beds through extraction of metal.	• Regulatory controls and monitoring.
• Increased requirement to waterways for recreational purposes.	• Identify and develop existing and potential access points. Liaise with TLA's and communities.
• Environmental effects and enhancement, e.g. discharges from drains/pump stations is an issue, e.g. wetland enhancement is a positive.	• Regulatory controls and monitoring. Code of Practice for Rivers and Drainage Management Activities. Capital and maintenance works.

Table 15 Individual scheme issues

Kaituna Catchment Control Scheme	Rangitāiki Drainage Scheme	Rangitāiki-Tarawera Rivers Scheme	Waioeka-Otara Rivers Scheme	Whakatāne-Tauranga Rivers Scheme
• River bank erosion caused from the wake created by motorised river traffic. • Stopbank erosion from stock access and control, poor cover, inadequate berm, large trees. • Geothermal activity in the upper Kaituna area (corrosion of flap-gate structures, hazardous working conditions). • Private ownership of riparian land restricting access for maintenance. • Stream channel aggradation. • Catchment land use changes e.g. lifestyle blocks. • Drain water quality in Lower Kaituna leading to consent compliance issues. • Land settling in the Lower Kaituna Catchment which then affects the ability for assets to meet levels of service. • River bank erosion due to storm damage - the nature of the river makes this difficult to maintain. • Debris and silt deposited in canals from beyond the scheme maintenance area. • Tauranga Eastern Link Motorway – effect on flood levels. • Lake level operation management (competing use). • Vandalism e.g. cutting down trees and fences for access. • Increased population growth particularly in the Lower Kaituna area creating stormwater management issues. • Long term sustainability of the scheme.	• Lowering of ground levels as a result of drainage. • Sea level rise. • Restriction of access to stream banks by landowners, physical constraints and unauthorised crossings. • Weed control and disposal. • Drain and pump station discharge water quality. • Pest weed incursion (e.g. Alligator weed). • Environmental impact of plains drainage on natural wetlands. • Contaminated sediments in the lower reaches of the Kopeopeo-Orini Canal from historical industry discharge. • Aggradation from outside of the drainage area. • Catchment land use changes e.g. lifestyle blocks, subdivisions. • Seismic movement. • Damage to assets from major flood events. • Organic land use restricting maintenance activities. • Environmental concerns e.g. fish passage, wildfowl breeding.	• Private ownership of riparian land restricting access. • Water level variance as a result of hydroelectric power station activity causing bank erosion. • High level of debt for the scheme. • Flooding, Edgecumbe earthquake, geotechnical issues with stopbanks and resultant major capital projects including Rangitāiki Floodway widening. • Stopbank top-ups required to the Rangitāiki Floodway. • Dams - adverse effect on edge protection vegetation works due to fluctuations in river water levels. Assists with attenuation during storms, sedimentation of Lake Aniwaniwa Dam headwaters. • Gravel accumulation in upper tributaries. • Land use changes in the upper catchment resulting in increased discharges and increased gravel and sediment. • Land use changes, particularly conversion to kiwifruit, in the lower catchment causing access issues. • Stock damage. • Weeds and pest control (damaging stopbanks). • Backlog of tasks relating to floodplain management strategies.	• Berm and river aggradation, particularly in tidal reaches. • Gravel extraction – renewal of extraction consents. • Ōpōtiki Harbour works (proposed Harbour groynes may affect flood levels). • Private ownership of riparian land restricting access. • Gravel accumulation. • Land use changes in the upper catchment resulting in increased discharges and increased gravel and sediment. • Flood damage repair works ongoing. • Stock damage. • Weeds and pest control (damaging stopbanks). • Petersons ring bank, low lying area may require protection. • State Highway 2 flooding, downstream of bridge. • Gordon Estate erosion at the Waioeka confluence. • Flood capacity and gravel accumulation underneath Waioeka Bridge. • Te Rere Pa area drainage and flooding. • Site specific flooding issues (Te Rere Pa, Gordon Estate, Waioeka Bridge). • Affordability due to demographic changes.	• Berm and river aggradation, particularly in tidal reaches. • Private ownership of riparian land restricting access, particularly in the Tauranga River. Encroachment in Whakatāne urban area. • Gravel accumulation and extraction. • Land use changes in the upper catchment resulting in increased discharges and increased gravel and sediment. • Ongoing flood damage repair works. • Stock damage. • Community expectations around scheme management. • Weeds and pest control (damaging stopbanks). • Maintenance of flood relief fuse at the river mouth. • High level of debt. • Environmental including fish passage and contaminated sites. • Contaminated sediments in the lower reaches of the Kopeopeo-Orini Canal from industry discharge. • Rating in arrears (to take into consideration when prioritising works).

6 Growth and demand

6.1 Introduction

The Bay of Plenty area contains a number of communities with different population densities, varying topography and geomorphology, varying flood protection requirements and agreed levels of service.

Planning for future changes in growth and demand is imperative to provide an economically sustained pathway to meet the needs of the region and visitors to the region. The provision of the River and Drainage activity and its management, is considered an essential element in the provision of collective community outcomes, particularly healthy and safe communities.

Demographic projections allow for the identification and quantification of areas within the region that are likely to experience significant pressures, or other situations that will impact upon the demand for services.

The Strategic Asset Management Plan addresses growth and demand at a regional scale across all of BOPRC's business. The following section links to the Strategic Asset Management Plan in principle and focuses on Rivers and Drainage specific issues.

6.2 Significance of growth to flood management

6.2.1 Growth overview

Population trends are important for flood management because:

- Scheme affordability is closely related to population, with rates being the key source of funding for scheme management.
- Community expectations lead the delivery of flood protection services and assets.
- Development can threaten the integrity of Rivers and Drainage scheme assets and the ability of the assets to meet levels of service.

High growth areas require good flood risk management policy and town planning that incorporates sound flood risk management principles. In areas where population is expected to increase, there will likely be greater demand for business and residential development and therefore greater population densities. This is likely to have the following primary impacts:

- Demand for an increased level of protection to valuable yet naturally vulnerable productive land;
- An increasing expectation for uninterrupted access to infrastructure, services and facilities during periods of high rainfall events, i.e. access to towns and business areas and nil to minimal interruption to supply chains;
- An increased demand for access to rivers and waterways for recreational use;
- An increase in surface water run-off rates as natural seepage is diminished through increased hard surface development (roofs, pavements, roading);
- An increased demand for protection of rivers and waterways for conservation purposes;
- Potential increases in capital and operational costs to scheme stakeholders.

Where population is expected to decrease, there will be a reduction in ability to pay as population ages and distribution of population changes within the region.

6.2.2 Management strategy

In areas of increasing population there is an increased demand and in most cases an expectation of increased levels of service. These expectations must be managed through wider community engagement and education, to ensure stakeholders understand the impact both physically and economically on changing levels of service; this understanding of 'cause and effect' will assist in effectively managing the impacts that result from growth and demand and the demographic profile of the region.

It is imperative that Council continue to collaborate with its partner stakeholders to ensure sustainable flood risk management across the region. The Regional Flood Risk Management Framework Project, was successful in growing understanding amongst territorial authorities on the importance of all of catchment planning and the potential impacts of development on flood protection asset performance. Continuing with this collaborative approach based on growing shared understanding will be important. Ensuring statutory plans align with flood management strategies and objectives will be an important focus. Advisory Groups will play an important role in this space.

The River Scheme Sustainability Project will continue to be the key strategic project that addresses these issues.

6.3 Environmental factors

6.3.1 Environmental overview

Environmental change and the resulting effects will impact greatly on the Rivers and Drainage activity. Increases in the frequency and intensity of storm events and extremes in weather, including droughts and raised sea levels, will potentially increase the demand to maintain existing levels of service. Effects that require consideration include:

- Climate change.
- Wetland restoration.
- Erosion protection.
- Conservation needs.
- Earthquakes or other climatic events.
- Future proofing.
- Increasing water quality standards and freshwater regulations.

6.3.2 Impacts of environmental factors on the Rivers and Drainage activity

The main impacts of environmental change on the Rivers and Drainage activity will include:

- More frequent and greater levels of damage to assets;
- A need for higher design standards to mitigate against the larger and/or more frequent events;
- Higher levels of post event maintenance/repair;
- Establishment of more erosion protection assets;

- A higher level of routine maintenance; and
- An increase in inspection and monitoring both during and outside storm events.

These impacts, in turn, can have serious adverse effects on economic, social and environmental values of the community. Hence the River Scheme Sustainability Project is looking at the sustainability of the Schemes over the next 100 years.

6.3.3 Management strategy

In line with climate change projections, BOPRC has a policy for the replacement and upgrading of assets. This is further described in following sections.

To assist with determining the capacity of the existing network, and the potential impacts of climate change, modelling is undertaken both internally and externally. Capacity reviews are undertaken at regular intervals for the river schemes to identify where levels of service issues are current or likely.

Modelling, coupled with incorporating a greater level of design and/or investigation to meet future climate change predictions will continue. This will particularly be the case with stopbank capacity reviews and reconstruction works to either 'top-up' or reconstruct stopbanks. As other key assets are either replaced or established, planning and design will ensure that the assets meet predicted climate change predictions for the term of the assets expected life.

The full suite of current best practice asset options for flood management will be deployed. The use of assets to achieve a desired flood protection or drainage outcome will continue to be fundamental to the way BOPRC delivers on our responsibilities around flood management. Decision-making around what asset type to use in different situations currently largely depends on the experience and judgement of senior BOPRC staff. Factors in this decision-making include (but are not limited to); level of risk, consequence of failure, engineering considerations, probability of success, environmental outcomes, one-off and ongoing costs, views of stakeholders and affordability to rate-payers.

Rivers and Drainage draw upon external advice and nation-wide industry best-practice to consider and review different management strategies pertaining to asset deployment. The 'Making Room for the Rivers' concept is an example of a change in management approach that is being considered and explored currently. A higher reliance on 'soft-engineering' options such as contouring, use of edge protection plantings and overflow areas is another example of a management strategy that is being tested and explored. These approaches are necessary to achieve ongoing scheme affordability and environmental sustainability.

Bay of Plenty Regional Council will continue to develop, test and document management strategies for asset deployment in liaison with Scheme Advisory Groups and the broader community. This asset management plan, Floodplain Management Strategies and the River Scheme Sustainability Project will continue to be key components in this respect.

6.4 Community expectations and risk

6.4.1 Community expectations and risk overview

The increased frequency and severity of flood events have, and will continue to impact upon insurance companies' reluctance to insure in high-risk areas without specified conditions, if at all. As a result, new business and economic developments will need to be encouraged to occur in less flood prone areas.

6.4.2 Impacts of community expectations and risk on the Rivers and Drainage activity

The impacts of community expectations and risk on the Rivers and Drainage activity will primarily evolve from the wide range of stakeholders that have an interest in the development and management of the Rivers and Drainage schemes. These different expectations will directly impact upon the way in which the activity is managed, i.e. multiple parties such as landowners, community groups, Iwi, and the general public are likely to have differing expectations and risk tolerances. Potential impacts could include:

- Changes in the level of service required and therefore risk mitigation that is required or acceptable.
- The extent of future proofing required for climate change and/or other environmental effects.
- Community investment and third party developments are likely to result in an increase in demand for development in areas of high risk. This will affect development patterns and in turn, place further pressure on development zones in District Plans.
- Increased demand to maintain or increase access for recreational use from parties such as whitebaiters.
- Demand for ecotourism and desire to enjoy a natural environment.

6.4.3 Management strategy

Bay of Plenty Regional Council will continue to identify and designate areas of greatest risk in conjunction with growth indicators.

Regulatory controls such as restricting the type of activity, structure, or function that can be carried out within those designated areas will need to be applied. Examples include the setting of minimum floor levels and minimum stormwater management requirements for new subdivisions. Protection of recreational and conservation values must be a key design criteria during the planning phase of protection structures.

6.5 Management of hazards and safety

6.5.1 Hazards and safety overview

Bay of Plenty Regional Council has a statutory responsibility to provide natural hazard management. Damage to life and property through flooding is the key natural hazard managed through the management of flood protection assets in this plan. By ensuring assets are well designed, built and maintained, BOPRC is providing a significant flood hazard management service to the public.

Bay of Plenty Regional Council's role in flood response includes systems that provide readiness, response and recovery. This role also includes coordination and leadership across the region with territorial authorities, key stakeholders, and liaison with Central Government. The broader range of community services provided by BOPRC in natural hazard management are not considered relevant to this plan.

6.5.2 Impacts of hazards and safety on the Rivers and Drainage activity

The effects of flooding can be devastating to economic wellbeing and harmful to human life. Without flood protection through the management of assets covered in this plan, entire towns and communities would be unviable given the issues they would face through regular flooding. Establishing and maintaining flood protection assets creates different risks which must be managed. The identification of critical assets and the establishment of monitoring and response plans is extremely important to manage the risk of asset failure in a flooding event. Failure of critical stopbanks for instance during a flood could inundate urban properties, cause extensive damage, and endanger life.

Less extreme hazards exist through potential asset performance issues in flooding events. For instance, pasture can perish if pumping stations fail to remove flood waters within designed timeframes, causing economic harm to farmers. Roading and access can be effected. Productive land can be eroded if erosion protection assets fail.

Effective management of hazards from flooding requires systems and resources to monitor, collect, assess, coordinate, educate and react appropriately to the varying levels of flooding experienced. The provision of services by BOPRC to manage the impacts of flooding come at a financial cost to the community, but are an investment in the communities' sustainability and prosperity.

6.5.3 Management strategy

Ensuring flood protection assets are appropriately designed for the level of service required is fundamental. Construction of assets using best practice engineering and approval processes ensures assets are built to design standards. Maintenance of assets once they are established is important to ensure functionality. Condition monitoring of assets to identify defects is an important management strategy to ensure assets continue to be fit for purpose. Ongoing geotechnical investigations is building a database and extending our knowledge on the geomorphological characteristics of stopbank assets.

River level monitoring combined with onsite observation and monitoring are the primary real-time and predictive tools available to BOPRC leading into and during a storm event. This allows known and developing problem areas to be closely monitored, effects to be understood, contingency plans to be developed and when and where appropriate, warnings issued.

Surveys, assessments and regular reviewing of incident and accident reports will continue to provide the information required to prioritise and manage hazards and areas of safety concern. In all cases, BOPRC's Emergency Management Team and associated response plans provide an effective management strategy.

Identification of critical assets assists with minimising the risks associated with failures of critical flood protection assets. Regular maintenance, monitoring, condition assessment, and emergency response planning assists with the management and mitigation of risks associated with potential asset failure across all asset categories. This includes critical and non-critical assets.

The Flood Protection and Drainage Bylaw 2020 is a key management strategy to mitigate the risk of asset failure. The Bylaw regulates and controls activities that have the potential to impact on the service function or integrity of flood protection and drainage assets.

6.6 Legislation

6.6.1 Legislation overview

There are a number of key regulations or legislation that impact on the activity, its management, renewal, repairs, upgrades and impacts. The key Legislative Acts are discussed in more detail in the Strategic Environment section. However, the key two are outlined below. Development contributions are also discussed at the end of this document.

Resource Management Act 1991 and amendments

Safeguarding the life-supporting capacity of air, water, soil and ecosystems; and avoiding, remedying or mitigating any adverse effects of activities on the environment.

Local Government Act 2002 and amendments

Schedule 10 of the Act sets out the requirements for local authorities as to how they will assess and manage the implications of demand and service provision levels and standards.

6.6.2 Impacts of legislation on the Rivers and Drainage activity

Legislative requirements impact heavily on the River and Drainage activity, as Council must determine how growth and demand will impact on the community in the long-term.

Legislative change can significantly impact on Council's ability to meet the minimum levels of service that have been agreed with the community and may require improvements to be made to River and Drainage assets. This will have a direct effect on the community if increased levels of service affect the community's ability to pay for those services.

Council must be able to identify growth and demand needs over a long period of time. This requires a robust knowledge of what assets it has, the asset condition, past performance, and future growth.

6.6.3 Management strategy

Council will ensure it is compliant with the relevant legislative requirements related to the River and Drainage activity. This includes performance and governance through the implementation and continuous improvement of this AMP and adoption of the Infrastructure Strategy – a requirement of the LGA 2002. Council will involve the community through consultation and decision-making and will implement the following:

- Ensure an adequate level of understanding of the legislation is obtained by key staff.
- Carry out reviews of policy and legislation changes to establish what the impacts may be (if any).
- Ensure compliance with consent conditions (where relevant).
- Maintain in-house capability – including legal – and utilise external advice as appropriate.

6.7 Demand projects

Capital works programme and funding

Key projects identified in the plan relating to growth as a key driver for capital investment are identified in Table 16.

Table 16 Capital works – growth summary

Works related to growth	Project cost estimate	Scheme	Completion year
Te Puke Stormwater Project.	$2,500,000	Kaituna Catchment Control Scheme	2021/2022

Te Puke Stormwater Project

Increased stormwater run-off from urban development can impact on the ability of assets to deliver their designed level of service. This can result due to the increase in hard surfaces through urban development, such as roading, pavement, housing and landscaped areas with hard surfaces such as cobbling. With the loss of ground soakage areas through this kind of development, stormwater enters Rivers and Drainage schemes more rapidly. This can increase flood peak levels, rates of water level rise and fall, and flow rates.

This project will focus on determining the level of impact on scheme drains through urban development in the Te Puke township. The project will also identify, cost and deliver remedial actions.

6.8 Non-asset demand management

6.8.1 Management strategies

Demand management strategies provide alternatives to the creation of new assets in order to meet demand and look at ways of modifying customer demands. This can ensure that the utilisation of existing assets is maximised and the need for new assets is deferred or reduced. Central to this concept is the fact that the establishment of assets requires additional ongoing cost, so using non-asset methods can increase scheme affordability.

Demand management is practiced continuously to maintain the total demand at reasonable and sustainable levels. The five key components of demand management are highlighted in the table below with relevant examples from the Rivers and Drainage activity.

Table 17 Demand management components and Rivers and Drainage examples

Demand component	Rivers and drainage examples
Legislation/regulation	• Manage resources and supporting infrastructure in line with legislation e.g. regulating and monitoring of gravel extraction rates.
Education	• Educating the community around Rivers and Drainage related activities in order to manage expectations and reasons for undertaking activities.
Incentives	• Managing rate increases by reducing asset establishment.
Operation	• Continual innovation and national collaboration to stay informed with best practice and improvements to standard modes of operation, e.g. membership in New Zealand River Managers Group.
Demand sub	• Maximum use of alternative and/or 'soft' materials (i.e. tree plantings) for erosion protection and channel training activities.

Examples of non-asset demand management strategies include:

- Monitoring development and providing incentives to develop in less flood prone areas.
- Regulatory control – such as setting minimum floor levels or requiring minimum stormwater attenuation.
- Developing alternative management techniques, such as;
  - Providing wider corridors for rivers to flow before intervening with asset establishment, e.g. 'making room for the rivers' concept – which among other options, considers land purchase as a means to provide the river more space.
  - Additional floodways, or extending the extent of existing floodways.
  - Inner bend channel establishment in river corridors to divert flow away from the outsides of bends thus reducing pressure on erosion protection assets in those areas.
- River gravel management.
- Negotiating reduced levels of service. Where if levels of service are reduced, scheme operational and capital renewal costs will likely decrease.
- Retirement or purchase of farmland in low lying areas and conversion to wetlands.
- Education: Where the cost/benefit relationship is discussed in relation to risk level and community objectives.

6.8.2 Demand management programme

The key strategic project BOPRC will continue to progress in this regard is the River Scheme Sustainability Project. This project will continue to consider the sustainability of schemes in a broad manner, and will identify and progress specific programs of work that consider non-asset management demand options.

7 Levels of service (LoS)

7.1 Overview

Asset management planning enables the relationship between levels of service and the cost of the service (the price/quality relationship) to be determined. This relationship is then evaluated in consultation with the community to determine the levels of service they are prepared to pay for.

Defined LoS can then be used to:

- Inform customers of the proposed LoS.
- Develop asset management strategies to deliver LoS.
- Measure performance against defined LoS.
- Identify the costs and benefits of services offered.
- Enable customers to assess customer values as accessibility, quality, safety, and sustainability.

In this context, LoS define the quality of delivery for a particular activity or service against which service performance can be measured.

7.1.1 Linking LoS to community outcomes

The Rivers, Drainage and Flood Management Activity contributes directly to the Community Outcomes identified in the 2021-2031 LTP, these are set out below:

- Kia haumaru, kia pakari te hapori - Safe and resilient communities:

  Our planning and infrastructure supports resilience to natural hazards so that our communities' safety is maintained and improved.

- Toitu te rohe - A vibrant region:

  Our stewardship of natural resources and the connections we make provides for sustainable economic development across our region.

- He taiao ora - A healthy environment:

  We protect and enhance our air, land, freshwater, geothermal, marine, coastal resources, and biodiversity for our communities. We support others to do the same.

- Te Mana o Te Wai – Freshwater for life

  Our water and land management practices maintain and improve the life giving ability of the region's freshwater resources.

LoS development process

Council developed the levels of service for the Rivers, Drainage and Flood Management Activity through the previous Long Term Plan and AMP processes. The AMP establishes the detail that informs the strategic LoS in the LTP.

The process that Council uses to review the LoS is set out in the following three parts:

Part 1 – Defining needs

The purpose of Part 1 is to investigate and understand the components that contribute to the LoS.

Part 2 Consultation: LoS Benchmarks

Bay of Plenty Regional Council has undertaken consultation through the LTP, Rivers and Drainage Scheme Advisory Group Meetings and previous customer satisfaction surveys.

The schemes have established LoS benchmarks and these benchmarks are still relevant.

Part 3 Consultation: Service delivery options and costs

The third part is to consult with the community on service delivery options and their associated costs as required by the LGA 2002 through the LTP process. Rivers and drainage scheme advisory groups are consulted where changes to LoS may occur. Consultation with advisory groups considers cost/benefit analysis of different LoS options. Directly affected stakeholders are also consulted.

Establishing customer values

Customer values provide the cornerstone to the development of LoS from both a customer and technical point of view.

The NAMS Developing Levels of Service and Performance Measures Manual describe customer values for Council activities. It is important for the customers and Council to consider which of these are most important as the priorities flow into the final required LoS.

The customer values considered to be important for the Rivers and Drainage activity are as follows:

- Affordability
- Community engagement
- Reliability/responsiveness
- Quality
- Safety
- Sustainability (whole community benefits)

7.1.2 Activity strategic outcomes levels of service

Activity strategic outcomes were developed as part of the 2021/20231 LTP. These levels of service provide the high-level overarching goals for the activities that are covered in this AMP. The following table relates the NAMS customer values with the agreed activity strategic outcome LoS.

Table 18 Customer values (NAMS) and activity strategic outcome LoS

Customer value (NAMS)	Activity strategic outcomes (Levels of Service)
Affordability	• Flood protection is affordable and predominantly paid for by targeted ratepayers.
Quality	• Provide flood protection in river and drainage scheme areas to agreed design levels.
Safety	• Health and safety risks are minimised.
Sustainability (whole community benefits)	• Community is informed of potential widespread flooding allowing them to take actions to avoid the hazard. • Effects on the environment are minimised in operations, works and asset maintenance.
Community Engagement	• Decision-making processes are transparent and easily understood and enables participation.
Reliability/responsiveness	• Response to service requests, complaints and events is timely and appropriate solutions are provided.

7.1.3 Design Standards (see appendix B2 for detailed design standards per scheme)

Design standards give a technical measure that asset performance and quality can be measured against. The activity strategic outcomes provide the overarching LoS and design standards provide the detail about how an asset is expected to perform to deliver the LoS.

The NAMS customer value 'Quality' and the activity strategic outcome LoS – "*provide flood protection in river and drainage scheme areas to agreed design levels",* is the LoS with particular relevance to the assets covered by this AMP. Design standards give a tangible physical measure that can be discussed and agreed with communities.

7.2 Customers and stakeholders

7.2.1 Overview

This section provides details of the consultation and research that BOPRC has undertaken to establish how the regional community perceives the Rivers and Drainage activity and how it may better deliver levels of service.

Consultation methods

Council has engaged in a variety of consultation approaches to gauge public opinion and to communicate its decisions and programmes to residents across the region, including:

- Information on the Council website and various newsletters and e-newsletters, media releases, editorials, public meetings, and social media.
- Customer service requests and complaints.
- Rivers Scheme Advisory Groups.
- Consultation carried out as part of the Annual Plan and LTP processes.

Co-governance partnerships

The Council has two co-governance partnerships at present with the Rangitāiki River Forum and Te Maru o Kaituna River Authority.

The Rangitāiki River Forum is the co-governance partnership jointly pursuant to the *Ngāti Manawa Claims Settlement Act 2012* and the *Ngāti Whare Claims Settlement Act 2012.* The Forum was inaugurated in May 2012 and has a statutory role to protect and enhance the mauri (life-giving capacity) of the Rangitāiki River and its tributaries. The Forum partners representatives of Ngāti Whare, Ngāti Manawa, Ngāti Awa, Hineuru, Ngāti Tuwharetoa (Kawerau), Ngati Tuwharetoa (Taupo) and Ngai Tuhoe together with elected members of Bay of Plenty Regional, Taupo District and Whakatāne District councils'.

Te Maru o Kaituna River Authority is a co-governance partnership pursuant to the Tapuika Claims Settlement Act 2014. Te Maru o Kaituna River Authority has a statutory mandate to restore, protect and enhance the environmental, cultural and spiritual health and well-being of the Kaituna River. It partners representatives from Tapuika, Waitaha, Te Arawa, Ngati Rangiwewehi and Ngāti Whakaue with elected members of Bay of Plenty Regional, Rotorua Lakes, Western Bay of Plenty and Tauranga City councils'.

Customer service requests and complaints

The Council uses a system called 'Job Tracker' to log and track queries that are made to the riversanddrains@boprc.govt.nz email address. The Rivers and Drainage Assets Coordinator assesses queries, and assigns and monitors the completion of tasks that are subsequently created.

Calls that are made directly to Rivers and Drainage Operations staff are dealt with as appropriate and not recorded in the Job Tracker system. Typically, these calls are made direct to the relevant staff member's mobile while they are out in the field.

7.2.2 Who are our customers and stakeholders?

Treaty Partners

Iwi, hapū and whānau have a physical, spiritual and cultural connection with waterways across the region. Te Mana o Te Wai is a policy framework through the National Policy Statement for Freshwater Management 2020, which will further embed tangata whenua values in waterway management. The implementation of the Te Mana o Te Wai framework, alongside existing commitments to the treaty partnership, will ensure that tangata whenua views continue to be represented in scheme management.
Tangata whenua representation in scheme management will further be implemented through representation on Council, Council sub-committees including Komiti Māori, co-management or advisory fora, and ongoing consultation in the delivery and planning of works.

Territorial Local Authorities

Collaboration between regional and local authorities is critical to ensure coordinated management across the region. Management of natural hazards, flood mitigation, and regional and district statutory planning for instance are examples of critical community services where both regional and local council have statutory roles and where collaboration is essential.

The key services influenced by this plan that are important for territorial authorities are:

- Flood protection to communities.
- Flood warning and response systems.

Department of Conservation and Fish and Game

Established under the Conservation Act 1987, both the Department of Conservation (DOC) and Fish and Game have statutory roles that create an interest in the way Rivers and Drainage schemes are managed. This requires collaboration, consultation and information sharing to ensure that scheme management is delivered in a way that is cognisant of the values of both DOC and Fish and Game.

Ratepayers

Ratepayers are the key funders and beneficiaries of scheme management. Targeted ratepayers expect a higher degree of benefit from schemes given that they pay 80% of the rates contribution to scheme budgets. Targeted ratepayers whose properties adjoin scheme maintenance areas generally expect that the scheme will provide an effective service where their investment is appropriately returned by benefit from the scheme. This means fit for purpose assets, responsible scheme management, and overall reliability of service.

7.2.3 Current and future stakeholder consultation

The LGA 2002 has given Council the mandate to ensure it adequately engages the regional community in its decision-making processes. The Act also sets the purpose of Local Government to enable local decision-making and action with and on behalf of the community. This means the final decision is made by Council after considering the community views.

Consultation record

Table 19 outlines the consultation that BOPRC has carried out in the Rivers and Drainage activity.

Table 19 Historical consultation record

Date	Issue	Consultation approach taken
2007/2008	Waioeka-Otara Floodplain Management Strategy (Review)	• Strategic Policy Committee. • Waioeka-Otara Rivers Scheme Liaison Group meeting. • Meeting with major stakeholders namely Ōpotiki District Council.
2007/2008	Whakatāne-Tauranga Floodplain Management Strategy Consultation Record (Stage 2 document)	• Strategic Policy Committee. • Whakatāne-Tauranga Rivers Scheme Liaison Group Meeting. • Major stakeholders invited to review and make submissions (including WDC, LTNZ etc.).

Date	Issue	Consultation approach taken
2007/2008	Rangitāiki-Tarawera Floodplain Management Strategy (Stage 1 document)	• Strategic Policy Committee. • Rangitāiki-Tarawera Rivers Scheme Liaison Group meeting. • Major stakeholders invited to review and make submissions (including WDC, LTNZ etc.).
March and November 2008	General Scheme management	• Waioeka-Otara, Whakatāne-Tauranga, Rangitāiki-Tarawera and Kaituna Scheme Liaison Group meetings.
April and August 2008	Edgecumbe flood mitigation	• Community Board and public meetings.
June 2008	Floodplain Management Strategy Whakatāne-Tauranga Floodplain Management Strategy Stage 1 Report sent out for comment	• Draft Stage 2 Report sent to key stakeholders.
September 2007	Whakatāne-Tauranga Floodplain Management Strategy 2 Report sent out for comment	• Draft Stage 1 Report send to key stakeholders. • Rangitāiki-Tarawera Scheme Liaison Group Stage 1 Report sent out for comment.
2008/2009	Rangitāiki-Tarawera Floodplain Management Strategy (draft Stage 2 document)	• Strategic Policy Committee. • Rangitāiki-Tarawera Rivers Scheme Liaison Group meeting. • Major stakeholders invited to review and make submissions (including WDC, LTNZ etc.). • Meetings with iwi representatives.
2009	2008/09 Rivers and Drainage AMP	• Consultation process in conjunction with LTP consultation. • Liaison Group meetings.
2012	2012-2062 Rivers and Drainage AMP	• Consultation process in conjunction with LTP consultation. • Liaison Group meetings.
2015	2015-2065 Rivers and Drainage AMP	• Consultation process in conjunction with LTP consultation. • Liaison Group meetings.
2018	2018-2068 Rivers and Drainage AMP 2018-2048 Infrastructure Strategy	• Consultation process in conjunction with LTP consultation. • River Scheme Advisory Group meetings.

Date	Issue	Consultation approach taken
2019/2020	BOPRC Floodway and Drainage Bylaw 2008 Review	Special consultative procedure in alignment with Annual Plan 2020/2021 consultation. River Scheme Advisory Group meetings. Public workshops and open days.
2021	2021-2071 Rivers and Drainage AMP 2021-2051 Infrastructure Strategy	• Consultation process in conjunction with LTP consultation. • Advisory Group meetings.
Six monthly in March and September each year	General Scheme management	Waioeka-Otara, Whakatāne-Tauranga, Rangitāiki-Tarawera and Kaituna Scheme Advisory Group meetings.
As an when required	BOPRC Flood Protection and Drainage Bylaw 2020 approval applications	• Bylaw application/approval process.
As and when required	Subdivision resource consent application referrals from District Council's for BOPRC comment	BOPRC provides comment to TLA.

Proposed future consultation

Table 20 outlines upcoming Rivers and Drainage activity proposals that Council will consult on with the regional community.

Table 20 Future proposed consultation

Year	Issue	Proposed consultation approach
Six monthly in March and September each year (ongoing).	Scheme management	• Waioeka-Otara Rivers Scheme Advisory Group meeting. • Whakatāne-Tauranga Rivers Scheme Advisory Group meeting. • Rangitāiki-Tarawera Rivers Scheme Advisory Group meeting. • Kaituna Catchment Control Scheme Advisory Group meeting
2024	2024-2074 Rivers and Drainage AMP 2024-2054 Infrastructure Strategy	• Consultation process in conjunction with LTP consultation. • Advisory Group meetings.

Future strategies

Bay of Plenty Regional Council will consult with the community on the LTP every three years, and the Annual Plan on a yearly basis in between the LTP process. The community will be encouraged to make submissions on issues contained within these plans, including Rivers and Drainage assets.

Consultation with communities is planned to inform a review of the Environmental Code of Practice for Rivers and Drainage Management Activities (2019). Consultation with tangata whenua and stakeholders (including DOC and Fish and Game) in the renewal process for Council's non-scheme waterway management consent(expired consent 64684) highlighted external party interest in this review. This will be an opportunity to further refine our management practices and to collaborate with the community.

Other consultation with specific relevance to Rivers and Drainage assets will be undertaken via the scheme advisory groups, landowners and tangata whenua as the need arises.

7.3 Rivers and Drainage Levels of Service, performance measures and reporting

Table 21 Levels of service tables

Community Outcome	Activity Strategic Outcomes (Levels of Service)	Customer Value	Customer Performance Measure			Technical Performance Measure					Performance measure procedure	Frequency
			Measure	Current target	Proposed target	Factors of influence	Measure	Current target	Current performance	Proposed target		
Safe and resilient communities: Our planning and infrastructure supports resilience to natural hazards so that our communities' safety is maintained and improved. A vibrant region: We work with our partners and communities to achieve integrated planning and good decision-making. We support economic development, understanding the Bay of Plenty region and how best we can add value.	Provide flood protection in river and drainage scheme areas to agreed design levels Protect homes from flooding	Safety Quality Reliability	Number of failures of flood protection system below specified design standards. Number of times drainage schemes do not provide effective drainage to low lying land at the specified design standards.	Zero failures	Zero failures	• Maintenance. • Design. • Asset condition.	• Design standards for each scheme. See appendices.	0	One failure (College Road, April 2017 flood event)	0	• Reports prepared for events greater than specified design standards. • Inspections and capacity review.	• Ongoing • Annual and ten yearly • Monthly • Ongoing
	Flood protection and control works are renewed and maintained		% of maintenance and flood repairs completed in accordance with the AMP.	85% per annum	85% per annum	• Major storm events. • Asset condition. • Funding. • Staff capacity and capability.	• Programmed maintenance for each scheme.	85% per annum	85% per annum	85% per annum	• Financial and asset management systems.	
			% of capital works completed in accordance with the AMP (nb. or approved changes to the work programme).	75% per annum	75% per annum		• Programmed works for each scheme.	75% per annum	75% per annum	75% per annum	• Financial and asset management systems.	
	Flood protection is affordable and predominantly paid for by targeted ratepayers	Affordability	Ratio of targeted rate to land value.	To be determined. Ratio of targeted rate to land values for sample properties.	Consistent or decreasing trend in ratio with time.	• Targeted rates. • Land values.	• Ratio of targeted rate to land values for each scheme. • Targeted rate increases discussed with schemes.	To be determined	To be determined	Consistent or decreasing trend in ratio with time	• Annual Plan/LTP process. • Scheme rating systems. • Economic analysis reports.	• Annual and ten yearly. • As required. • For major proposals.

Community Outcome	Activity Strategic Outcomes (Levels of Service)	Customer Value	Customer Performance Measure			Technical Performance Measure					Performance measure procedure	Frequency
			Measure	Current target	Proposed target	Factors of influence	Measure	Current target	Current performance	Proposed target		
						• Competitive and fair full-cost pricing of scheme maintenance and works.	• Compliance with the Council Contracts Manual.	100% compliance (including approved exceptions)	100%	As for current	• Contract records and documentation. • Annual report to Council.	• Ongoing • Annually
	Community receives timely warning of potential flooding allowing them to take actions to avoid the hazard	Safety Quality Reliability	The community is informed of potential flooding so that action can be undertaken to mitigate onsite effects.	100%	100%		• Percentage of flood warnings at predetermined levels are given in accordance with the Flood Warning Manual.	100%	80%	90%	• Flood level data recorded (Hydrotel) cross checked against activation of warnings.	• Ongoing/annually
A healthy environment: We will maintain and enhance our air, land, freshwater, geothermal, coastal resources and biodiversity for all those who live, work and play within our region. We support others to do the same.	Effects on the environment are minimised in operations, works and asset maintenance	Sustainability	All operations, works and asset maintenance undertaken according to current legislation and policy, including Environmental Code of Practice for Rivers and Drainage Maintenance Activities.	100%	As for current	• Designed for the long-term, including climate change, structural integrity etc.	• Compliance with adopted design guidelines (e.g. BOPRC hydrological and hydraulic guidelines, updated Ministry for Environment Climate Change releases).	100% compliance	100%	100% compliance	• Peer review of internal designs. • Internal review of external designs.	• Ongoing
						• Minimise adverse effects. • Use of sustainable practices (e.g. material re-use, fish-friendly floodgates).	• Compliance with Environmental Code of Practice and Guidelines.	100% compliance	100%	100% compliance	• Spatial works records. • Work completion reports. • Compliance monitoring reports.	• Ongoing
Safe and resilient communities: Our planning and infrastructure supports resilience to natural hazards so that our communities' safety is	Decision making process are transparent, easily understood and enable participation	Community engagement	Scheme stakeholders and community are informed and consulted in decisions related to schemes.	100%	As for current	• Significant proposed changes/ enhancements or additions to the Rivers and Drainage services/ infrastructure.	• Carry out the special consultative procedure through the Annual Plan and LTP (or separately as required) including options, issues and costs.	100% compliance	100%	100% compliance	• LTP. • Annual Plan. • Council, Committee reports. • Rivers and Drainage Scheme Advisory Groups.	• 10 yearly • Annually • Monthly

Community Outcome	Activity Strategic Outcomes (Levels of Service)	Customer Value	Customer Performance Measure			Technical Performance Measure					Performance measure procedure	Frequency
			Measure	Current target	Proposed target	Factors of influence	Measure	Current target	Current performance	Proposed target		
maintained and improved. A vibrant region: We work with our partners and communities to achieve integrated planning and good decision-making. We support economic development, understanding the Bay of Plenty region and how best we can add value.						• The regional community is well informed about the BOPRC's activities and the environment.	• Appropriate information available to stakeholders and the wider community.	100% compliance	100%	100% compliance	• Advisory group meeting minutes for each scheme. • Website has relevant information available for community.	• Bi-annually • Annually/ongoing
	Response to service requests and complaints and events is timely and appropriate solutions are provided	Reliability/ responsiveness	Initial response to non-urgent complaints and service requests within five working days.	100%	100%	• Electronic system functionality. • Staff capacity.	• Report on response times for all complaints and requests.	100%	Undetermined	100%	• Documented response times. • Documented investigation.	• Annually
	Health and safety risks are minimised	Safety	No health and safety incidents attributable to lack of management of Rivers and Drainage assets.	Zero	Zero	• Maintain a health and safety system to record and investigate incidents involving staff and contractors.	• 100% of known incidents are recorded and investigated in alignment with Council policy.	100% compliance	100% compliance	As for current	• Report accidents to Human Resources. • Health and safety audits.	• Quarterly
						• Contractors compliance with Health and Safety Regulations.	• Comply with Council Contract Manual and Health and Safety Policy, and legislation.	100% compliance	100% compliance	As for current	• Contract records. • Health and safety audits.	• Ongoing • Annually

7.3.1 How have we performed?

Bay of Plenty Regional Council is constantly monitoring performance against objectives and LoS goals that are part of this AMP. This is delivered in a variety of ways as identified in section 7.3 above, but particularly by those measures referred to in the column 'performance measure procedure' in Table 21 above.

Council reporting is a key performance measure for Rivers and Drainage, as is consultation and reporting to Rivers and Drainage scheme advisory groups. Internal reporting and due diligence plays an important role, with the function of the Organisational Asset Management Steering Group being a good example of a key internal performance monitoring tool for Council.

Analysis of achievement of the improvement plan from the 2018-2068 version of this AMP has shown strong improvement in all areas identified. The instigation of the condition monitoring programme is a particularly good example of recent improvement made that ensures a higher degree of reliability in achieving LoS goals. In a similar vein, performance monitoring through capacity reviews will continue to be an extremely important activity to deliver agreed LoS and design standards.

The following section identifies those assets that have been identified as not currently meeting agreed design standards. Budgeted capital projects are approved as part of the LTP 2021-2031 budget to account for issues where we have agreed the preferred option with stakeholders.

7.4 Any issues to be aware of

The following table lists those assets that are known to not meet design standard as of August 2020. The capital plan in section 8 lists the budgets and timing of works to meet the desired design standard in these assets.

Table 22 Assets that are known to not meet design standard as of August 2020

Location	Nominal design level in 2020	Design flow plus freeboard	Plan to meet LoS
Rangitāiki River – left bank from Thornton Road bridge to mouth	1% (100 year) AEP plus 300 mm free board.	870 m^3/s at Lake Matahina.	Will meet LoS at the completion of the Rangitāiki Floodway Project.
Stopbanks surrounding Transpower substation and Fonterra – Edgecumbe (NE and SE quadrants and LB Reid's Floodway)	0.33% (300 year) AEP. Likely to change to 1% AEP with freeboard.	1000 m^3/s at Te Teko	Plans in development with stakeholders.
Omeheu right bank – unconfirmed whether this area continues to not meet design standard (as per previous AMP)	20% (5 year) AEP plus 300 mm freeboard.	Drainage co-efficient of 28 mm/day for 3-day storm.	To be confirmed in pending capacity review.
Bell Road Pumping Stations A & C	20% AEP (5 year).	Drainage co-efficient of 37.5 mm/day for 3-day storm.	Option assessment currently underway with stakeholders.

Location	Nominal design level in 2020	Design flow plus freeboard	Plan to meet LoS
Duke Street Pumping Station	10 year 24hr storm of 160 mm.	Drainage co-efficient to clear a 10 year, 24 hr rainfall of 160 mm, with a runoff of 40% from the 210 ha catchment in 30 hrs.	Proposal to change LoS being consulted on through LTP process. New proposed LoS: Drainage co-efficient to clear a 10 year, 24 hr rainfall of 160 mm, with a runoff of 40% from the 210 ha catchment in 48 hrs.
Utuhina – downstream of SH 5	1% AEP (100 year) plus 500 mm free board.	55 m^3/s at Utuhina.	Capital works planned to meet LoS.
Puarenga right bank downstream of SH 30	1% (100 year) AEP plus 500 mm free board.	17.2 m^3/s at SH 30.	Capital works planned to meet LoS.
Whakatāne left bank downstream of Pekatahi Bridge SH 2	1% (100 year) AEP plus 500mm free board.	2,820 m^3/s at Valley Road.	Recent survey has identified that there is a section just upstream of the Valley Rd recorder that is not meeting LoS design standard. Capital plan accounts for work to meet LoS.

8 Capital planning

8.1 Renewals project planning

8.1.1 Overview

Capital expenditure is the building of new assets, or upgrading of existing assets. Capital expenditure planning is largely driven by the contents of this asset management plan, especially in terms of replacing assets at the end of their expected lives and the necessity to meet levels of service. The majority of capital expenditure is focused on replacing or improving existing assets.

The Engineering Team undertakes the majority of the capital work programme, including project management, surveying of performance, modelling, design and physical construction works. The Rivers and Drainage Operations Team manages the smaller scale more routine type replacements of assets. In particular, replacements of assets such as culverts, pumps, electrical systems in pump stations, and flood gates. The Rivers and Drainage Assets Team has responsibility for ensuring capital works are planned and delivered in accordance with this asset management plan.

8.2 Capital and replacement planning

8.2.1 Replacement Works

Replacement expenditure is work that restores an existing asset to its original level of service, i.e. capacity or the required condition. These broadly fit into the following work categories as follows:

Rehabilitation

Rehabilitation involves the repair of an existing asset, or asset component. It does not provide for a planned increase in the operating capacity or design loading. It is intended to enable the assets to continue to be operated to meet the current levels of service.

Replacement (renewal)

Replacement does not provide for a planned increase to the operating capacity or design loading. Some minor increase in capacity may result from the process of replacement, but a substantial improvement is needed before asset development is considered to have occurred.

8.3 Capital works demand drivers – rehabilitation and replacement

The overall LoS objective is to maintain and renew assets considering the following:

- The age profile.
- The condition profile.
- Performance risk.
- The level of ongoing maintenance.
- The economic lives of the materials used.
- Financial, customer and health and safety risks.

Council carries out an annual prioritisation process of all necessary renewal or development works. The priority list is used to assign funds when preparing the financial plans. It is important that cost estimates are reviewed at detailed design stage and/or purchase.

Renewals are reviewed regularly, with any deferred work re-prioritised alongside other planned capital work. Deferral may occur where an asset has reached the end of its expected life but it continues to be in good working order and the consequence of sudden and unexpected asset failure is low.

The following factors are key drivers in rehabilitation and renewal capital works planning:

8.3.1 Asset age

Rivers and Drainage assets expected lives are based on industry best practice and local knowledge. Asset information, including asset age is held on the asset register. Where the asset is part of a critical asset flood defence, asset improvement or replacement is much more likely at the end of the assets expected life. This is especially the case for stopbanks. For less critical assets, factors such as condition, performance, and economics will become more significant in the capital work decision-making process.

8.3.2 Asset condition or performance

Assets are renewed where they fail to meet the required level of service. The monitoring of asset condition, reliability, capacity and performance, during planned maintenance inspections and operational activity identifies non-performing assets. Indicators of non-performing assets include:

- Structural failure.
- Repeated asset failure (breaks, faults).
- Ineffective and/or uneconomic operation.
- Unsafe conditions for the public.

Asset renewals due to performance or condition issues will be scheduled in to the capital plan. The remedial work will often occur in the following financial years. Where the work is deemed to be urgent, for example if a critical asset has issues, then funding may be approved by Council for the work to occur in the same financial year that the issue is detected. Condition and performance monitoring programmes are further expanded on in the following section.

8.3.1 Economics

One factor in asset replacement decision-making is cost. Assets will be replaced when it is no longer economic to continue repairing the asset. For example, where the annual cost of repairs exceeds the annualised cost of its renewal. In most cases, assets will be replaced before this point to ensure asset reliability is high. This approach also provides efficiencies for the Rivers and Drainage Operations Team.

8.3.2 Risk

Assets will be replaced where the risk of failure and associated environmental, public health, financial or social impact justifies proactive action (e.g. probable extent of flooding damage, health and safety risk). Where such assets are identified (e.g. critical assets), proactive inspection is undertaken to determine asset condition at a frequency appropriate to the risk and rate of asset decay.

8.4 New assets

Occasionally, new additional assets are planned and built. Decision-making in the case of building new additional assets will take into account demand and affordability, and will involve consultation with ratepayers through Advisory Groups and Council.

New works fall into separate categories as follows:

- Growth

  Any asset development (Council funded or externally funded) that is required as a result of growth.

- Levels of service

  Any asset development that is required as a result of an increase in levels of service. Most often this is driven by customer demand.

- Legislative

  Any asset developed to meet legislative requirements.

- Vested

  Any assets vested (gifted) with Council.

8.5 Life cycle

The current lifecycle expectations for the Rivers and Drainage assets and the annual depreciation rates are as follows:

Table 23 Projected asset lives

Item	Annual rate (%)	(Years)
Stopbank	0.3	Perpetuity (with settlement)
Rockwork	0	Perpetuity
Concrete wall	2.0	50
Culvert	2.0	50
Edge planting	0	Perpetuity
Buffer zone	0	Perpetuity
Trenched willows	0	Perpetuity
Fencing	0	Perpetuity
Rubble	0	Perpetuity
Waterway	0	Perpetuity
Pump station	1.4286	70
Pumps	2.8577	35
Pump electronics	6.6666	15
Pump electrical	3.3333	30
Pump ancillary	02.5	40
Sluice gate	1.4286	70
Flood-gate (concrete structure)	1.4286	70
Stoplog	2.5	40

Item	Annual rate (%)	(Years)
Drop structure	2.5	40
Timber wall	2.5	40
Groyne (Mole)	1.4286	70
Concrete structure	1.4286	70
Gabion	5.0	20
Radial gate	2.5	40
Flap gate	4	25

8.6 Capacity reviews and stopbank capital works

A large proportion of Council's investment in the capital programme is associated with stopbank capacity reviews. Stopbanks are a fundamental part of any flood defence network and are prone to changes in height following construction. This can occur as a result of settling, where the material used in the construction of the stopbank compacts over time through natural processes. This more commonly occurs as a result of the surrounding ground moving through tectonic movement or land settling. This latter cause is particularly common in areas with peaty soils where through land drainage the ground is slowly drying out.

Capacity reviews measure the capacity a flood channel has to contain flood water. The process involves the building of electronic computer models of the flood way (space between the stopbank crests on either side of the waterway) from data gathered in surveys. Computer modelling of different flood level scenarios is then conducted to ascertain the current capacity of the stopbank network. Where performance issues in relation to levels of service are identified, design of remedial work is undertaken. Finally, the physical capital work to rectify the stopbank performance issue is carried out.

The entire process described above will normally take five years. Capacity reviews occur every 10 years in all major river schemes and 15 years in the upper Kaituna streams (that flow into Lake Rotorua). This ensures that the stopbank network is constantly being monitored to measure performance against levels of service with appropriate allowance for climate change predictions. Settlement of 50% of the freeboard is allowed before stopbank reconstruction is undertaken.

8.7 Climate change allowance design provision

For all capital works, a provision is made in the design of the asset for the predicted impacts of climate change. For stopbank capacity review and rehabilitation design work, the climate change provision allowed provides for any increase in flood loading forecasted until the next round of capacity review is due. As described above, for all major river schemes this occurs every 10 years, and for the upper Kaituna streams, every 15 years. For all other assets, design accounts for expected climate change variances for the term of the assets expected life.

The climate change forecast used in asset design is the Intergovernmental Panel on Climate Change's RCP (Representation Concentration Pathway) level 8.5, for non-tidal areas, and RCP 8.5+ for tidal areas.

8.8 Capital programmes

The following capital works programmes for each Scheme are categorised by type, being: Improvement, Replacement and New. These categories correspond to the wider AM categories of LOS and Demand (upgrades), Renewals, and LOS and Demand (new) respectively.

8.8.1 Kaituna Catchment Control Scheme

Table 24 below summarises the projected capital works to be undertaken over the next 10 years.

Table 24 Project renewals and capital expenditure for Kaituna Catchment Control Scheme

Kaituna Catchment Control Scheme			
Year	**Capital works**	**Type**	**How much**
Year 1 (2021-2022)	Utuhina Stopbanks	Improvement	$630,000
	Upper Kaituna Modelling	Improvement	$50,000
	Ngongotaha Construction	Improvement	$1,564,000
	Pump Station Electrical	Replacement	$95,000
	Te Puke Stormwater	Improvement	$2,500,000
	New Ford Road Pump Station	Replacement	$1,800,000
	Kaituna Mole	Replacement	$564,000
			TOTAL: $7,203,000
Year 2 (2022-2023)	Upper Kaituna Modelling	Improvement	$50,000
	Pump replacements	Replacement	$170,000
			TOTAL: $220,000
Year 3 (2023-2024)	Upper Kaituna Design	Improvement	$50,000
	Lower Kaituna Hydrology	Improvement	$50,000
			TOTAL: $100,000
Year 4 (2024-2025)	Lower Kaituna Modelling	Improvement	$150,000
	Upper Kaituna Construction	Improvement	$400,000
			TOTAL: $550,000
Year 5 (2025-2026)	Consent renewal (divert floodwater Waingaehe Stream)	Replacement	$80,000
	Lower Kaituna Modelling	Improvement	$150,000
	Upper Kaituna Construction	Improvement	$350,000
			TOTAL: $580,000

Year	Capital works	Type	How much
Year 6 (2026-2027)	Lower Kaituna Design	Improvement	$100,000
Year 7 (2027-2028)	Lower Kaituna Construction Other renewals (floodgates, culverts etc)	Improvement Replacement	$1,380,000 $265,000 TOTAL: $1,645,000
Year 8 (2028-2029)	Other renewals (floodgates, culverts etc) Bell Rd Drainage Mitigation	Replacement Improvement	$133,000 $1,000,000 TOTAL: $1,133,000
Year 9 (2029-2030)	Renewal of Kaituna Mole Consent	Replacement	$340,000
Year 10 (2030-2031)	Other renewals (floodgates, culverts etc)	Replacement	$52,000
		TOTAL 2021-2031	$11,923,000
Years 11-20 (2031-2041)	Capacity reviews/modelling and stopbank upgrades. Various replacements/renewals.	New, Replacements, Improvements	$4,487,800
Years 21-30 (2041-2051)	Capacity reviews/modelling and stopbank upgrades. Various replacements/renewals.	New, Replacements, Improvements	$4,896,287
Years 31-40 (2051-2061)	Capacity reviews/modelling and stopbank upgrades. Various replacements/renewals.	New, Replacements, Improvements	$8,505,561
Years 41-50 (2061-2071)	Capacity reviews/modelling and stopbank upgrades. Various replacements/renewals.	New, Replacements, Improvements	$3,006,420

8.8.2 Rangitāiki Drainage Scheme

Table 25 below summarises the projected capital works to be undertaken over the next 10 years. More detail on funding sources for these projects is outlined in Section 11 Financial Planning.

Table 25 Projected capital expenditure for the Rangitāiki Drainage Scheme

Rangitāiki Drainage Scheme			
Year	**Capital works**	**Type**	**How much**
Year 1 (2021/2022)	Culvert renewals Eastern Drain redesign	Replacement Improvement	$260,000 $150,000 Total: $410,000
Year 2 (2022/2023)	Culvert renewals Eastern Drain reconstruction place holder	Replacement Improvement	$500,000 $600,000 Total: $1,100,000
Year 3 (2023/2024)	Culvert renewals	Replacement	$500,000
Year 4 (2024/2025)	Culvert renewals	Replacement	$200,000
Year 5 (2025/2026)	Culvert renewals	Replacement	$200,000
Year 6 (2026/2027)	Culvert renewals	Replacement	$200,000
Year 7 (2027/2028)	Culvert renewals	Replacement	$200,000
Year 8 (2028/2029)	Culvert renewals	Replacement	$200,000
Year 9 (2029/2030)	Culvert renewals Drop Structures	Replacement Replacement	$200,000 $42,000 Total: $242,000
Year 10 (2030/2031)	Culvert renewals	Replacement	$140,000
		LTP 2021-2031 TOTAL	$3,392,000
Years 11-20 (2031-2041)	Culvert renewals		$133,300
Years 21-30 (2041-2051)	Culvert renewals		$134,000
Years 31-40 (2051-2061)	Culvert, drop structure and headwall renewals		$183,500
Years 41-50 (2061-2071)	Culvert renewals		$468,000

8.8.3 Rangitāiki-Tarawera Rivers Scheme

Table 26 below summarises the projected capital works to be undertaken over the next 10 years. More detail on funding sources for these projects is outlined in Section 11 Financial Planning.

Table 26 Projected capital expenditure for Rangitāiki-Tarawera Rivers Scheme

Rangitāiki-Tarawera Catchment Control Scheme			
Year	**Capital works**	**Type**	**How much**
Year 1 (2021/2022)	Rangitaiki Floodway Spillway Rangitaiki River Floodwalls (placeholder) Tarawera Stopbank Design 2017 Flood Repair Project	New Improvement Improvement Improvement	$2,800,000 $1,000,000 $50,000 $400,000 TOTAL: $4,250,000
Year 2 (2022/2023)	Tarawera Stopbank Construction (place holder) Rangitaiki River Floodwalls Construction (place holder)	Improvement Improvement	$600,000 $1,000,000 TOTAL: $1,600,000
Year 3 (2023/2024)	Tarawera Stopbank Reconstruction Pump Station Electronics	Improvement Replacement	$1,200,000 $30,000 TOTAL: $1,230,000
Year 4 (2024/2025)	No work planned	NA	NA
Year 5 (2025/2026)	No work planned	NA	NA
Year 6 (2026/2027)	No work planned	NA	NA
Year 7 (2027/2028)	Rangitaiki Stopbank Survey and Hydrology	Improvement	$50,000
Year 8 (2028/2029)	Rangitaiki Stopbank Modelling	Improvement	$150,000
Year 9 (2029/2030)	Rangitaiki Stopbank Modelling	Improvement	$150,000
Year 10 (2030/2031)	No work planned	NA	NA
		LTP 2021-2031 TOTAL	$7,430,000
Years 11-20 (2031-2041)	Capacity reviews/modelling and stopbank upgrades. Various replacements/renewals.	New, Replacements, Improvements	$3,831,508
Years 21-30 (2041-2051)	Capacity reviews/modelling and stopbank upgrades. Various replacements/renewals.	New, Replacements, Improvements	$3,578,211
Years 31-40 (2051-2061)	Capacity reviews/modelling and stopbank upgrades. Various replacements/renewals.	New, Replacements, Improvements	$3,049,554
Years 41-50 (2061-2071)	Capacity reviews/modelling and stopbank upgrades. Various replacements/renewals.	New, Replacements, Improvements	$2,563,800

8.8.4 Waioeka-Otara Rivers Scheme

Table 27 below summarises the projected capital works to be undertaken over the next 10-years. More detail on funding sources for these projects is outlined in Section 11 Financial Planning.

Table 27 Projected capital expenditure for the Waioeka-Otara Rivers Scheme

Waioeka-Otara Rivers Scheme			
Year	**Capital works**	**Type**	**How much**
Year 1 (2021/2022)	Stopbank engineering design Floodwall	Improvement Improvement	$100,000 $500,000 Total: $600,000
Year 2 (2022/2023)	Stopbank reconstruction Duke Street pump station electronics	Improvement Replacement	$1,615,000 $15,000 TOTAL: $1,630,000
Year 3 (2023/2024)	No work planned	NA	NA
Year 4 (2024/2025)	No work planned	NA	NA
Year 5 (2025/2026)	No work planned	NA	NA
Year 6 (2026/2027)	No work planned	NA	NA
Year 7 (2027/2028)	No work planned	NA	NA
Year 8 (2028/2029)	Capacity review - hydrology	Improvement	$100,000
Year 9 (2029/2030)	Capacity review - modelling	Improvement	$150,000
Year 10 (2030/2031)	Gravel extraction consent renewal Capacity review - modelling	Replacement Improvement	$900,000 $150,000 TOTAL: $1,050,000
		LTP 2021-2031 TOTAL	$3,530,000
Years 11-20 (2031-2041)	Capacity reviews/modelling and stopbank upgrades. Various replacements/renewals.	New, Replacements, Improvements	$2,647,000
Years 21-30 (2041-2051)	Capacity reviews/modelling and stopbank upgrades. Various replacements/renewals.	New, Replacements, Improvements	$1,790,000
Years 31-40 (2051-2061)	Capacity reviews/modelling and stopbank upgrades. Various replacements/renewals.	New, Replacements, Improvements	$2,591,000
Years 41-50 (2061-2071)	Capacity reviews/modelling and stopbank upgrades. Various replacements/renewals.	New, Replacements, Improvements	$1,842,000

8.8.5 Whakatāne-Tauranga Rivers Scheme

Table 28 summaries the projected capital works to be undertaken over the next 10 years. More detail on funding sources for these projects is outlined in Section 11 Financial Planning.

Table 28 Projected capital expenditure for the Whakatāne-Tauranga River Scheme

Whakatane-Tauranga Rivers Scheme			
Year	**Capital works**	**Type**	**How much**
Year 1 (2021-2022)	Whakatane Urban Stopbanks (place holder)	Improvement	$1,000,000
	Culverts	Replacement	$50,000
	2017 Flood Repair Project	Improvement	$700,000
			TOTAL: $1,750,000
Year 2 (2022-2023)	Whakatane Urban Stopbanks (place holder)	Improvement	$1,000,000
	Whakatane urban stopbank – Marist-Trident (design)	Improvement	$150,000
	Modelling – Canals	Improvement	$50,000
	Culverts	Replacement	$50,000
			TOTAL: $1,250,000
Year 3 (2023-2024)	Whakatane Urban Stopbanks (place holder)	Improvement	$1,000,000
	Design - Canals	Improvement	$50,000
	Culverts	Replacement	$50,000
	Whakatane urban stopbank – Marist-Trident (construction)	Improvement	$2,000,000
			TOTAL: $3,100,000
Year 4 (2024-2025)	Canal Stopbanks	Improvement	$1,300,000
	Te Rahu PS Pump Electronics	Replacement	$35,000
	Climate Change	Improvement	$730,000
			TOTAL: $2,065,000
Year 5 (2025-2026)	Whakatane River Stopbanks – hydrology	Improvement	$50,000
	Culverts	Replacement	$50,000
	Kope Orini PS Pump Electronics	Replacement	$80,000
			TOTAL: 180,000

Year 6 (2026-2027)	Whakatane River Stopbanks – modelling Culverts	Improvement Replacement	$100,000 $50,000 TOTAL: $150,000
Year 7 (2027-2028)	Whakatane River Stopbanks – modelling Culverts	Improvement Replacement	$100,000 $50,000 TOTAL: $150,000
Year 8 (2028-2029)	Whakatane River Stopbanks – design Culverts Climate change	Improvement Replacement Improvement	$100,000 $50,000 $780,000 TOTAL: $930,000
Year 9 (2029-2030)	Whakatane River Stopbanks – construction Culverts	Improvement Replacement	$1,380,000 $50,000 TOTAL: $1,430,000
Year 10 (2030-2031)	No work planned	NA	NA
		LTP2021-2031 TOTAL	$12,305,000
Years 11-20 (2031-2041)	Capacity reviews/ modelling and stopbank upgrades. Various replacements/renewals.	New, Replacements, Improvements	$7,497,000
Years 21-30 (2041-2051)	Capacity reviews/ modelling and stopbank upgrades. Various replacements/renewals.	New, Replacements, Improvements	$3,187,000
Years 31-40 (2051-2061)	Capacity reviews/ modelling and stopbank upgrades. Various replacements/renewals.	New, Replacements, Improvements	$3,274,000
Years 41-50 (2061-2071)	Capacity reviews/ modelling and stopbank upgrades. Various replacements/renewals.	New, Replacements, Improvements	$3,670,000

9 Operational and maintenance planning and delivery

9.1 Overview

Planning is driven by this asset management plan in that it identifies the types of work and the frequency of work required. Types of work and work frequency are reviewed on an ongoing basis, and annually as part of the official asset management plan review. The Rivers and Drainage Assets Team is responsible for the review of this asset management plan, and coordinates ongoing review with other teams.

Scheme 10-year budgets are approved through the Long-Term Plan (LTP) process. Annual budgets are reviewed and confirmed through the annual plan process or LTP process every third year. The Rivers and Drainage Assets Team is responsible for developing draft scheme budgets in line with this plan. Budgets are developed in consultation with River Scheme Advisory Groups, who represent the views of targeted ratepayers in this process. Proposed scheme budgets are publicly disclosed through the annual plan or LTP consultation processes and are open to public submission. Approval of scheme budgets rests with Council.

The Rivers and Drainage Operations Team is largely responsible for the delivery of maintenance and operations works across the assets covered in this plan. The Rivers and Drainage Operations Team programmes the delivery and timing of annual maintenance work and manages the operational budgets for schemes. The Rivers and Drainage Operations Team has a number of staff across the Bay of Plenty, strategically located to enable efficient access to, and management of, maintenance work on scheme assets.

9.2 Operations and maintenance strategy

The operations and maintenance strategy in this asset management plan essentially focuses on maintaining the level of service for the term of the expected life span of an asset in a cost-effective manner. To achieve this, the right balance between routine planned and reactive maintenance is required so that assets are managed optimally in terms of functionality and cost. The relationship between planned and reactive work and total maintenance costs is depicted in the following diagram in Figure 24. This asset management plan aims to deliver the optimal balance between planned and reactive maintenance work while maintaining levels of service.

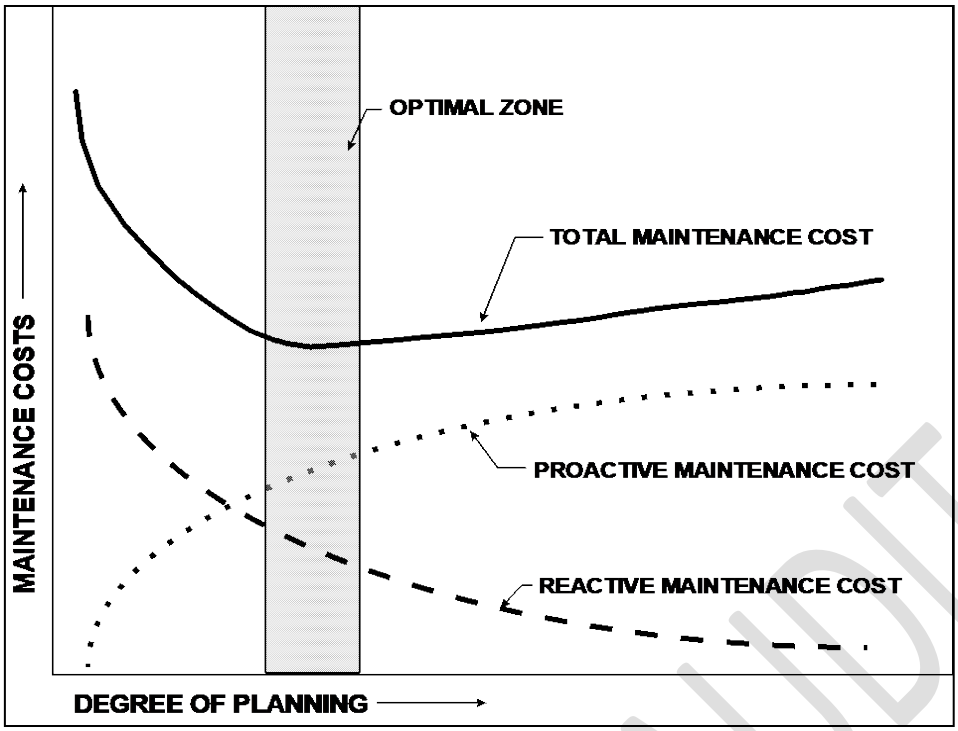


Figure 24 Balancing proactive and reactive maintenance

The short-term maintenance strategy is to maintain the current levels of service. Maintenance regimes may be adjusted moving forward to allow for different factors, including:

- Risk of failure – the risk associated with failure of critical assets.
- Levels of service – changes in the current or agreed level of service.
- Economic efficiency – asset condition assessment.
- Extend the life of the asset component – asset improvements and development programme.
- Legislative compliance – e.g. requirements of LGA 2002.
- Climate change.
- Affordability.
- Sustainability.
- Environmental, social, cultural and economic wellbeing.

The current maintenance and operations regime to achieve the aim – maintaining the level of service for the term of the expected life span of an asset in the most cost-effective manner – is detailed in the following table.

Table 29 Operational maintenance work types and frequencies

Operational and Maintenance Plan – Rivers and Drainage		Scheme				
Activity	**Description**	**Upper Kaituna**	**Lower Kaituna**	**Rangitāiki-Tarawera**	**Waioeka-Otara**	**Whakatāne-Tauranga**
Stream/Fairway channel						
General overview	Oversight and general inspection of stream.	Yearly				
Routine inspection and maintenance	Inspection, miscellaneous weed clearing, minor erosion repairs.	Ongoing				
Berm maintenance	Miscellaneous weed spray/mowing.	Yearly				
River beach shaping	Managing gravel build-ups on beaches. Move gravel build-up on inside bends of rivers.			Upper Rangitāiki - annual	annual	annual
Rock or rubble rip-rap	Repositioning and replacement of rock/rubble as required.	15 years				
Drop structures	Repositioning and replacement of rock/rubble/gabions.	As required				
Channel excavation	Remove silt build up.	As required				
Debris clearance	Remove debris and log-jams.	As required				
Stopbanks and floodwalls						
Minor flood-gates	Regular operational check.	Quarterly and pre-flood				
Annual inspection	Oversight and inspection.	Yearly				
Miscellaneous maintenance	Miscellaneous minor repairs to stopbanks/ culverts/fences/trees removal of gorse/ weeds.	Ongoing				
Ohau Channel and Weir						
General inspection	Annual inspection.	Yearly				
Miscellaneous maintenance	Handrails, fishpass maintenance, desilting the fish blocks, willow clearing (channel).	6 months				
Okere Control Gates						
Inspection	Regular operational and site safety checks.	6 months				
Miscellaneous maintenance	Electrical, signage, handrails, lights repairs.	6 months				

Operational and Maintenance Plan – Rivers and Drainage		Scheme				
Activity	**Description**	**Upper Kaituna**	**Lower Kaituna**	**Rangitāiki-Tarawera**	**Waioeka-Otara**	**Whakatāne-Tauranga**
Gate ropes	Replace.	5 years				
Lifting mechanism	Replace motors, gearboxes, and other elements.	20 years				
Gate refurbishment	Remove, refurbish, repaint and reinstall.	20 years				
Major flood-gates and culverts						
Regular inspection	Regular operational check.		Quarterly			
Annual inspection	Condition/settlement check.		Yearly			
Desilting	Sediment removal around floodgates and in culvert.		5 years			
Miscellaneous maintenance	Flood-gate chains/bolts etc.		2 years			
Ancillary replacement	Flap-gates/winches/ retaining walls/timber.		20 years			
Pump stations						
Normal inspection	Regular operational check, clean screens and floodgates. Replace minor electrical components as required.		Ongoing			
Regular inspection	Full pump station check (refer pump station check sheet).		6 monthly			
Maintenance	Check oil for contamination, test windings, check/replace sacrificial anodes. Replace electrical and pump components as required. Replace bearings and mechanical seals. Sandblast and repaint with anticorrosive paint.		2-½ years 5 years	5 years	2-½ years 5 years	5 years

Operational and Maintenance Plan – Rivers and Drainage		Scheme				
Activity	**Description**	**Upper Kaituna**	**Lower Kaituna**	**Rangitāiki-Tarawera**	**Waioeka-Otara**	**Whakatāne-Tauranga**
Pump recondition/ major maintenance	Fully dismantle, re-varnish windings; replace wear ring, impellor and castings as required. Replace/ refurbish weed screens, upgrade switchboard as needed. Replace bell mouth, shaft, deflector casing, build-up and balance impellors.		20 years	20 years	20 years	20 years 10 years
Normal inspection	Oversight and general inspection of reach.		6 monthly			
Planting	Ongoing protective planting as required.		Yearly			
Layering	Trimming and lopping of willows.		6 years			
Tree clearing and topping	Removal of willows and other vegetation and willow topping		7-10 years			
Rock	Provision for new and maintenance of existing rip rap as required.		15 years			
Rubble	As for rock.		10 years			
Fence maintenance	Inspection and repair.		Ongoing			

Operational and Maintenance Plan – Rivers and Drainage		Scheme				
Activity	**Description**	**Upper Kaituna**	**Lower Kaituna**	**Rangitāiki-Tarawera**	**Waioeka-Otara**	**Whakatāne-Tauranga**
Buffer zone						
Normal inspection	Oversight and general inspection, particularly fencing and vegetation.	Yearly				
Tree clearing and topping	Clearing of overgrown willows, plantings and vegetation, topping willows.	7-10 years				
Fence maintenance	Inspection and repair.	Ongoing				
Minor outlet structures						
Normal inspection	Regular operational check.					Twice a year
Miscellaneous maintenance	Repair flap-gates/ replace bolts.					Yearly
Desilt outlet	Arawa Road pump station (W47) and James Street (W29) only.					5 years
Stoplogs						
Refurbish	Replace seals and re-galvanise stoplogs.	7 years				10 years

Operational and Maintenance Plan – Drainage Schemes		Scheme	
Activity	**Description**	**Lower Kaituna**	**Rangitāiki Drainage**
Drains			
Maintenance	Drain clearance, weed spraying, cutting.	Ongoing	
Survey	Cross-section and long section survey.	15 years	
Canals			
General overview	Oversight and general inspection.	Yearly	
Regular inspection	Regular inspection of canal condition.	Ongoing	
Cross-section survey	Resurvey for main canals. Resurvey of other canals.	8 years As required	
Bank maintenance	Miscellaneous bank repairs, weed spray.	Ongoing	
Maintaining waterway	Weed clearance, drain clearing, desilting.	Ongoing	
Stopbank			
General overview	Oversight and inspection.		Yearly
Survey	Stopbank long section and cross-sections.		As required
Culverts and flap-gates			
Regular inspection	Regular operational check.	Ongoing	
Culvert cleaning	Desilting, removing blockages.	Ongoing	
Miscellaneous maintenance	Replacement of flood-gate chains/bolts etc.	2 years	

Operational and Maintenance Plan – Drainage Schemes		Scheme	
Activity	**Description**	**Lower Kaituna**	**Rangitāiki Drainage**
Ancillary replacement	Replacement of flap-gates, winches, retaining walls, timber.	20 years	
Erosion control structures			
Regular inspection	Regular inspection of condition.		Ongoing
Minor repairs	Minor repairs to gabion and mattress structures.		5 years
Replacement	By replenishment		Ongoing

9.2.1 Inspection, condition and performance assessment programme

Inspections are ongoing as part of Rivers and Drainage Operations Team maintenance schedules. Dedicated condition assessments occur less frequently and focus solely on the physical state of assets. The 'Flood Protection Asset Inspection and Condition Rating Guideline (2019)' is used for condition assessments. Performance assessments look at the broader picture, including river capacity, condition data, consequence of failure and soil types. Performance assessments follow the 'Flood Protection Assets – Performance Assessment Code of Practice'.

The following assessment programme is followed.

Table 30 Inspection, condition and performance assessment programme

Rivers and Drainage Asset Inspection, Condition and Performance Assessment Programme			
Asset type	**Annual**	**1-5 year**	**10-year**
Stopbank and erosion protection including buffer zone, edge planting, fencing, rock work, rubble and trenched willows.	Operations inspection for maintenance issues including rabbit holes, erosion etc. Post event visual walkover/boat inspection/drone footage.	Varies: 1-3 yearly critical assets 3-yearly non critical stopbanks 5-yearly erosion protection where no stopbanks exist.	Survey long section and representative cross sections. Performance and risk assessment reporting. Geotechnical investigation.
Pump stations including pumps, pump station, electrical and electronics.	6 monthly check. Annual Inspection.	5-year mechanical and electrical/electronic condition assessment.	10-year civil inspection of pump station and structures.
Structures including culvert, floodgate, concrete and timber structures and walls, gabion baskets, groyne (mole), drop structure, sluice gate.	Operations inspection of erosion/damage. Post event visual walkover/boat inspection/drone footage.	1-5 yearly condition assessment (and after significant floods) including winches of major culverts and floodgates. Varies: 2-yearly critical structures 3-yearly non critical structures 5-yearly structures where no stopbanks exist.	10-year civil inspection of critical structures.

Rivers and Drainage Asset Inspection, Condition and Performance Assessment Programme			
Asset type	**Annual**	**1-5 year**	**10-year**
Structures - Okere control gates.	Visual review of site: biannual electrical, signage, handrails, lights and wire ropes.	2-yearly condition assessment. 5-yearly electrical/electronic and mechanical audit.	10-year civil inspection.
Structures - Stoplogs (Whakatāne).	Visual inspection.	2-yearly condition assessment.	10 yearly civil inspection at time of stopbank condition assessment.
Waterways	Operations inspection for maintenance issues.		

The condition assessment model below in Table 31 forms the basis of **condition assessment** of Rivers and Drainage assets.

Table 31 Condition rating model

Rating	Condition	Description
0	Non-existent	Asset abandoned or no longer exists
1	Very good Only routine/cyclic maintenance required	Sound physical condition, well maintained. Only normal maintenance required. Asset likely to perform adequately with routine maintenance for 10 years or more (unless natural hazard damage). No work required.
2	Good Minor maintenance required	Acceptable physical condition, showing minor wear or deterioration, well maintained. Minor defects only. Deterioration has no significant impact on asset performance. Minimal short-term failure risk but potential for deterioration in the long-term (5 years plus). Only minor work required (if any).
3	Moderate Moderate maintenance or repair work required	Acceptable physical condition, but showing some wear or deterioration, well maintained. Some maintenance or repair required to return to the agreed level of service. Some parts/minor components of the asset need replacement or repair, but asset still functions safely at adequate level of service. Moderate work required.
4	Poor Significant maintenance or renewal/upgrade required within 1 year	Poor physical condition, significant wear or deterioration. Parts of the asset need replacement or repair. Requires renewal. No immediate risk to health or safety, but works required within 1 year to ensure asset remains safe. Significant renewal/upgrade required. Substantial work required in short-term.
5	Very poor Asset requires urgent upgrade or replacement	Failed or failure imminent Immediate need to replace most of, or the entire asset. Over 50% of asset requires replacement. Health and safety hazards exist, or asset cannot be serviced without risk to personnel Major work or replacement required urgently.

Performance assessment is a measure of confidence that an asset, or group of assets, will provide the required level of service, while assessing intrinsic strength, capacity, asset condition and consequence of failure. Council has recently completed performance assessments of critical assets.

Asset capacity assessment timing is one factor considered in asset performance assessments. Each river or stream flood protection network capacity assessment is generally completed on a 10-year cyclical program (except upper Kaituna streams which are every 15 years), with the programme taking a period of five years from initial survey through to completion of any capital works.

Table 32 Stopbank capacity review inspection and works programme.

Stopbank capacity review inspections and works programme			
Year	**Action**	**Action includes**	**Resulting action**
Y1	Long section and cross section survey (at representative cross sections).	Generate plans of long section and cross section.	Check against benchmarks and design standards. Generate report.
Y2	Level 1 Assessment. Concurrent with modelling and capacity review	Data gathering and risk assessment (review design standard, capacity, intrinsic strength, condition). Validation and assessment of fish passage.	AMP and GIS update. Risk assessment report (based on Code of Practice).
Y3	Level 2 Assessment.	Geotechnical investigation of high risk sites identified in Level 1 assessment as requiring further inspection.	Review of risk assessment (with more detail). Design of remedial and capital works.
Y4-Y5	Remedial and Capital Works.	Physical works.	Upgraded assets. As-builts. Asset Register and GIS updated.

9.3 Maintenance planning

9.3.1 Reliability (performance)

In the Rivers and Drainage activity, a small asset failure (namely in the stopbanks or erosion protection asset groups) can lead to inundation of a large area of the floodplain resulting in disproportionate damage to the initial failure.

The erosion protection assets can also be subject to substantial damage themselves from flows less than capacity design level.

Reactive maintenance is expended on repairing flood damage resulting from moderate sized floods.

Preventative maintenance, regular inspection, monitoring and hydraulic modelling all contribute to ensuring service reliability standards are met.

9.3.2 Asset maintenance plans

Maintenance plans have been developed for each of the schemes operated by BOPRC. These plans outline the maintenance activities that are required to ensure the agreed levels of service for each scheme are met and to meet the scheme requirements for typical river flows.

Due to the nature of these assets and their main purpose, during periods of high flow, or flooding, additional flood damage repair works will be required to restore the scheme to acceptable operating levels of service.

9.4 O and M projects

Tech One implementation

Rivers and Drainage is currently in the process of implementing the Tech One asset management module. The module has a range of functionality that enables efficient asset management, including;

- Linking financial system to asset register.
- Asset data links with Arc GIS.
- Maintenance and operations plans and tasking can be generated automatically.
- Reporting of work completed or outstanding can be automated.
- Asset valuations can be completed in Tech One with automatic links to budgeting programmes.
- Condition data can be logged against an assets profile and used to inform budget planning.
- All work completed in the life-cycle of an asset can be logged against that asset, informing performance monitoring and asset replacement decision-making.

An improvement project is identified in the improvement plan of this AMP that will focus on integrating the use of Tech 1 and optimising the use of its functionality. Investing in Tech 1 integration is an investment in the management of the Rivers and Drainage assets. Where greater management oversight, cost-efficiency and reporting functionality will be made possible.

Training and support for staff that interface with the system is also identified as an improvement project in the improvement plan of this AMP and will be an immediate focus. Both of these improvement projects will be led by Rivers and Drainage Assets in collaboration with Rivers and Drainage Operations and Engineering.

10 Risk management

10.1 Overview

This section covers the risk management implemented by BOPRC and how these apply to the current and future activities. In addition, an overview of risk management is provided along with suggested improvements to current practices.

The objective of risk management is to identify the specific business risks, together with any possible risks to the health and safety of employees, other contractors and the general public, associated with the ownership and management of the assets. This can be used to determine the direct and indirect costs associated with these risks, and form a priority-based action plan to address them.

The risk quantification process described in this section is not the process used to quantify risk in asset condition and performance assessments. However, risk data from condition and performance assessments has been taken into account in risk analysis in this section.

Putting the risks into perspective

Council policy and operation cannot influence all the factors contributing to these events. Bay of Plenty Regional Council has a responsibility to assess the risks in order to best manage the assets with the resources available to avoid and mitigate the effects of any event.

In addition, BOPRC has highlighted a number of key risk areas across the activity including:

- *General:* Unexpected asset depreciation (cost escalations to maintain level of service).
- *Rivers and drainage:* Increased frequency and/or size of adverse weather effects.
- *Rivers and drainage:* Rise in sea level and storm surges.
- *Rivers and drainage:* Stopbank/flood wall condition deterioration, weakness and failure.
- *Rivers and drainage:* Pump station failure.
- *Rivers and drainage:* Communication and power failure with gauging stations, telecommunication systems.

These are discussed in further detail in the Risk Registers and the overall Action Plan contained in this section of the AMP.

Level of risk

The purpose of this risk plan is to identify the risks associated with the activity and assets. This requires approaching the risks from many perspectives including financial, operational, organisational, and public health and safety.

These risks are pertinent to both a higher, corporate level, and to a more detailed asset - specific level, but do not substitute for more specific risk analysis at those levels (see Figure 25).

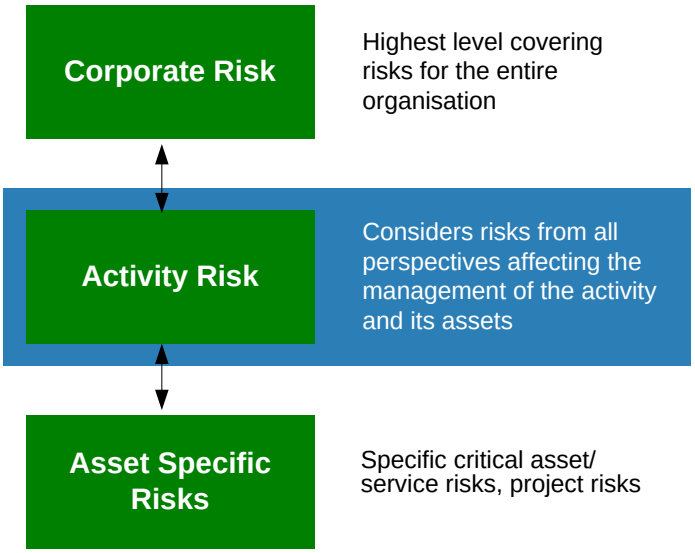


Figure 25 Organisation levels of risk

The next step beyond this risk analysis is to develop more detailed risk plans where the criticality of specific assets is assessed and an action plan developed as appropriate.

10.2 Current situation

Corporate policy

Bay of Plenty Regional Council has developed a Risk Management Framework and Plan. The risk criteria and matrices established as the basis for risk evaluation were developed in accordance with the NZ/AS/ISO31000:2009 risk management standard. A corporate risk register is updated every three months.

10.3 Risk management process

The following flowchart and text details the key elements of the risk management process undertaken.

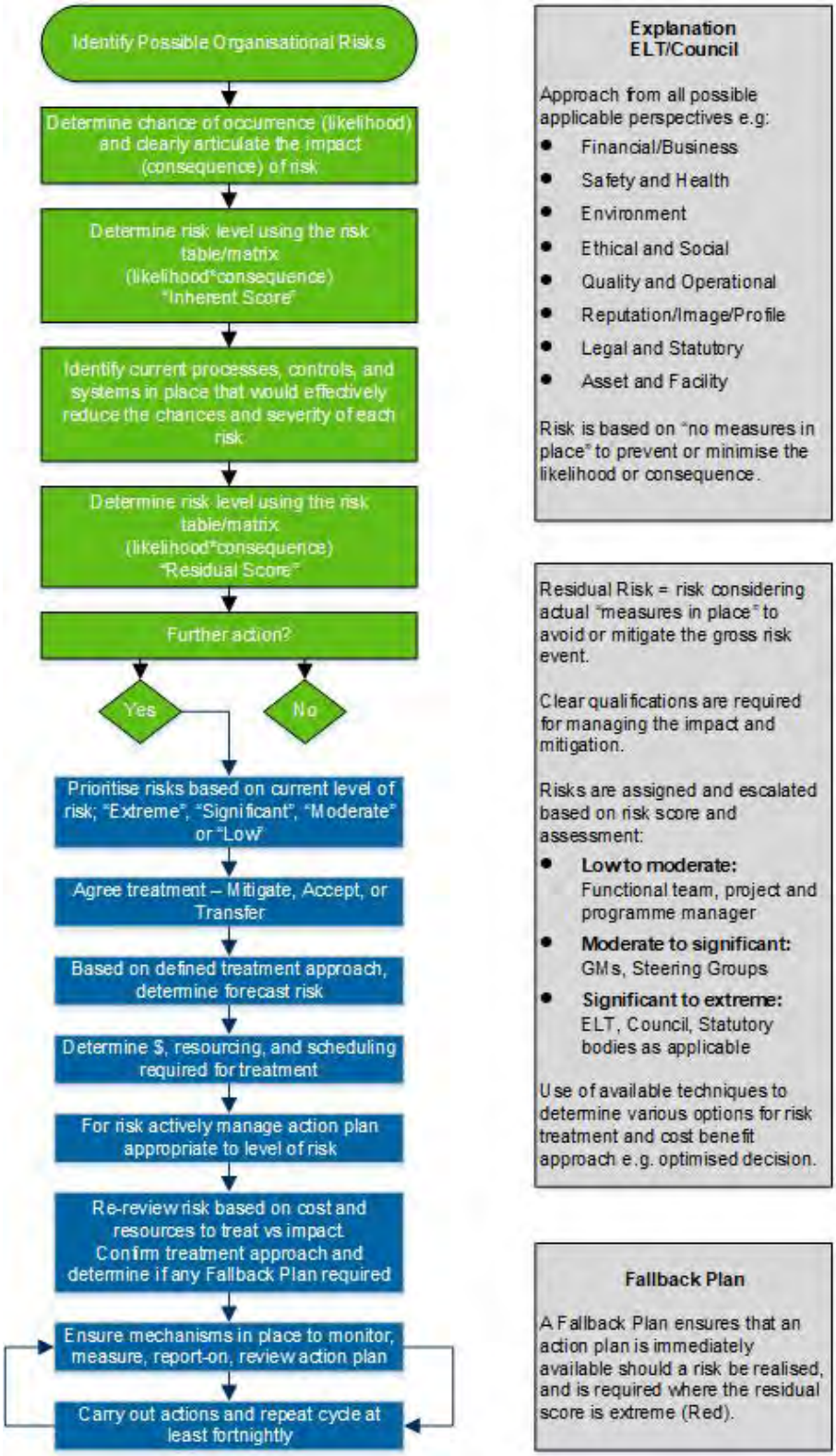


Figure 26 Risk management process

The following sections expand upon the risk management process as identified in the flowchart.

Identify possible organisational risks

All practically possible risks affecting the asset activity need to be identified. Risks can include financial, environmental, social, operational and health and safety considerations. Once identified, risks are entered into the Risk Register (). The Register is used to record and summarise each risk and to outline current mitigation measures and potential future management options.

Determine chance of occurrence and consequence for gross risk factor

Tables 33 and 34 demonstrate the scales used to determine the likelihood and consequence levels, which are input into the risk calculation to consider the effect of a risk event.

The likelihood of occurrence and severity of consequences should be based on as much real data as possible, for example local knowledge or recorded events such as maintenance records, weather events etc. Some analysis may be required for verification.

The likelihood scales identify how likely, or often, a particular event is expected to occur, these are shown in the table below.

Table 33 Likelihood of occurrence

Likelihood	Likelihood description	Scoring	Probability % (to assist assessment)
Frequent	Will almost certainly occur, and at least once in a month.	5	91-100
Often	Will probably occur 6–12 times per year.	4	71-90
Likely	1–5 times per year – likely to occur as least once in the next two–three months. There is a chance in foreseeable future.	3	51-70
Possible	May occur at least once in the next year. Little chance of occurrence in the foreseeable future.	2	21-50
Rare	Not expected to occur this year but may occur in a future period - unlikely in the foreseeable future.	1	1-20

The consequence descriptors in Table 34 indicate the level of possible consequences for a risk.

Table 34 Consequence rating

Rating Level	Consequence description	Score
Catastrophic	• Catastrophic loss of public or stakeholder confidence, or breakdown in standards, which requires major recovery action to restore reputation or effectiveness. • Significant negative economic, social or cultural impact on a large proportion of the Bay of Plenty community. • Clearly threatens operations or ability of organisation to achieve its objectives. • Major unexpected financial overspend or loss. • Loss of life. • Prolonged national media and political attention.	5
Major	• Major unexpected financial overspend or loss. • Significant dissatisfaction expressed by stakeholders. • Moderate negative economic, social or cultural impact on a large proportion of the Bay of Plenty community. • Serious harm. • National media attention. • Unexpected failure to meet a standard.	4
Moderate	• Failure leading to review of project or operation that will require changes to processes or goals. • Likely to cause some damage or, disruption or breach of controls. • Significant negative economic, social or cultural impact on a small proportion of the Bay of Plenty community. • Moderate financial overspend or loss. • Regional media attention, loss of image. • Injury to staff or contractor.	3
Minor	• Localised or isolated failure to meet stakeholder requirements or standards. • Moderate negative economic, social or cultural impact on a small proportion of the Bay of Plenty community. • Unlikely to cause damage or threaten the effectiveness of the project. • Minor financial impact, involves management time.	2
Insignificant	• Very low impact that will not be visible, negligible. • Minor negative economic, social or cultural impact on the Bay of Plenty community.	1

After the likelihood and consequence factors have been determined, the level of risk is calculated by multiplying the Likelihood of Occurrence (Table 33 and 34) and Consequence Rating together. Risk = the likelihood of an event occurring multiplied by the consequence of such an event.

The outcome is a risk rating. The risk rating enables definition between those risks that are significant and those that are of a lesser nature. Having established the comparative risk level applicable to individual risks the risks are ranked. Four risk categories have been used: Extreme, High, Moderate, and Low (Table 35 and 36).

Table 35 Risk assessment matrix

Likelihood	Consequence				
	Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
Frequent (5)	5	10	15	20	25
Often (4)	4	8	12	16	20
Likely (3)	3	6	9	12	15
Possible (2)	2	4	6	8	10
Rare(1)	1	2	3	4	5

Once the impact has been ranked according to the relative risk level it poses, it is then possible to target the treatment of the risk exposure, by beginning with the highest risks and identifying the potential mitigation measures.

Table 36 Comparative levels of risk

15-25	Extreme risk	Requires immediate remedial action.
8-14	High risk	Requires remedial planning and action via the AMP.
4-6	Moderate risk	Address via new procedures and/or modification of existing practices and training.
1-3	Low risk	No formal requirement for further action, unless escalation of risk is possible.

The initial risk level needs to be calculated, with likelihood and consequences considered as if there were no measures in place to prevent or mitigate the risk occurrence. Essentially, initial risk is an exercise to determine “What is the worst that could happen?” Once the initial risk is determined, it is possible to investigate the current systems and processes to identify the residual risk and then formulate an action plan to further reduce the likelihood or consequences of identified risks occurring, where it is considered economically appropriate.

Identify current systems and processes, and their effectiveness

Current systems and processes are identified, and as far as resources allow, their effectiveness measured. Effectiveness ranking scores are conservative until audits and actual practice prove otherwise.

Effectiveness of existing systems and processes is expressed in the categories depicted in Table 37 below.

Table 37 Effectiveness rankings of existing systems and processes

Excellent	Fulfils requirements thoroughly, very robust and positive measurable effects.
Good	Fulfils requirements, robust and measurable, room for improvement.
Fair	Barely fulfils requirements, effects hard to measure (or haven't been audited or measured), improvement required.
Poor	Not fulfilling requirements, little measurement or effect on overall risk.
Very Poor	Totally ineffective in avoiding or mitigating associated risk events.

Determine residual risk

The residual risk is the actual risk that exists considering the effective measures implemented above. The measures in place reduce either, or both, the consequence and the likelihood of a risk occurrence. The revised factors are input into the same Risk Matrix to obtain the Residual Risk Factor.

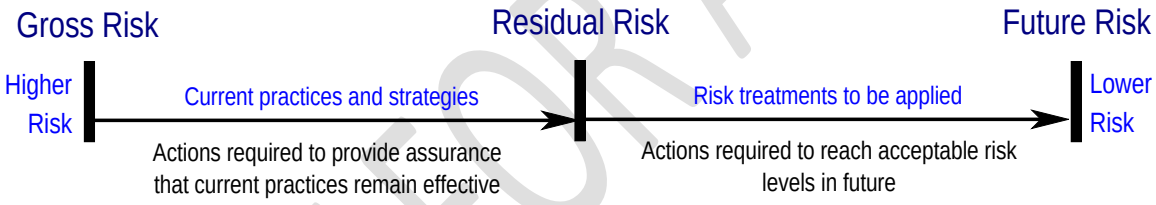


Figure 27 Determining 'residual risk' in the risk treatment and assessment process

Gaps between initial (gross) risk and residual risk indicate the importance of effective current practices to prevent initial risk events. Accordingly, improvement actions should focus on the things that will further assure Council that current practices remain effective.

Gaps between residual risk and an acceptable future risk require improvement actions that will reduce current risk levels.

The most suitable risk reduction actions must be determined by considering options and resources available to the Council. Costs and benefits of these actions should be analysed to determine those actions yielding the greatest benefit (risk reduction) for the least cost. The best available techniques should be utilised to analyse the options e.g. optimised decision-making (ODM).

Application of ODM applies a 'value chain' to the proposed actions rather than just working from the highest risk down regardless of cost. For example:

A high risk may have to remain due to the prohibitive costs associated with avoidance or mitigation.

A medium risk event could be easily and cost-effectively avoided within resources available.

Review risks

Most of the time, the risks identified will remain the same and reviews will occur in the context of these risks. However, it will be important to recognise when a new risk arises, or an existing risk changes in nature. In the latter case, the gross risk also needs to be re-evaluated.

Risk Register

The risk registers provided in the following tables for the current and future Rivers and Drainage activities of the BOPRC have been developed in consultation with key staff.

Table 38 Asset management risks – general

Asset Management Risks - General													
Risk reference	**Risk descriptor** – details the main component and provides an example of a risk(s) that may be attributable *What are the risks?*	**Risk type** *What are the main types of impact resulting from this risk event?*	**Gross risk** *What risk level do we face if we did nothing to prevent or minimise it?*			**Current practices/Strategies** *What are we doing to avoid the risk or reduce its effect?*		**Residual risk** *Considering what we do, what is the current actual risk level we face?*			**Risk owner (Name and title)** *Who has the responsibility and ability to follow through?*	**Management options available** *What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?*
			Consequence	**Likelihood**	**Factor**	**Description**	**Effectiveness**	**Consequence**	**Likelihood**	**Factor**		
DR01	Lack of internal resources – the ability to attract key staff and or retain skilled staff. High workload vs. lifestyle.	Organisational	3	5	15	• Career development programme and training. • City/District promotion (lifestyle). • Dedicated HR staff/recruitment consultancies. • Staff handover/exit process – HR processes. • Recruitment standards. • Benchmarked salary levels/remuneration review. • Annual staff satisfaction surveys – best places to work. • Promoting positive work environment – social, team building. • Good office accommodation/layout. • Policies (e.g. EEO, Stress Management, Personnel). • Flexible working hours. • Good organisational structure. • Succession planning.	Good	2	4	8	General Manager (GM) Corporate GM Integrated Catchments	• Continue current practice and review flexibility within individual contracts and working hours. Family/Lifestyle friendly policies. • Review and monitor work levels of staff. • Instigate cadetship programme in conjunction with wider industry. • Review and improve succession planning. • Improve team approach, backup roles.

Asset Management Risks - General												
Risk reference	**Risk descriptor** – details the main component and provides an example of a risk(s) that may be attributable *What are the risks?*	**Risk type** *What are the main types of impact resulting from this risk event?*	**Gross risk** *What risk level do we face if we did nothing to prevent or minimise it?*			**Current practices/Strategies** *What are we doing to avoid the risk or reduce its effect?*		**Residual risk** *Considering what we do, what is the current actual risk level we face?*			**Risk owner (Name and title)** *Who has the responsibility and ability to follow through?*	**Management options available** *What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?*
			Consequence	**Likelihood**	**Factor**	**Description**	**Effectiveness**	**Consequence**	**Likelihood**	**Factor**		
DR02	Loss of Knowledge – inability to retain knowledge or have sufficient systems in place to manage data/information, especially regarding asset performance and condition. Loss of institutional knowledge. IT failure.	Organisational	3	3	9	• Processes and practices – guidelines to be followed e.g. Easyinfo. Established robust filing system. • Team of competent, trained staff, development into roles. • IT practices (backup, virus, security etc.). • Asset changes/updating process – developing AMIS (GIS / finance One). • Programmed condition surveys undertaken on some assets. • Best practice manuals e.g. NAMS, hydraulic guidelines, BOPRC environmental code of practice. • NZ Standards e.g. building code. • Contracts manual. • Responsibilities defined.	Good	2	2	4	GM Corporate GM Integrated Catchments	• Continue development of integrated AMIS in-house. • Develop processes to ensure that asset knowledge is transferred, stored and accessible and audited (externally), including maintenance information. Define mentors/coaches and successors. • Ongoing training for staff.
DR03	Inadequate Project Management – projects inadequately scoped, budgeted, managed, documented, and reviewed, inadequate consultation with owners, resource consent issues etc. resulting in time and cost, loss of image and other impacts.	Operational	4	5	20	• Annual Plan/LTP Process. • Use of trained/competent external resource. • Some life of asset calculations. • Appropriate resources (e.g. software/information systems). • Strategies and plans dictate project requirements.	Good	3	3	9	GM Integrated Catchments GM Coporate	• Introduction of Project Management System and follow on training for key staff. • Increase level of internal Project Management Training for key staff. • Maintain and improve stakeholder consultation. • Standardise and document Project Management processes (organisation-wide) e.g. project Reviews and debriefing. • Optimised decision making. More consistent life of asset calculations. Consider use of multi-criteria analysis.

Asset Management Risks - General												
Risk reference	**Risk descriptor** – details the main component and provides an example of a risk(s) that may be attributable *What are the risks?*	**Risk type** *What are the main types of impact resulting from this risk event?*	**Gross risk** *What risk level do we face if we did nothing to prevent or minimise it?*			**Current practices/Strategies** *What are we doing to avoid the risk or reduce its effect?*		**Residual risk** *Considering what we do, what is the current actual risk level we face?*			**Risk owner (Name and title)** *Who has the responsibility and ability to follow through?*	**Management options available** *What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?*
			Consequence	**Likelihood**	**Factor**	**Description**	**Effectiveness**	**Consequence**	**Likelihood**	**Factor**		
DR04	Inadequate Contract Management (Service/ Maintenance/ Capital) – resulting in unnecessary or excessive costs and/or insufficient output or quality. Poor Contractor performance.	Operational	3	5	15	• Contract tendering process in place. • Contract conditions (KPI's, penalties). • Financial reporting/cost monitoring. • Contract procedures manual, Contract penalties, Contractor evaluations, Quick response to failures. • Adequately trained staff or external resource. • Contract Administrator. • Quality auditing. • Approved design and specification prior to letting contracts.	Good	2	2	4	GM Integrated Catchments GM Corporate	• Continue current practice. • Improve Auditing and Reporting throughout term of the contract. • Continue to improve training for appropriate staff on contract management. • Review and revise contract procedures manual as required. • Project Reviews and debriefing. • Improved Financial reporting/cost monitoring.
DR05	Inadequate Asset Management – not up to date, or insufficient quality of process and output.	Operational Legislative	4	4	16	• Asset Management processes and practices and organisation structure. • Asset Management System (GIS, AMIS). • Use of Professional Services. • Adequately trained staff or external resource. • Resourcing of Internal Services. • Identifying gaps. • Peer to peer information sharing on best practice.	Good	3	2	6	GM Integrated Catchments Rivers and Drainage Asset Manager (RDA Manager)	• Improvement plan and process to achieve medium/advanced AMP status. • Develop and implement Improvement Plans. • Continuing Staff Development in Asset Management. • Ongoing external review of AM planning. • Ongoing budget provision. • Document asset management processes, develop business rules. • Update and improve AMIS/AM information systems and interfaces e.g. with GIS or financial system. • Improve information flow to asset management e.g. as-built drawings, contractor audit information.

Asset Management Risks - General												
Risk reference	**Risk descriptor** – details the main component and provides an example of a risk(s) that may be attributable *What are the risks?*	**Risk type** *What are the main types of impact resulting from this risk event?*	**Gross risk** *What risk level do we face if we did nothing to prevent or minimise it?*			**Current practices/Strategies** *What are we doing to avoid the risk or reduce its effect?*		**Residual risk** *Considering what we do, what is the current actual risk level we face?*			**Risk owner (Name and title)** *Who has the responsibility and ability to follow through?*	**Management options available** *What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?*
			Consequence	**Likelihood**	**Factor**	**Description**	**Effectiveness**	**Consequence**	**Likelihood**	**Factor**		
DR06	Inadequate Condition/Performance Assessments – reliable data for maintenance/renewals/replacements and valuations.	Operational	4	4	16	• Internal and external feedback, Complaints/Job Tracker. • Ongoing condition assessment programmes for selected assets. • Annual audits and scheduled inspections e.g. pump stations. • Asset Management Systems (e.g. GIS, AMIS). • Implemented condition assessment programme and methodology for all assets. • Use external professionals.	Fair	3	3	9	GM Integrated Catchments RDA Manager	• Staff training and continuity regarding assessments. • Develop a process to ensure that knowledge is transferred, stored and accessible. Define champions and successors. External backup.
DR07	Non-compliance with Legislation and Consent Conditions – inability or failure to comply with consents, statute and national standards. Increase in requirements.	Legislative	3	5	15	• Compliance with resource consents, RMA, LGA 2002, District and Regional Plans and Bylaws. • Contract conditions. Service contract standards. • Internal audits and continuous monitoring. • Dedicated Consents Manager. • Some knowledge and awareness among key staff. • Local Government and national networking. • Feedback from and liaison with Councils, DoC, Historic Places Trust and Fish & Game, iwi/hapu. • Use of external advice/resources. • Follow Council Environmental Code of Practice. • Some auditing of works contracts (e.g. traffic management, safety, OSH). • Appropriate response to incidents.	Good	2	2	4	GM Integrated Catchments RDA Manager	• Improve monitoring of expiring consents and identification of new consents. • Better compliance through Consents database and Monitoring of Consent requirements. • Improve tools for Consent Manager. • Allocate adequate budget for consent renewals. • Identify upfront what resource consents are required and develop a framework to ensure all legislative requirements are met. • Key staff to keep updated on current legislation. • Continue communicating effects of legislative change to Council/Annual Plan/Ten Year Plan process.
DR08	Slow Response to known Impaired Service levels – such as known under-capacity stopbank.	Organisational Financial Operational	4	3	12	• Consultation. • Fit for purpose works. • Prioritisation/risk assessment (ODM). • Education. • Flood management strategies.	Good	3	2	6	GM Integrated Catchments RDA Manager	• Communication of prioritised response.

Asset Management Risks - General												
Risk reference	**Risk descriptor** – details the main component and provides an example of a risk(s) that may be attributable *What are the risks?*	**Risk type** *What are the main types of impact resulting from this risk event?*	**Gross risk** *What risk level do we face if we did nothing to prevent or minimise it?*			**Current practices/Strategies** *What are we doing to avoid the risk or reduce its effect?*		**Residual risk** *Considering what we do, what is the current actual risk level we face?*			**Risk owner (Name and title)** *Who has the responsibility and ability to follow through?*	**Management options available** *What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?*
			Consequence	**Likelihood**	**Factor**	**Description**	**Effectiveness**	**Consequence**	**Likelihood**	**Factor**		
DR09	Moderate Natural Hazard Damage – (slips/flooding/coastal erosion/wind) causing damage to assets and or hindering development.	Public Environmental Health Organisational	4	3	12	• Group Civil Defence Emergency/Management Plan. • Dedicated Emergency Management Coordinator. • Hazard identification, maps and reports, monitoring, use of geotech consultants. • Complaints feedback. • Equipment Agreement (with out of region resources). • Resource sharing agreement between councils. • National and Council Engineering Standards. • Procedures for activation of resources (equipment, rooms, computers etc.) for emergency response. • Building code/standards. • Flood manual. • Emergency management training and exercises.	Good	3	3	9	GM Integrated Catchments RDA Manager	• As per current practice. • Liaise with Regional policy makers to identify hazards and ensure emergency response mechanisms are in place in the event of a hazard occurring. • Increase public awareness of residual risk.
DR10	Extreme Natural Hazards Damage – (earthquake/tsunami/volcanic/major storm event/over design event) causing damage to assets and or hindering development.	Environmental Public Health Organisational Financial	5	2	10	• Group Civil Defence Emergency/Management Plan. • Dedicated Emergency Management Coordinator. • Hazard identification, Maps and reports, monitoring, use of geotech consultants. • Complaints feedback. • Equipment Agreement (with out of region resources). • Resource sharing agreement between councils. • Regional and National Civil Defence support. • Maintenance contracts (with out of region resources). • Resource sharing agreement between councils. • National and Council Engineering Standards. • Building code/standards. • Flood manual. • Procedures for activation of resources (equipment, rooms, computers etc) for emergency response. • Lifelines Group. • Emergency management training and exercises.	Fair	4	2	8	GM Integrated Catchments RDA Manager	• Liaise with National and Regional policy makers to identify hazards and ensure emergency response mechanisms are in place in the event of a hazard occurring. • Staff training, awareness of roles. • Implementation of policies and Emergency Civil Defence Management Plan. • Increase public awareness of residual risk.
DR11	Technology Lapse – inability to track technology, engineering developments/techniques, local and national trends and to utilise where relevant.	Organisational	3	3	9	• Local Government networking. • Staff development and training. • Conference Attendance. • Peer to peer contact. • Use of external advice/resources.	Good	2	2	4	GM Integrated Catchments RDA Manager GM Corporate	• Continue good external networking and training. • IT Policy/IT Roadmap. • Better IT and GIS resource availability. • Further staff development and training.

Asset Management Risks - General												
Risk reference	**Risk descriptor** – details the main component and provides an example of a risk(s) that may be attributable *What are the risks?*	**Risk type** *What are the main types of impact resulting from this risk event?*	**Gross risk** *What risk level do we face if we did nothing to prevent or minimise it?*			**Current practices/Strategies** *What are we doing to avoid the risk or reduce its effect?*		**Residual risk** *Considering what we do, what is the current actual risk level we face?*			**Risk owner (Name and title)** *Who has the responsibility and ability to follow through?*	**Management options available** *What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?*
			Consequence	**Likelihood**	**Factor**	**Description**	**Effectiveness**	**Consequence**	**Likelihood**	**Factor**		
DR12	Lack of Political Alignment – or inability of elected members to fulfil roles and responsibilities or disregard for community views. Change in the make-up of Council could alter ability to achieve long-term objectives.	Organisational Reputation/ Image	3	5	15	• Councillors roles well defined and implemented. • Legislative requirements/Ten Year Plan process. • Reports to Council. • Induction of new politicians (Councillor induction/handbook/workshop/conferences/inter-council tours). • Bulletins to Councillors. One-on-one contact and forums. Councillors are made aware of who to talk to. • Elected Members on project teams/steering groups.	Good	2	3	6	Chief Executive Leadership Team GM Integrated Catchments	• Continued communication to Council. • Manage process through CE/Leadership Team (LT).
DR13	External Economic Influences (Cost Escalations) – rising costs (e.g. materials, fuel), due to economic circumstances and worldwide incidents. Inability to afford maintenance and repair.	Economic Financial	3	4	12	• Respond to external influences as appropriate. • Local Government networking. • Consultation with stakeholders and Council. • Responding to national directives. • Monitoring world events and reacting. • Review existing contracts. • Procurement strategies e.g. rock supply, buying locally.	Fair	3	4	12	GM Integrated Catchments RDA Manager	• Recycling initiatives. • Increase contingencies if necessary. • Improve efficiencies. • Investigate alternative resources.
DR14	Unexpected Asset Depreciation (Cost Escalations to maintain level of service) –Greater loss of service (e.g. more rapid than expected stopbank settlement). Inability to afford renewals.	Operational Financial	4	4	16	• Respond to cost escalation as appropriate. • Prioritising works through Optimised Decision Making. • Consultation with stakeholders and Council. • Responding to national directives. • Procurement strategies, buying locally, alternate sources of material. • Reducing level of service.	Fair	4	3	12	GM Integrated Catchments RDA Manager	• Continue asset monitoring and recording to gain more reliable forecasts. • Change design. • Increase depreciation rates. • Plan for more frequent renewal. • Public education. • Increasing efficiency. • Rationalise spending – prioritise activities.
DR15	Decrease in Funding – Both internal to pay debt, rates and including failure to acquire external subsidies.	Organisational	3	3	9	• Monitor other funding opportunities. • Prioritising projects/ Annual Plan/Ten Year Plan process. • Liaising with other councils. • Submitting external applications and reporting internally to Council. • Contract external specialists as required.	Good	3	2	6	GM Integrated Catchments RDA Manager GM Corporate	• Maintain and manage clear lines of communication with key external agencies. • Forecast likely scenarios regarding effects of budget changes. • Increasing efficiency. • Rationalise spending – prioritise activities.

Asset Management Risks - General												
Risk reference	**Risk descriptor** – details the main component and provides an example of a risk(s) that may be attributable *What are the risks?*	**Risk type** *What are the main types of impact resulting from this risk event?*	**Gross risk** *What risk level do we face if we did nothing to prevent or minimise it?*			**Current practices/Strategies** *What are we doing to avoid the risk or reduce its effect?*		**Residual risk** *Considering what we do, what is the current actual risk level we face?*			**Risk owner (Name and title)** *Who has the responsibility and ability to follow through?*	**Management options available** *What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?*
			Consequence	**Likelihood**	**Factor**	**Description**	**Effectiveness**	**Consequence**	**Likelihood**	**Factor**		
DR16	Inadequate Communications and PR Management – e.g. a lack of communication, or information overload being ignored, reporting only negative information, promising the undeliverable and raising expectations, risk of flood protection asset failure not acknowledged by communities.	Reputation/ Image Safety Financial Operational	3	4	12	• Dedicated Corporate Communications Team. • Some timely communication to affected customers (public/ratepayers, councillors, staff, contractors). • Existing corporate communications procedures and protocols (who gets what and when). • "Customer service interface. • Include communications/customer service component in project debrief process. • Access to communications tools – web, intranet, newsletters, bulletins. • Communications Plan.	Good	1	3	3	GM Integrated Catchments RDA Manager	• Continue current practice. • More communication/PR involvement at earlier stage of contracts/capital works/projects. • Improve integration of communications across BOPRC/Contractors and other councils to inform external customers. • Build further customer service understanding of Council issues/projects. • Increase public education and residual risk communication.
DR17	Public Health and Safety Incident – causing injury and or damage to residents/visitors/staff or property resulting in claims and or negative publicity (e.g. poorly designed or maintained assets etc.).	Public Health Reputation/ Image	5	4	20	• Inspection, contract management, hazard identification. • Complaints. • Structure safety checks and electrical audits. • Local Council's Engineering Standards. • Building code/standards/guidelines. • Specialised standards (e.g. agrichemical). • Condition and performance assessments. • Programmes in place to identify areas, issues, risks that may impact on assets. • Fencing. • Signage. • Ten Year Plan Consultation. • ACC/Indemnity insurance. • Health and Safety Representative. • Corporate Auditing of Health and Safety. • Approved Contractor Health and Safety Plans. • Emergency response. • Training/staff induction/manuals/personal protective equipment/Incident Register (HR). • Contractor inductions.	Good	3	3	9	GM Integrated Catchments RDA Manager GM Corproate	• Review Council's liability and Heath & Safety Policy. • Design standards maintained. • Asset Management Planning. • Levels of service determined from community consultation (Ten Year Plan process). • Local Government networking. • Ensure BOPRC is carrying out appropriate renewals and managing the budget correctly. • Review and develop safe working methods and practices.
DR18	Inadequate Security – Inadequate security plan, lighting, community and employee safety.	Public Health Reputation/ Image Operational Financial	3	5	15	• Complaints. • Respond to community concerns. • Locked/fenced property and land. • Restricting vehicular access.	Good to Excellent	2	3	6	GM Integrated Catchments RDA Manager	• Incident reporting. • Identify problem areas quickly and respond.

Asset Management Risks - General												
Risk reference	**Risk descriptor** – details the main component and provides an example of a risk(s) that may be attributable *What are the risks?*	**Risk type** *What are the main types of impact resulting from this risk event?*	**Gross risk** *What risk level do we face if we did nothing to prevent or minimise it?*			**Current practices/Strategies** *What are we doing to avoid the risk or reduce its effect?*		**Residual risk** *Considering what we do, what is the current actual risk level we face?*			**Risk owner (Name and title)** *Who has the responsibility and ability to follow through?*	**Management options available** *What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?*
			Consequence	**Likelihood**	**Factor**	**Description**	**Effectiveness**	**Consequence**	**Likelihood**	**Factor**		
DR19	Vandalism – of assets (e.g. control structures).	Reputation/ Image Operational Public Health Financial	3	3	9	• Design to minimise. • Custodians. • Safety inspections. • Prompt repair response. • Monitor via telemetry. • Complaints. • Fencing and locking access to assets. • Restricting vehicular access. • Asset protection Bylaws. • Education and partnership.	Good	2	2	4	GM Integrated Catchments Rivers and Drainage Operations Manager (RDO Manager)	• Continue current practice. • Implement new technologies as appropriate.

Table 39 Asset management risks – Rivers and Drainage

Asset Management Risks – Rivers and Drainage												
Risk Reference	**Risk Descriptor** – details the main component and provides an example of a risk(s) that may be attributable *What are the risks?*	**Risk type** *What are the main types of impact resulting from this risk event?*	**Gross risk** *What risk level do we face if we did nothing to prevent or minimise it?*			**Current practices/Strategies** *What are we doing to avoid the risk or reduce its effect?*		**Residual risk** *Considering what we do, what is the current actual risk level we face?*			**Risk owner (Name and title)** *Who has the responsibility and ability to follow through?*	**Management options available** *What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?*
			Consequence	**Likelihood**	**Factor**	**Description**	**Effectiveness**	**Consequence**	**Likelihood**	**Factor**		
DR20	Increased Frequency and/or Size of Adverse Weather Effects – rendering flood control and drainage schemes unsustainable.	Operational Public Health & Safety Financial	5	4	20	• Flood-proofing initiatives. • River management and planning. • Floodplain management strategies. • Building regulations, floor levels. • Flood monitoring and warning systems. • Education and emergency preparedness (output to Civil Defence). • Regional River Gravel Management Plan. • Civil Defence. • Hydraulic modelling. • Inundation studies. • Flood manual – guideline to staff (warning levels etc.). • Monitoring IPCC recommendations and adopting.	Good	4	4	16	GM Integrated Catchments RDA Manager Engineering Manager	• Analysis of likely scenarios – gain clearer picture of possible consequence. • Investigate feasibility of retreat of erosion structures. • Catchment modelling (land use changes etc.). • Recommend relocation and retreat of at-risk dwellings and industry. • Increased awareness and education of flood hazards. • Increased flood protection.
DR21	Rise in Sea Level and Storm Surges– rendering flood control and drainage schemes unsustainable.	Operational Public Health & Safety Financial	5	4	20	• Flood-proofing initiatives. • River management and planning. • Floodplain management strategies. • Building regulations, floor levels. • Flood monitoring and warning systems. • Education and emergency preparedness, output to Civil Defence). • Regional River Gravel Management Plan. • Civil Defence. • Hydraulic modelling. • Storm surge monitoring. • Inundation studies. • Flood manual – guideline to staff (warning levels etc.). • Monitoring IPCC recommendations and adopting.	Good	4	4	16	GM Integrated Catchments RDA Manager Engineering Manager	• Analysis of likely scenarios – gain clearer picture of possible consequence. • Investigate feasibility of retreat of erosion structures. • Evacuation protocols agreed with TLAs and CDEM. • Dredging coastal marine areas. • Recommend relocation and retreat of dwellings and industry from coastal inundation and erosion zones. • Increased awareness and education of coastal flood hazards.
DR22	Stopbank Deterioration, Weakness and Failure– (including foundation) resulting in ineffective flood control, flooding.	Operational Public Health & Safety Financial Reputation/ Image	5	5	25	• Regular BOPRC condition and performance reviews. • Visual inspections, physical surveys. • Scheme reviews, hydraulic capacity modelling. • Use of internal/external specialists e.g. geotechnical. • Renewal/upgrade programmes. • Education of communities, socialisation of inherent risk. • Maintenance regime. • BOPRC flood protection and drainage bylaws.	Good	5	3	15	GM Integrated Catchments RDA Manager RDO Manager Engineering Manager	• As per current practice. • Recommend relocation and retreat of dwellings and industry from flood prone areas. • Evacuation protocols agreed with TLAs and CDEM. • Increased awareness and education. • Increased geotechnical investigations. • Monitor improvements in geotechnical advancements. • Upstream catchment management to reduce flood levels.

Asset Management Risks – Rivers and Drainage												
Risk Reference	**Risk Descriptor** – details the main component and provides an example of a risk(s) that may be attributable *What are the risks?*	**Risk type** *What are the main types of impact resulting from this risk event?*	**Gross risk** *What risk level do we face if we did nothing to prevent or minimise it?*			**Current practices/Strategies** *What are we doing to avoid the risk or reduce its effect?*		**Residual risk** *Considering what we do, what is the current actual risk level we face?*			**Risk owner (Name and title)** *Who has the responsibility and ability to follow through?*	**Management options available** *What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?*
			Consequence	**Likelihood**	**Factor**	**Description**	**Effectiveness**	**Consequence**	**Likelihood**	**Factor**		
DR23	Flood Control Gate Malfunction or Inadequately Operated – resulting in flooding of low lying areas.	Operational Public Health & Safety Financial Reputation/ Image	3	3	9	• Regular inspections. • Condition monitoring. • Renewal/upgrade programmes. • Maintenance regime – internal staff (dedicated custodian). • Operations manuals.	Good	3	2	6	GM Integrated Catchments RDO Manager	• As per current practice. • Review inspection programme. • Telemetry/monitoring/alarms.
DR24	Structure Failure (Concrete Walls, Flood Control Gates) – resulting in failure of asset to perform and/or unexpected costs and resources.	Operational Public Health & Safety Financial Reputation/ Image	4	3	12	• Regular inspections. • Condition monitoring. • Renewal/upgrade programmes. • Maintenance regime – internal staff (dedicated custodian for flood control gates).	Good	4	1	4	GM Integrated Catchments RDO Manager	• As per current practice. • Review inspection programme, including condition/structural assessment.
DR25	Pump Station Failure – resulting in inundated areas – predominantly rural.	Operational Public Health & Safety Financial Reputation/ Image	3	3	9	• Regular inspections. • Condition monitoring. • Renewal/upgrade programmes. • Maintenance regime – internal staff, caretakers. • Emergency backup pumps, connections for generators, mobile pumps. • Experienced staff – ongoing training. • Key stations have telemetry/alarms. • Feedback from landowners.	Good	2	2	4	GM Integrated Catchments RDA Manager RDO Manager	• As per current practice. • More stations with telemetry monitoring.
DR26	Riverbank Erosion – resulting in decreased flood protection, loss of land, increasing risk of breach.	Operational Public Health & Safety Financial Reputation/ Image	3	4	12	• Edge Protection, vegetation, structural, rip rap, gabion walls. • Buffer zones, fenced. • Subsidised Streamcare programme. • Renewal/upgrade programmes. • Maintenance regime. • Regular inspections. • Regional River Gravel Management Plan. • Riverbank trial protection works. • Trial native planting. • Willow protection research group contribution. • Environmental code of practice.	Good	2	3	6	GM Integrated Catchments RDA Manager RDO Manager	• As per current practice. • Increased gravel removal (certain rivers). • Public education (e.g. stock control).

Asset Management Risks – Rivers and Drainage												
Risk Reference	**Risk Descriptor** – details the main component and provides an example of a risk(s) that may be attributable *What are the risks?*	**Risk type** *What are the main types of impact resulting from this risk event?*	**Gross risk** *What risk level do we face if we did nothing to prevent or minimise it?*			**Current practices/Strategies** *What are we doing to avoid the risk or reduce its effect?*		**Residual risk** *Considering what we do, what is the current actual risk level we face?*			**Risk owner (Name and title)** *Who has the responsibility and ability to follow through?*	**Management options available** *What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?*
			Consequence	**Likelihood**	**Factor**	**Description**	**Effectiveness**	**Consequence**	**Likelihood**	**Factor**		
DR27	Failure of Drains (Excavated Channels) – silting, aquatic weed growth, blockages causing loss of land drainage capacity.	Operational Public Health & Safety Financial Reputation/ Image	2	5	10	• Maintenance regime – internal staff. • Regular inspections. • Condition monitoring. • Biological and mechanical weed control. • Renewal/upgrade programmes. • Hydraulic modelling. • Environmental code of practice.	Good	2	2	4	GM Integrated Catchments RDA Manager RDO Manager	• As per current practice. • Improved drainage system as ecological habitat e.g. fish-friendly floodgate. • Education (e.g. stock control).
DR28	Effect of Low Bridges across canals, rivers e.g. affecting flood flows, risk of failure.	Operational Public Health & Safety Financial Reputation/ Image	3	4	12	• Hydraulic modelling. • Liaison/agreements with bridge owners. • Flood protection and drainage protection bylaws. • Hydraulic guidelines and advice.	Good	2	2	4	GM Integrated Catchments RDA Manager RDO Manager	• As per current practice.
DR29	Residential Intensification – resulting in increased need to manage extra stormwater capacity.	Public Health & Safety Financial Reputation/ Image	3	5	15	• Technical reviews of resource consent applications. • Submissions to District Plans. • District applications are reviewed by experienced staff and recommendations provided. • Dialogue with TLA's. • General advice provided on request.	Good	2	2	4	GM Integrated Catchments RDA Manager RDO Manager	• As per current practice. • Streamline review process (increase TLA responsibility). • Education and awareness of public (e.g. website).
DR30	International Shortage of Hydraulic and Hydrologic Design Engineering Expertise.	Operational Public Health & Safety	3	3	9	• Internal training. • Raising profile in tertiary institutions. • Use of current consultants. • Staff retention practices.	Good	2	2	4	GM Integrated Catchments RDA Manager RDO Manager Engineering Manager	• As per current practice. • Increase remuneration.

Risk Action Plan

The Asset Management Risk Action Plan for Rivers and Drainage is compiled from the Risk Register and highlights the most significant risks faced as determined in the risk register and sets out the actions or initiatives that will be put in place to manage or reduce the risk's impact. The main risks are listed in order of severity (primarily gross risk, and secondarily residual risk) as assigned in consultation with key Council officers.

Actions that are required to achieve the desired improvements are indicated along with how progress on these actions will be monitored and reported. Where applicable, action tasks will detail timeframes for achievement, and responsibility for these actions.

The options for mitigating risks considered to reduce the cause, probability or impact of failure, are depicted in Table 40 below.

Table 40 Risk treatment options

Accept Risk	Accept the Risk, fund and resource any risk impacts
Strategic Change	Implement strategic planning, organisational improvements
Operational Change	Implement technical improvements, procedural changes
Risk Transfer	Outsourcing, improving contract terms, increased insurance

Link to improvement plans

Actions identified in this Risk Management analysis are linked to actions identified in the Audit and Improvement section of this AMP, where resources are identified and a defined method provided for revisiting and reviewing progress against each action item.

Monitor, measure, report, review plan and actions

Management options listed in the risk tables have been refined into actions for each risk listed. These are the actions that are required to cost-effectively reduce the net risk by increasing the ability to minimise the chances of the risk event occurring, or minimising the consequences should it occur.

Actions should consider the overall management of Council, not just the minimisation of risk. If possible, proposed actions should align with other initiatives to:

- Reduce capital investment costs.
- Reduce operating and maintenance costs.
- Reduce business risk exposure (BRE).
- Increase effective asset life/value.
- Increase level of service.

The resulting action plan for risk treatment needs to be practical and achievable such that the necessary resources and time frames are realistically met. The actions also need to be able to be monitored and measured.

The monitoring/reporting column of the Risk Action Plan table specifies:

- **Responsibility:** Nominated person responsible for ensuring the risks are managed and that improvements are carried out in accordance with the programme;
- **Timeframe**: Achievable target date to be monitored and reported against; and
- **Method and frequency of monitoring:** This entire action table will be monitored by the Rivers and Drainage Operations, Rivers and Drainage Assets, and Engineering Managers.

The actions listed will be reported, monitored and reviewed regularly at the Risk Management Steering Committee and various other forums.

As necessary, this committee will need to revise timeframes, responsibility, and even the appropriateness of continuing with the proposed action, or adding new actions.

As actions are complete, the net risk should reduce in most cases. The risk tables will need to be reviewed against these and updated to reflect these improvements.

Table 41 Asset Management Risk Action Plan – Rivers and Drainage

Risk ref	Risk descriptor	Risk type	Residual risk	Action	Responsibility	Monitoring/Reporting	Timeframe
DR20	*Rivers and Drainage:* Increased Frequency and/or Size of Adverse Weather Effects – rendering flood control and drainage schemes unsustainable.	Operational Public Health & Safety Financial	16	• Catchment modelling (land use changes etc.). • Recommend relocation and retreat of at-risk dwellings and industry. • Increased awareness and education of flood hazards. • Increased flood protection.	Manager Engineering	• Capacity review using updated records – flood protection asset performance assessment activity.	10 yearly major river schemes Every 15 years Rotorua urban
DR21	*Rivers and Drainage:* Rise in Sea Level and Storm Surges – rendering flood control and drainage schemes unsustainable.	Operational Public Health & Safety Financial	16	• Dredging coastal marine areas. • Recommend relocation and retreat of dwellings and industry from coastal inundation and erosion zones. • Increased awareness and education of coastal flood hazards.	Manager Engineering	• Capacity review using updated sea level rise and storm surge.	10 yearly
DR22	*Rivers and Drainage:* Stopbank Deterioration, Weakness and Failure – (including foundation) resulting in ineffective flood control, flooding.	Operational Public Health & Safety Financial Reputation/ Image	15	• As per current practice. • Recommend relocation and retreat of dwellings and industry from flood prone areas. • Increased awareness and education. • Increased geotechnical investigations. • Monitor improvements in geotechnical advancements. • Evacuation protocols agreed with TLAs and CDEM. • Asset condition and performance assessments and remedial actions • Upstream catchment management to reduce flood levels.	Rivers and Drainage Asset (RDA) Manager Rivers and Drainage Operations (RDO) Manager Engineering Manager	• Flood protection asset condition and performance assessment.	10 yearly

Risk ref	Risk descriptor	Risk type	Residual risk	Action	Responsibility	Monitoring/Reporting	Timeframe
DR14	*General:* Unexpected Asset Depreciation (Cost Escalations to maintain level of service) –Greater loss of service (e.g. more rapid than expected stopbank settlement). Inability to afford renewals.	Operational Financial	12	• Change design. • Increase depreciation rates. • Plan for more frequent renewal. • Public education. • Increasing efficiency. • Rationalise spending – prioritise activities.	RDA Manager Engineering Manager	• Asset condition assessment valuation.	Annually
DR13	*General:* External Economic Influences (Cost Escalations) – rising costs (e.g. materials, fuel), due to economic circumstances and worldwide incidents. Inability to afford maintenance and repair.	Economic Financial	12	• Recycling initiatives. • Increase contingencies if necessary. • Improve efficiencies. • Investigate alternative resources and procurement strategies.	RDA Manager RDO Manager Engineering Manager	• Valuations. • Project completion reports. • Efficiency and effectiveness initiatives.	Annually Ongoing
DR06	*General:* Inadequate Condition/Performance Assessments – reliable data for maintenance/renewals/replacements and valuations.	Operational	9	• Staff training and continuity regarding assessments. • Implement condition assessment programme for all assets – track through Tech 1. • Processes to ensure that knowledge is transferred, stored and accessible. Define champions and successors. External backup.	RDA Manager RDO Manager	• AMP Improvement Plan. • Valuations.	3 yearly Annually

Risk ref	Risk descriptor	Risk type	Residual risk	Action	Responsibility	Monitoring/Reporting	Timeframe
DR09	*General:* Moderate Natural Hazard Damage – (slips/flooding/coastal erosion/wind) causing damage to assets and or hindering development.	Public and Environmental Health Organisational	9	• As per current practice. • Liaise with Regional policy makers to identify hazards and ensure emergency response mechanisms are in place in the event of a hazard occurring. • Increase public awareness of residual risk.	RDA Manager RDO Manager	• Council report following event.	Ongoing
DR17	*General:* Public Health and Safety Incident – causing injury and or damage to residents/visitors/staff or property resulting in claims and or negative publicity (e.g. poorly designed or maintained assets etc.).	Public Health Reputation/Image	9	• Review Council's liability and Health and Safety Policy. • Design standards maintained. • Asset Management Planning. • Levels of service determined from community consultation (Ten Year Plan process). • Local Government networking. • Ensure BOPRC is carrying out appropriate renewals and managing the budget correctly. • Review and develop safe working methods and practices where necessary.	RDA Manager RDO Manager Engineering Manager	• Health and Safety Annual Audit.	Annually

Risk ref	Risk descriptor	Risk type	Residual risk	• Action	Responsibility	• Monitoring/Reporting	Timeframe
DR01	Lack of internal resources – the ability to attract key staff and or retain skilled staff. High workload vs. lifestyle.	Organisational	8	• Continue current practice and review flexibility within individual contracts and working hours. Family/lifestyle friendly policies. • Review and monitor work levels of staff. • Instigate cadetship programme in conjunction with wider industry. • Review and improve succession planning. • Improve team approach, backup roles.	RDA Manager RDO Manager Engineering Manager People and Capability	• People and Capability reports to management. • Remuneration system reports – market data.	Annually
DR10	Extreme Natural Hazards Damage – (earthquake/tsunami/volcanic/major storm event/over design event) causing damage to assets and or hindering development.	Environmental Public Health Organisational Financial	8	• Liaise with National and Regional policy makers to identify hazards and ensure emergency response mechanisms are in place in the event of a hazard occurring. • Staff training, awareness of roles. • Implementation of policies and Emergency Civil Defence Management Plan. • Increase public awareness of residual risk.	RDA Manager RDO Manager Engineering Manager	• Council report following extreme event.	Ongoing

10.4 Critical assets

Critical assets were first identified as part of Council's management of Rivers and Drainage assets in 2014. At that time key staff identified critical Rivers and Drainage assets, where critical assets were identified as;

Assets that have a high consequence of failure, but not necessarily a high probability of failure.

Quantifying consequence of failure is the key element in determining critical flood protection assets. The consequence criteria that qualifies a Council flood protection asset as 'critical' are assets that:

- Provide direct* flood protection to urban environments where large groups of people live in a concentrated manner, i.e. towns, not rural type subdivisions.
- Provide direct flood protection to regionally significant infrastructure.

* The use of the term 'direct' has been included to indicate that the asset must be in close proximity to the value being protected.

The asset type identified as having a high consequence of failure was stopbanks. Stopbank lengths identified include the associated assets that form part of the stopbank e.g. floodgate within a stopbank, floodwalls, important fixed point assets (e.g. diversion structure), culvert within stopbank and rockwork protecting a stopbank.

This explanation of criteria that qualifies a Council flood protection asset as a 'critical asset' has been maintained through the latest asset management plan review in line with the Long Term Plan 2021-2031 development.

This criteria identified the following as the most critical assets based on risk to people and important infrastructure.

1 Asset: Whakatāne River right bank Te Tahi Street to river mouth

Protects - Whakatāne Township.

2 Asset: Whakatāne River left bank Te Rahu Canal outlet to river mouth (this includes Te Rahu and Kopeopeo Canal floodgates) Note: These assets have a lower freeboard than the Whakatāne Township banks above. This is to facilitate spilling of floodwaters to the west in an overdesign event.

Protects - The Hub, Gateway Drive, Keepa Road, Whakatāne Board Mill.

3 Asset: Rangitāiki River stopbanks left and right bank from substation to downstream of town.

Protects - Edgecumbe Township, Fonterra factory and Transpower substation (electricity supply to most of eastern Bay of Plenty).

4 Asset: Waioeka right bank (around urban area).

Otara left bank (around urban area).

5 Mill Stream bank (south of Ōpōtiki, ties into Waioeka stopbank).

Protects - Ōpōtiki Township.

6 Asset: Ōkere control gates (Ōkere Gates). Regulates the flow of water from Lake Rotoiti into Kaituna River. Protects Rotorua and surrounding areas.

7 Asset: Ohau Weir. Controls water level fluctuations in Lake Rotorua. Protects Rotorua and surrounding areas.

8 Asset: Rotorua Urban Stopbanks, floodwalls and Waingaehe Diversion Structure. Protects urban Rotorua.

Emergency Response Plan for Critical Assets

A response plan was adopted in 2020 that provides guidance for readiness, response and recovery in relation to issues effecting the integrity of critical assets. This provides another important level of risk mitigation for critical assets. The key elements of the plan that provide risk mitigation are;

- Guidance on the required condition assessment regime and other readiness type activities.
- Identification of modes of failure.
- Response solutions to manage issues as they arise.

This emergency response plan is consistent with other Council plans and processes for flood response management. To compliment this plan, an operator's flood response field guide is in development. It is expected that this will be completed by the end of the 2021/2022 financial year.

Condition monitoring of critical assets

Condition monitoring is the key risk mitigation activity undertaken by Council in relation to critical assets. Condition monitoring occurs on an ongoing basis through day-to-day operations and maintenance staff observations. Because the Rivers and Drainage Operations Team is consistently in the field in direct contact with critical assets there is a high likelihood that they will identify any issue relating to condition.

Staff also conduct inspections of critical assets following larger type flood events where damage to the assets is more likely. With the intense pressures created in flood events erosion can occur, which may create an issue that requires immediate attention. More often issues identified are less significant in nature but may increase the likelihood of a more serious issue in future. All condition issues are entered into the asset management system as defects and remedial work is planned and delivered.

A thorough visual inspection of critical asset condition is routinely conducted every one to three years by an experienced Rivers and Drainage engineer. These inspections supplement those described above and ensure that all critical assets are thoroughly assessed at acceptable frequencies.

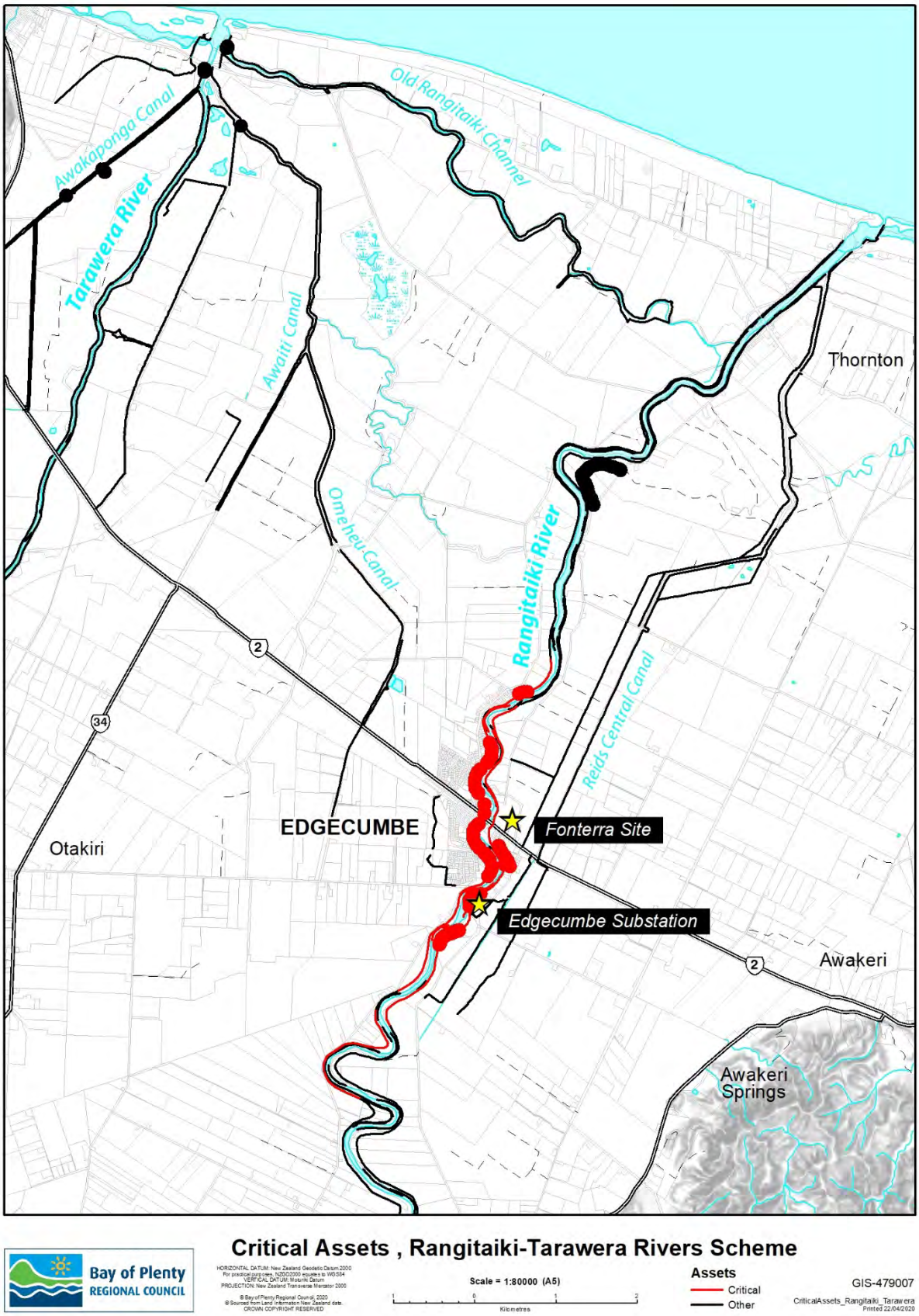


Figure 28 Critical Assets Rangitāiki-Tarawera Rivers Scheme

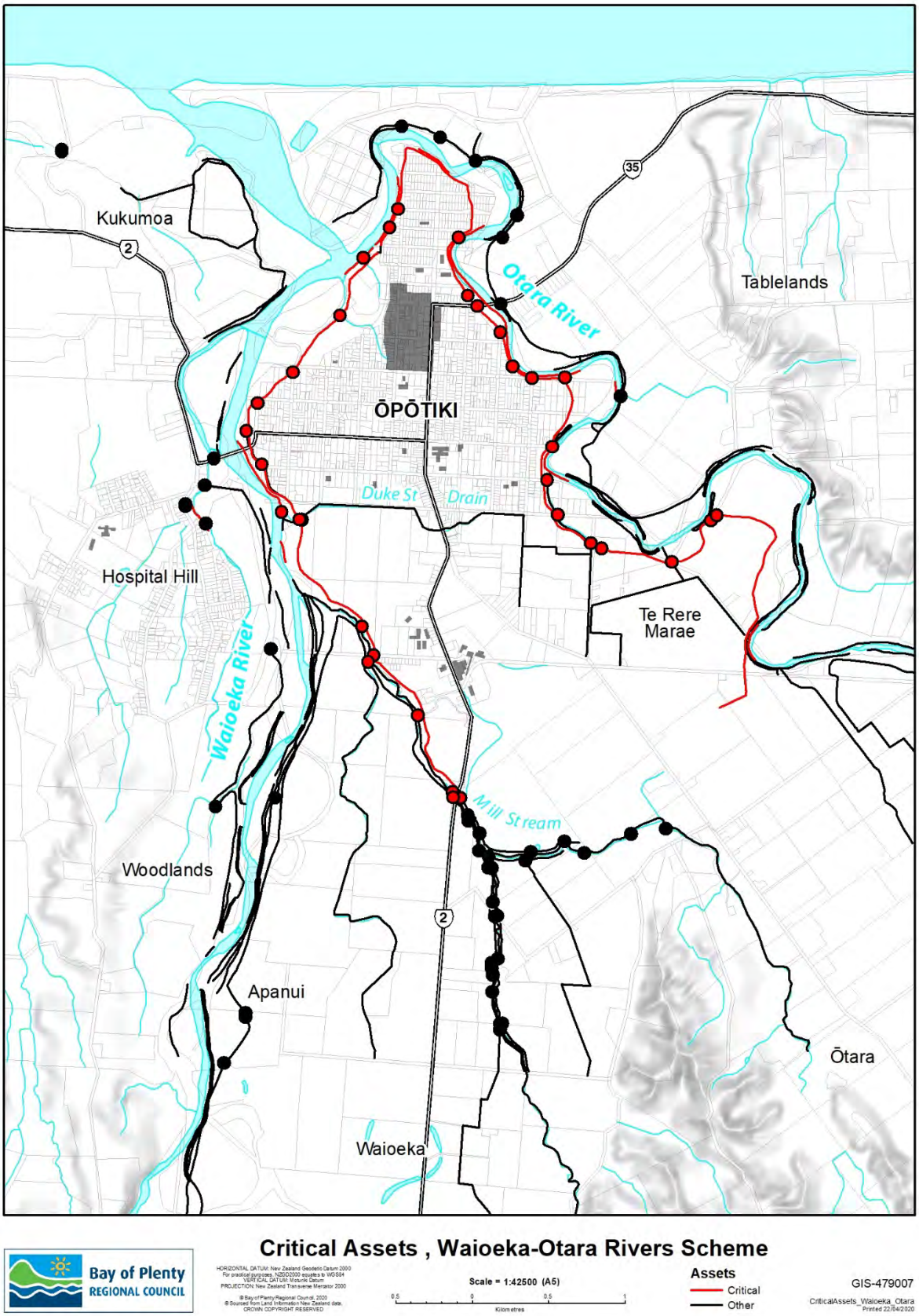


Figure 29 Critical Assets Waioeka-Otara Rivers Scheme

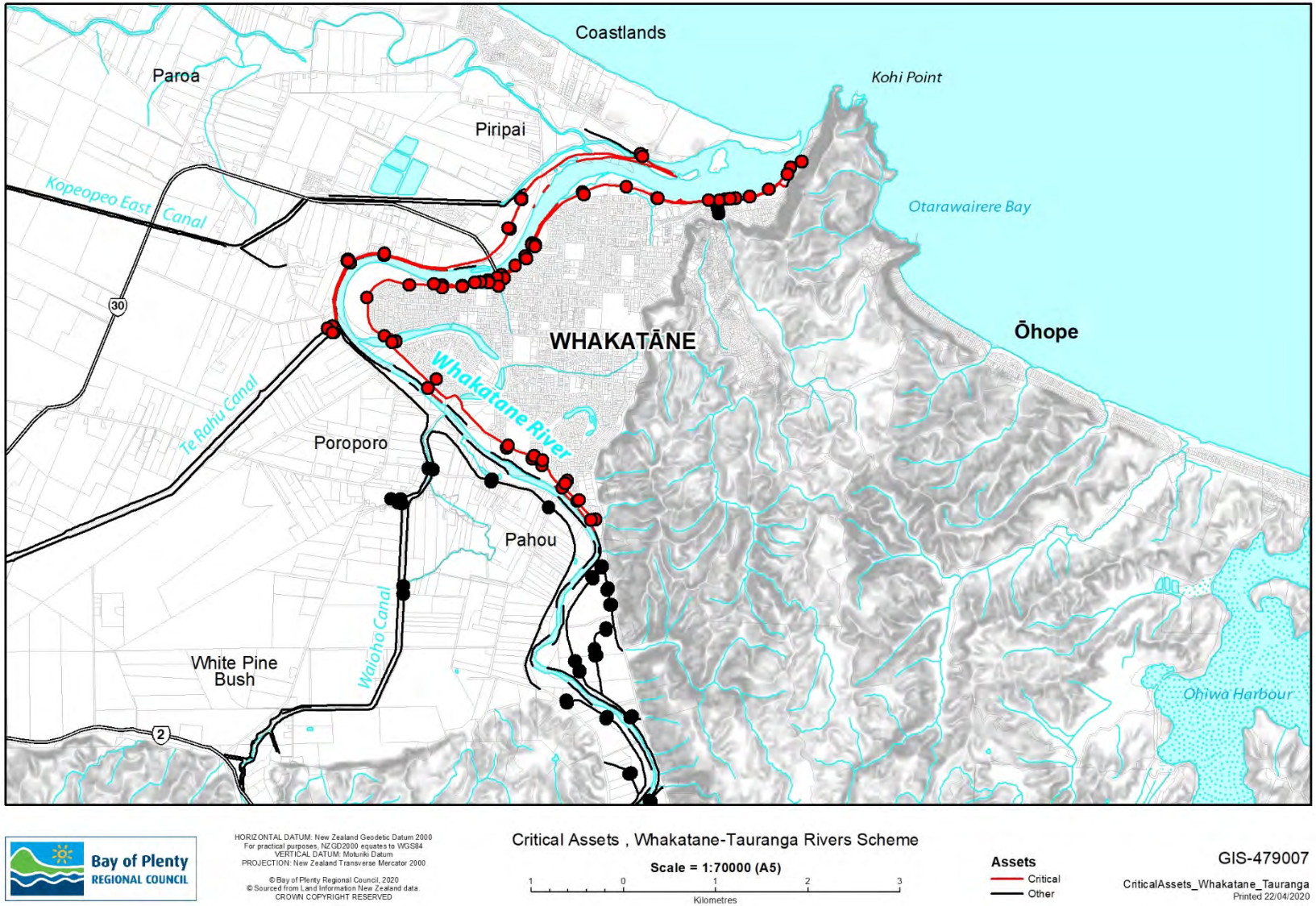


Figure 30 Critical Assets Whakatāne-Tauranga Rivers Scheme

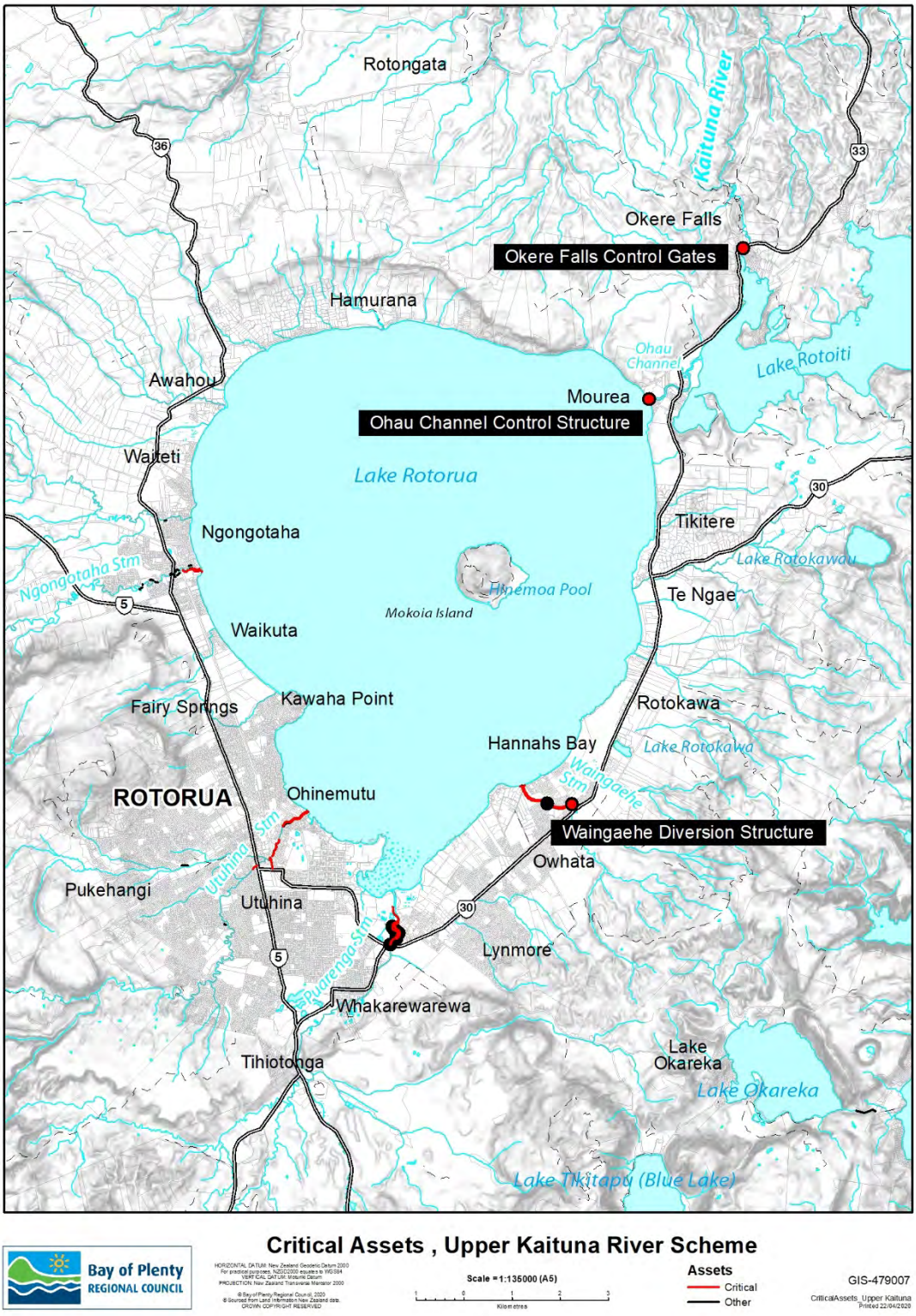


Figure 31 Critical Assets Kaituna Catchment Control Scheme

10.5 Business continuity

Bay of Plenty Regional Council has a Business Continuity Plan that accounts for the management of flood protection assets in civil defence emergency type situations. Council has the personnel, resource and preparedness to continue to operate flood protection assets in most conceivable events. The key process that provides readiness and response direction is the Flood Warning Manual. This is described further below.

10.6 Emergency management

10.6.1 Bay of Plenty Lifelines Group

Bay of Plenty Regional Council is a member and the administering authority of the Bay of Plenty Lifelines Group. This group is part of a national network of regional lifeline entities that formed under the New Zealand Lifelines Council. Lifelines groups represent the essential infrastructure and services that support our communities. In the case of this asset management plan – flood protection and response being the relative Council service.

Lifeline groups have responsibilities for planning and coordinating in a way which enables the continuation of important infrastructure services in an emergency or crisis event, with assistance from CDEM Groups, the Ministry of Civil Defence and Emergency Management (MCDEM) and other relevant Government agencies and regulatory bodies.

The Bay of Plenty Lifelines Group is a group of public and private utilities working together to mitigate our natural hazards and threats, thereby reducing risk to Bay of Plenty infrastructure and communities.

The group exists to support lifeline utilities to meet their legislative requirements, particularly those under the CDEM Act 2002. The Rivers and Drainage group has representation on the Lifeline Group.

10.6.2 Civil Defence Emergency Management

Bay of Plenty Regional Council is a member of the Bay of Plenty CDEM Group.

10.6.3 Bay of Plenty Regional Council Flood Warning Manual

Bay of Plenty Regional Council has a detailed Flood Warning Manual that outlines the key procedures to be undertaken during a flooding event. The main purpose of the manual is to assist the flood controller or anyone else on duty during a flood event, to carry out key functions with the objective of avoiding or reducing the risk to life and property from floods.

The manual is divided into several parts, generally covering the following:

- Introduction to use of the manual.
- Roles and activation.
- Flood management tools.
- Communications.
- Non Scheme areas.
- All Scheme related Rivers: Otara, Waioeka, Tauranga (known as Waimana River until 2014), Whakatāne, Rangitāiki, Tarawera and Kaituna.

- Lakes operational procedures.
- Coastal flooding processes.

Under each of the river schemes, the following items are generally covered:

- Warnings and warnings lists.
- River telemetry sites.
- Catchment hydrological characteristics.
- Current stopbank design standards.
- Predicted warning stages and travel times.
- Previous floods.
- Flood warning contact detail lists.

The flood warning telephone lists are updated on an annual basis to verify property owners and their contact details. Bay of Plenty Regional Council manages a telemetry system that records river flows and rainfall at critical locations throughout the Bay of Plenty region. When pre-determined trigger levels are reached or exceeded, automated notifications are sent to the BOPRC Duty Flood Manager.

The Duty Flood Manager contact phone number is 0800 884 881 ext 9845.

During a flood event, a number of people are contacted including but not limited to:

- BOPRC staff in charge of river works.
- BOPRC Area Engineers – staff that manage the day-to-day operations of schemes.
- BOPRC Managers – Engineering and Rivers and Drainage Operations and Assets.
- Any contractors currently working on or near rivers.
- Members of the established flood warning groups.
- Local and Group CDEM Duty Managers.

Flood warnings are notified to the CDEM Group Controller and Bay of Plenty Group Emergency Coordination Centre Duty Manager where there is the possibility that the nature or extent of the flood could lead to the declaration of a civil defence emergency.

The information provided would include but is not limited to:

- Predicted peak river levels.
- Possible storm surge levels.
- Expected extent and area of flooding and numbers of properties that could be adversely affected.

Availability of flood response resources.

11 Financial planning

11.1 Financial planning

To undertake a sustainable, long-term approach to asset management, it is essential to prepare long-term financial forecasts. This allows a long-term view of how the asset will be managed, how much this will cost and when additional funding may be required to meet expected service levels.

11.1.1 Summary financial forecast – all schemes

The tables below contains the Rivers and Drainage Statement of Financial Performance, which incorporates the projected income and funding sources to fund operational, renewal and capital expenditure for the next 50 years (2021-2071).

Note: Financial information is draft and will be updated following the workshop – for adoption for audit in December 2020.

Table 42 Rivers and Drainage financial performance 2021-2071

	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2032-41	2042-51	2052-61	2062-71
UNINFLATED	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Operating revenue														
Targeted rates	10,255	10,531	10,726	10,955	11,260	11,565	11,903	12,537	12,629	12,792	120,537	119,939	119,899	120,193
General funding	2,362	1,617	1,491	1,395	1,471	1,533	1,627	1,635	1,775	2,045	20,992	20,853	20,841	20,918
Operating grants and subsidies	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fees and charges	12	12	12	12	12	12	12	12	12	12	376	376	376	376
Other revenue	364	339	333	371	414	417	412	412	412	408	-	-	-	-
Total operating revenue	**12,993**	**12,500**	**12,563**	**12,734**	**13,157**	**13,527**	**13,954**	**14,596**	**14,828**	**15,256**	**141,906**	**141,168**	**141,116**	**141,487**
Operating expenditure														
Kaituna Catchment	3,229	1,858	1,864	1,871	1,891	2,773	1,937	1,980	2,010	2,022	25,409	25,405	25,405	25,405
Rangitāiki Tarawera River Scheme	2,575	3,950	2,448	2,437	2,416	2,397	3,115	2,367	2,361	2,357	28,442	28,425	28,425	28,425
Whakatāne Tauranga Rivers Scheme	1,481	1,340	2,857	1,424	1,459	1,475	1,494	1,524	1,573	1,613	21,846	21,098	21,049	21,416
Waioeka Otara Rivers Scheme	842	848	878	2,086	890	898	908	921	1,538	956	8,164	8,161	8,161	8,161
Rangitāiki Drainage Scheme	760	550	569	578	585	689	600	607	615	851	9,409	9,409	9,409	9,409
Sub total expenditure	**8,886**	**8,546**	**8,616**	**8,396**	**7,240**	**8,233**	**8,054**	**7,399**	**8,096**	**7,799**	**93,270**	**92,498**	**92,449**	**92,816**
Overhead and corporate charges														
Corporate Costs	3,524	3,690	3,711	3,704	3,722	3,738	3,722	3,720	3,617	3,608	23,468	23,467	23,467	23,467
Total expenditure	**12,410**	**12,237**	**12,327**	**12,101**	**10,962**	**11,971**	**11,776**	**11,119**	**11,714**	**11,407**	**116,738**	**115,965**	**115,916**	**116,283**
Net deficit (surplus) to fund	**(583)**	**(263)**	**(235)**	**(633)**	**(2,195)**	**(1,556)**	**(2,178)**	**(3,477)**	**(3,114)**	**(3,849)**	**(25,167)**	**(25,203)**	**(25,201)**	**(25,204)**
Funding required														
(Increase)/decrease in reserves	(583)	(263)	(235)	(633)	(2,195)	(1,556)	(2,178)	(3,477)	(3,114)	(3,849)	(25,167)	(25,203)	(25,201)	(25,204)
Total operating funding	**(583)**	**(263)**	**(235)**	**(633)**	**(2,195)**	**(1,556)**	**(2,178)**	**(3,477)**	**(3,114)**	**(3,849)**	**(25,167)**	**(25,203)**	**(25,201)**	**(25,204)**
Capital														
Kaituna Catchment	7,203	220	100	550	580	100	1,645	1,133	340	52	4,489	4,896	8,506	3,006
Rangitāiki Tarawera River Scheme	4,250	1,600	1,230	-	-	-	50	150	150	-	3,832	3,578	3,050	2,564
Whakatāne Tauranga Rivers Scheme	1,750	1,250	3,100	2,065	180	150	150	930	1,430	-	7,497	3,187	3,274	3,670
Waioeka Otara Rivers Scheme	600	1,630	-	-	-	-	-	100	150	1,050	2,647	1,790	2,591	1,842
Rangitāiki Drainage Scheme	410	1,100	500	200	200	200	200	200	242	140	133	134	184	468
Total capital expenditure	**14,213**	**5,800**	**4,930**	**2,815**	**960**	**450**	**2,045**	**2,513**	**2,312**	**1,242**	**18,597**	**13,585**	**17,604**	**11,550**

Capital funding														
Grants, subsidies and insurance revenue	7,436	1,919	652	-	-	-	-	-	-	-	-	-	-	-
Increase in debt	6,777	3,881	4,278	2,815	960	450	2,045	2,513	2,312	1,242	18,597	13,585	17,604	11,550
Total capital funding applied	**14,213**	**5,800**	**4,930**	**2,815**	**960**	**450**	**2,045**	**2,513**	**2,312**	**1,242**	**18,597**	**13,585**	**17,604**	**11,550**

11.1.2 Kaituna Catchment Control Scheme financial summary 2021-2071

Table 43 Forecast financial summary ($)

	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2032-41	2042-51	2052-61	2062-71
UNINFLATED	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Operating revenue														
Targeted rates	1,905	1,969	2,040	2,110	2,216	2,301	2,412	2,711	2,756	2,790	30,093	30,093	30,093	30,093
General funding	560	242	251	259	278	296	320	353	368	454	7,522	7,523	7,523	7,523
Operating grants and subsidies	-	-	-	-	-	-	-	-	-	-				
Fees and charges	-	-	-	-	-	-	-	-	-	-				
Other revenue	151	134	149	180	199	197	198	198	198	198	1,982	1,982	1,982	1,982
Total operating revenue	**2,615**	**2,345**	**2,440**	**2,548**	**2,693**	**2,794**	**2,930**	**3,262**	**3,322**	**3,442**	**39,597**	**39,598**	**39,598**	**39,598**
Operating expenditure														
Other Operating Costs	2,453	1,062	1,082	1,104	1,128	2,021	1,183	1,214	1,249	1,283	17,895	17,895	17,895	17,895
Finance costs	282	308	295	285	281	270	271	284	279	261	2,712	2,709	2,709	2,709
Depreciation and amortisation	494	487	487	482	482	482	482	482	482	478	4,802	4,801	4,801	4,801
Sub total expenditure	**3,229**	**1,858**	**1,864**	**1,871**	**1,891**	**2,773**	**1,937**	**1,980**	**2,010**	**2,022**	**25,409**	**25,405**	**25,405**	**25,405**
Corporate Costs	854	888	894	893	897	902	898	898	875	873	5,654	5,654	5,654	5,654
Total expenditure	**4,083**	**2,746**	**2,758**	**2,765**	**2,788**	**3,675**	**2,834**	**2,878**	**2,885**	**2,896**	**31,063**	**31,059**	**31,059**	**31,059**
Net deficit (surplus) to fund	**1,468**	**401**	**319**	**216**	**95**	**881**	**(96)**	**(385)**	**(437)**	**(546)**	**(8,534)**	**(8,540)**	**(8,540)**	**(8,540)**
Funding required														
(Increase)/decrease in reserves	1,468	401	319	216	95	881	(96)	(385)	(437)	(546)	(8,534)	(8,540)	(8,540)	(8,540)
Total operating funding	**1,468**	**401**	**319**	**216**	**95**	**881**	**(96)**	**(385)**	**(437)**	**(546)**	**(8,534)**	**(8,540)**	**(8,540)**	**(8,540)**
Capital														
Kaituna pump station electronic upgrades	95	170	-	-	-	-	265	133	-	52	-	-	-	-
Ford Road Pump Station	1,800	-	-	-	-	-	-	-	-	-	-	-	-	-
Te Puke Stormwater Project	2,500	-	-	-	-	-	-	-	-	-	-	-	-	-
Utuhina stream stopbanks	630	-	-	-	-	-	-	-	-	-	-	-	-	-
Kaituna Mole	564	-	-	-	-	-	-	-	-	-	-	-	-	-
Kaituna Upper stopbanks	-	-	-	-	-	-	-	-	-	-	600	550	550	550
Kaituna lower stopbanks	-	-	-	-	-	-	-	-	-	-	1,251	1,251	1,251	1,251
Kaituna climate change	-	-	-	-	-	-	-	-	-	-	1,125	1,125	1,125	1,125
Kaituna lower renewals	-	-	-	-	-	-	-	-	-	-	1,266	318	3,332	-
Kaituna Upper Floodwalls	-	-	-	-	-	-	-	-	-	-	246	14	-	-
Kaituna consent renewal	-	-	-	-	-	-	-	-	-	-	-	1,638	80	80
Okere Gates	-	-	-	-	-	-	-	-	-	-	-	-	2,167	-
Upper Kaituna stopbank modelling	50	50	-	-	-	-	-	-	340	-	-	-	-	-

Ngongotaha Stream Civil Works	1,564	-	-	-	-	-	-	-	-	-	-	-	-	-
Upper Kaituna design	-	-	50	-	-	-	-	-	-	-	-	-	-	-
Upper Kaituna construction	-	-	-	400	350	-	-	-	-	-	-	-	-	-
Bell Road Drainage Mitigation	-	-	-	-	-	-	-	1,000	-	-	-	-	-	-
Lower Kaituna modelling	-	-	50	150	-	-	-	-	-	-	-	-	-	-
Lower Kaituna construction	-	-	-	-	150	100	-	-	-	-	-	-	-	-
Lower Kaituna construction	-	-	-	-	-	-	1,380	-	-	-	-	-	-	-
Kaituna scheme renewal of consent 20074	-	-	-	-	80	-	-	-	-	-	-	-	-	-
Total capital expenditure	**7,203**	**220**	**100**	**550**	**580**	**100**	**1,645**	**1,133**	**340**	**52**	**4,489**	**4,896**	**8,506**	**3,006**
Capital funding														
Grants, subsidies and insurance revenue	1,752	-	-	-	-	-	-	-	-	-				
Increase in debt	5,451	220	100	550	580	100	1,645	1,133	340	52	4,489	4,896	8,506	3,006
Total capital funding applied	**7,203**	**220**	**100**	**550**	**580**	**100**	**1,645**	**1,133**	**340**	**52**	**4,489**	**4,896**	**8,506**	**3,006**

11.1.3 Rangitāiki Drainage Scheme financial summary

Table 44 Forecast financial summary ($)

	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2032-41	2042-51	2052-61	2062-71
UNINFLATED	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Operating revenue														
Targeted rates	1,097	1,098	1,109	1,119	1,129	1,165	1,172	1,182	1,177	1,187	11,820	11,820	11,820	11,820
General funding	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating grants and subsidies	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fees and charges	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other revenue	4	2	3	5	7	6	6	6	6	6	60	60	60	60
Total operating revenue	**1,101**	**1,100**	**1,112**	**1,124**	**1,136**	**1,171**	**1,178**	**1,188**	**1,183**	**1,193**	**11,880**	**11,880**	**11,880**	**11,880**
Operating expenditure														
Other Operating Costs	692	468	473	479	484	588	498	505	513	749	8,390	8,390	8,390	8,390
Finance costs	34	48	62	66	66	67	67	68	68	68	678	678	678	678
Depreciation and amortisation	34	34	34	34	34	34	34	34	34	34	340	340	340	340
Sub total expenditure	**760**	**550**	**569**	**578**	**585**	**689**	**600**	**607**	**615**	**851**	**9,409**	**9,409**	**9,409**	**9,409**
Corporate Costs	455	473	477	475	476	479	476	475	459	458	1,936	1,936	1,936	1,936
Total expenditure	**1,214**	**1,023**	**1,046**	**1,053**	**1,061**	**1,168**	**1,076**	**1,082**	**1,074**	**1,309**	**11,344**	**11,344**	**11,344**	**11,344**
Net deficit (surplus) to fund	**113**	**(77)**	**(66)**	**(71)**	**(75)**	**(3)**	**(102)**	**(105)**	**(109)**	**116**	**(535)**	**(535)**	**(535)**	**(535)**
Funding required														
(Increase)/decrease in reserves	113	(77)	(66)	(71)	(75)	(3)	(102)	(105)	(109)	116	(535)	(535)	(535)	(535)
Total operating funding	**113**	**(77)**	**(66)**	**(71)**	**(75)**	**(3)**	**(102)**	**(105)**	**(109)**	**116**	**(535)**	**(535)**	**(535)**	**(535)**
Capital														
Capital expenditure														
Rangitaiki Drainage Schemes Renewals	260	500	500	200	200	200	200	200	242	140	133	134	184	468
East Drain redesign	150	600	-	-	-	-	-	-	-	-	-	-	-	-
Total capital expenditure	**410**	**1,100**	**500**	**200**	**200**	**200**	**200**	**200**	**242**	**140**	**133**	**134**	**184**	**468**
Capital funding														
Grants, subsidies and insurance revenue	-	-	-	-	-	-	-	-	-	-				
Increase in debt	410	1,100	500	200	200	200	200	200	242	140	133	134	184	468
Total capital funding applied	**410**	**1,100**	**500**	**200**	**200**	**200**	**200**	**200**	**242**	**140**	**133**	**134**	**184**	**468**

11.1.4 Rangitāiki-Tarawera Rivers Scheme financial summary 2021-2071

Table 45 Forecast financial summary ($)

	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2032-41	2042-51	2052-61	2062-71
UNINFLATED	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Operating revenue														
Targeted rates	3,878	3,956	4,012	4,081	4,175	4,276	4,368	4,484	4,526	4,604	45,379	45,379	45,379	45,379
General funding	769	388	295	312	335	347	376	309	319	444	3,774	3,797	3,796	3,796
Operating grants and subsidies	-	-	-	-	-	-	-	-	-	-				
Fees and charges	12	12	12	12	12	12	12	12	12	12	376	376	376	376
Other revenue	122	99	92	103	114	126	120	120	120	118	931	931	931	931
Total operating revenue	**4,782**	**4,455**	**4,411**	**4,508**	**4,636**	**4,761**	**4,875**	**4,924**	**4,977**	**5,176**	**50,460**	**50,482**	**50,482**	**50,482**
Operating expenditure														
Other Operating Costs	1,305	2,764	1,304	1,336	1,371	1,410	2,190	1,499	1,551	1,607	20,533	20,533	20,533	20,533
Finance costs	983	899	857	815	759	701	643	586	528	468	5,092	5,075	5,075	5,075
Depreciation and amortisation	287	287	287	286	286	286	282	282	282	282	2,818	2,818	2,818	2,818
Sub total expenditure	**2,575**	**3,950**	**2,448**	**2,437**	**2,416**	**2,397**	**3,115**	**2,367**	**2,361**	**2,357**	**28,442**	**28,425**	**28,425**	**28,425**
Corporate Costs	978	1,025	1,028	1,029	1,034	1,038	1,034	1,033	994	991	7,267	7,266	7,266	7,266
Total expenditure	**3,553**	**4,975**	**3,476**	**3,466**	**3,450**	**3,435**	**4,150**	**3,400**	**3,354**	**3,348**	**35,709**	**35,691**	**35,691**	**35,691**
Net deficit (surplus) to fund	**(1,229)**	**520**	**(935)**	**(1,042)**	**(1,186)**	**(1,326)**	**(726)**	**(1,525)**	**(1,622)**	**(1,828)**	**(14,751)**	**(14,791)**	**(14,791)**	**(14,791)**
Funding required														
(Increase)/decrease in reserves	(1,229)	520	(935)	(1,042)	(1,186)	(1,326)	(726)	(1,525)	(1,622)	(1,828)	(14,751)	(14,791)	(14,791)	(14,791)
Total operating funding	**(1,229)**	**520**	**(935)**	**(1,042)**	**(1,186)**	**(1,326)**	**(726)**	**(1,525)**	**(1,622)**	**(1,828)**	**(14,751)**	**(14,791)**	**(14,791)**	**(14,791)**
Capital														
Rangitaiki Floodway	2,800	-	-	-	-	-	-	-	-	-	-	-	-	-
Rangitaiki Tarawera Capital Renewal	1,000	1,000	-	-	-	-	-	-	-	-	-	-	-	-
Rangitāiki Tarawera stopbanks	-	-	-	-	-	-	-	-	-	-	2,100	2,100	1,664	1,364
Rangitāiki Tarawera floodgate repairs	-	-	-	-	-	-	-	-	-	-	213	-	-	-
Rangitāiki Tarawera Pump repairs	-	-	-	-	-	-	-	-	-	-	318	-	-	-
Rangitaiki Tarawera Climate change	-	-	-	-	-	-	-	-	-	-	1,200	1,260	1,240	1,200
Rangitāiki Tarawera floodwalls	-	-	-	-	-	-	-	-	-	-	-	218	146	
Rangitaiki Tarawera Flood Damage Repairs	400	-	-	-	-	-	-	-	-	-	-	-	-	-
Rangitaiki River modelling	-	-	-	-	-	-	-	150	150	-	-	-	-	-
Tarawera stopbank design	50	-	-	-	-	-	-	-	-	-	-	-	-	-

Tarawera stopbank construction	-	600	1,200	-	-	-	-	-	-	-	-	-	-	-
Rangitaiki Tarawera pump electronics	-	-	30	-	-	-	-	-	-	-	-	-	-	-
Rangitaiki Tarawera survery & hydrology	-	-	-	-	-	-	50	-	-	-	-	-	-	-
Total capital expenditure	**4,250**	**1,600**	**1,230**	**-**	**-**	**-**	**50**	**150**	**150**	**-**	**3,832**	**3,578**	**3,050**	**2,564**
Capital funding														
Grants, subsidies and insurance revenue	4,316	907	-	-	-	-	-	-	-	-				
Increase in debt	(66)	693	1,230	-	-	-	50	150	150	-	3,832	3,578	3,050	2,564
Total capital funding applied	**4,250**	**1,600**	**1,230**	**-**	**-**	**-**	**50**	**150**	**150**	**-**	**3,832**	**3,578**	**3,050**	**2,564**

11.1.5 Waioeka-Otara Rivers Scheme financial summary 2021-2071

Table 46 Forecast financial summary ($)

	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2032-41	2042-51	2052-61	2062-71
UNINFLATED	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Operating revenue														
Targeted rates	1,559	1,561	1,565	1,565	1,579	1,606	1,637	1,658	1,683	1,714	16,852	16,852	16,852	16,852
General funding	325	347	366	381	392	408	428	447	544	517	5,026	5,026	5,026	5,026
Operating grants and subsidies	-	-	-	-	-	-	-	-	-	-				
Fees and charges	-	-	-	-	-	-	-	-	-	-				
Other revenue	5	12	21	2	26	15	5	5	5	5	51	51	51	51
Total operating revenue	**1,889**	**1,920**	**1,952**	**1,948**	**1,997**	**2,030**	**2,071**	**2,110**	**2,232**	**2,236**	**21,929**	**21,929**	**21,929**	**21,929**
Operating expenditure														
Other Operating Costs	604	586	599	1,816	630	647	667	688	1,312	737	5,921	5,921	5,921	5,921
Finance costs	104	129	145	136	127	117	108	99	92	85	904	901	901	901
Depreciation and amortisation	134	134	134	134	134	134	134	134	134	134	1,338	1,338	1,338	1,338
Sub total expenditure	**842**	**848**	**878**	**2,086**	**890**	**898**	**908**	**921**	**1,538**	**956**	**8,164**	**8,161**	**8,161**	**8,161**
Corporate Costs	435	464	467	467	469	471	469	469	467	464	3,286	3,286	3,286	3,286
Total expenditure	**1,276**	**1,312**	**1,345**	**2,553**	**1,359**	**1,370**	**1,378**	**1,390**	**2,004**	**1,420**	**11,450**	**11,447**	**11,447**	**11,447**
Net deficit (surplus) to fund	**(612)**	**(608)**	**(606)**	**605**	**(638)**	**(660)**	**(693)**	**(720)**	**(228)**	**(816)**	**(10,479)**	**(10,482)**	**(10,482)**	**(10,482)**
Funding required														
(Increase) / decrease in reserves	(612)	(608)	(606)	605	(638)	(660)	(693)	(720)	(228)	(816)	(10,479)	(10,482)	(10,482)	(10,482)
Total operating funding	**(612)**	**(608)**	**(606)**	**605**	**(638)**	**(660)**	**(693)**	**(720)**	**(228)**	**(816)**	**(10,479)**	**(10,482)**	**(10,482)**	**(10,482)**
Capital														
Waioeka Otara Capital New	-	-	-	-	-	-	-	-	-	900	-	-	-	-
Otara Floodwalls	500	-	-	-	-	-	-	-	-	-	-	-	-	-
Waioeka Otara stopbanks	-	-	-	-	-	-	-	-	-	-	1,315	1,050	1,050	1,050
Waioeka Otara Pump repairs	-	-	-	-	-	-	-	-	-	-	142	-	20	142
Waioeka Otara Consent renewal	-	-	-	-	-	-	-	-	-	-	90	90	90	
Waioeka Otara Climate change	-	-	-	-	-	-	-	-	-	-	1,100	650	850	650
Waioeka Otara floodwalls	-	-	-	-	-	-	-	-	-	-	-	-	553	

Waioeka Otara culvert replacement	-	-	-	-	-	-	-	-	-	-	-	-	28	
Waioeka design	100	15	-	-	-	-	-	-	-	-	-	-	-	-
Waioeka Otara Hydrology	-	-	-	-	-	-	-	100	-	-	-	-	-	-
Waioeka Otara construction	-	1,615	-	-	-	-	-	-	-	-	-	-	-	-
Waioeka Otara modelling	-	-	-	-	-	-	-	-	150	150	-	-	-	-
Total capital expenditure	**600**	**1,630**	**-**	**-**	**-**	**-**	**-**	**100**	**150**	**1,050**	**2,647**	**1,790**	**2,591**	**1,842**
Capital funding														
Grants, subsidies and insurance revenue	-	-	-	-	-	-	-	-	-	-				
Increase in debt	600	1,630	-	-	-	-	-	100	150	1,050	2,647	1,790	2,591	1,842
Total capital funding applied	**600**	**1,630**	**-**	**-**	**-**	**-**	**-**	**100**	**150**	**1,050**	**2,647**	**1,790**	**2,591**	**1,842**

11.1.6 Whakatāne-Tauranga Rivers Scheme financial summary 2021-2071

Table 47 Forecast financial summary ($)

	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2032-41	2042-51	2052-61	2062-71
UNINFLATED	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Operating revenue														
Targeted rates	1,817	1,947	2,000	2,080	2,161	2,218	2,314	2,503	2,487	2,498	16,394	15,795	15,756	16,050
General funding	707	640	580	445	467	482	502	526	544	630	4,669	4,507	4,494	4,571
Operating grants and subsidies	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fees and charges	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other revenue	82	92	69	82	69	72	83	83	83	81	827	827	827	827
Total operating revenue	**2,607**	**2,679**	**2,648**	**2,606**	**2,696**	**2,771**	**2,899**	**3,112**	**3,113**	**3,209**	**21,891**	**21,130**	**21,078**	**21,448**
Operating expenditure														
Other Operating Costs	1,017	885	2,390	931	958	987	1,019	1,055	1,094	1,137	16,157	16,157	16,157	16,157
Finance costs	201	192	204	232	241	228	214	209	219	216	1,709	882	767	1,069
Depreciation and amortisation	264	264	264	261	261	261	261	261	261	261	3,981	4,059	4,125	4,190
Sub total expenditure	**1,481**	**1,340**	**2,857**	**1,424**	**1,459**	**1,475**	**1,494**	**1,524**	**1,573**	**1,613**	**21,846**	**21,098**	**21,049**	**21,416**
Corporate Costs	802	841	844	841	845	848	845	845	823	821	5,325	5,325	5,325	5,325
Total expenditure	**2,284**	**2,181**	**3,702**	**2,265**	**2,304**	**2,324**	**2,339**	**2,369**	**2,396**	**2,434**	**27,172**	**26,423**	**26,374**	**26,741**
Net deficit (surplus) to fund	**(323)**	**(498)**	**1,053**	**(342)**	**(392)**	**(448)**	**(561)**	**(742)**	**(717)**	**(775)**	**5,281**	**5,294**	**5,296**	**5,293**
Funding required														
(Increase) / decrease in reserves	(323)	(498)	1,053	(342)	(392)	(448)	(561)	(742)	(717)	(775)	5,281	5,294	5,296	5,293
Total operating funding	**(323)**	**(498)**	**1,053**	**(342)**	**(392)**	**(448)**	**(561)**	**(742)**	**(717)**	**(775)**	**5,281**	**5,294**	**5,296**	**5,293**
Capital														
Capital expenditure														
Whakatane Tauranga Flood Damage Repairs	700	-	-	-	-	-	-	-	-	-	-	-	-	-
Whakatane Tauranga culvert renewals	50	-	50	-	-	50	50	50	50	-	-	-	-	-
Whakatane River (modelling)	-	50	-	-	50	100	100	-	-	-	-	-	-	-
Whakatāne Tauranga Climate Change	-	-	-	-	-	-	-	-	-	-	1,510	890	890	890
Whakatāne Tauranga Stopbanks	-	-	-	-	-	-	-	-	-	-	1,300	1,300	1,300	1,300
Whakatāne Tauranga Floodwalls	-	-	-	-	-	-	-	-	-	-	1,900	-	200	460
Whakatāne Tauranga Floodgates	-	-	-	-	-	-	-	-	-	-	1,422	-		
Whakatāne Tauranga Pump repairs	-	-	-	-	-	-	-	-	-	-	1,365	997	884	1,020
Whakatane River stopbanks (Stage 2)	1,000	1,000	1,000	-	-	-	-	-	1,380	-	-	-	-	-

Te Rahu Pump electronics	-	-	-	35	-	-	-	-	-	-	-	-	-	-
Orini Pump electronics	-	-	-	-	80	-	-	-	-	-	-	-	-	-
Trident stopbank design	-	150	-	-	-	-	-	-	-	-	-	-	-	-
Trident stopbank construction	-	-	2,000	-	-	-	-	-	-	-	-	-	-	-
Whakatane Tauranga river hydrology	-	-	-	-	50	-	-	-	-	-	-	-	-	-
Whakatane Tauranga river design	-	-	-	-	-	-	-	100	-	-	-	-	-	-
Whakatane Tauranga river climate change	-	-	-	730	-	-	-	780	-	-	-	-	-	-
Whakatane Tauranga canal modelling	-	50	50	-	-	-	-	-	-	-	-	-	-	-
Whakatane Tauranga canal construction	-	-	-	1,300	-	-	-	-	-	-	-	-	-	-
Total capital expenditure	**1,750**	**1,250**	**3,100**	**2,065**	**180**	**150**	**150**	**930**	**1,430**	**-**	**7,497**	**3,187**	**3,274**	**3,670**
Capital funding														
Grants, subsidies and insurance revenue	1,369	1,011	652	-	-	-	-	-	-	-				
Increase in debt	382	238	2,448	2,065	180	150	150	930	1,430	-	7,497	3,187	3,274	3,670
Total capital funding applied	**1,750**	**1,250**	**3,100**	**2,065**	**180**	**150**	**150**	**930**	**1,430**	**-**	**7,497**	**3,187**	**3,274**	**3,670**

11.2 Funding strategy

11.2.1 Funding

The Rivers and Drainage schemes are managed under the Soil Conservation and Rivers Control Act 1941. The Act allows for separately rated river schemes on a catchment-by-catchment basis.

Bay of Plenty Regional Council manages the Rangitāiki Drainage Scheme under the Rangitāiki Land Drainage Act 1956.

Targeted rates contribute 80% of river scheme costs. These are identified under each separate rating area, with the proportional funding distribution varying across each scheme.

Regional general funds contribute to 20% of the scheme rates (except the Rangitāiki Drainage scheme which is 100% target rate funded) to acknowledge the broader benefits that the schemes provide. Rates on any property are calculated on the basis of land area and benefit classification of that property.

Additional funding sources such as interest on scheme reserves and one-off contributions from external sources also assist in funding scheme budgets. A further breakdown of this is accessible via BOPRC's Revenue and Financing Policy on Council's website – www.boprc.govt.nz.

11.2.2 Significance Policy and Strategic Assets

Council's Policy on Significance lists the Rivers and Drainage assets as strategic assets. This means that any transfer of ownership of the assets would be a significant decision and would require a full analysis of options and consideration of community views and preferences in Council's decision-making process.

11.3 Disposals

At this time, BOPRC has no plans to dispose of any of its Rivers and Drainage assets.

Bay of Plenty Regional Council does not have a disposal and/or acquisition plan or strategy developed for any of its Rivers and Drainage schemes. There are no intentions to dispose of any of the scheme assets at this time as scheme assets are not normally disposed of and design standards are not normally lowered. Although there is no current acquisition plan, with the potential effects of climate change it may be necessary to alter the required design parameters for the scheme dependent upon community wishes.

12 Assumptions

12.1 Asset valuation

Introduction

Statutory financial reporting requires BOPRC to revalue its fixed assets at least every five years. Bay of Plenty Regional Council undertakes to value the river and drainage assets annually. An asset valuation is to be used for asset management (calculating long-term asset renewal projections), identifying loss of service potential (depreciation), and for financial reporting purposes.

Accounting standards

New Zealand International Financial Reporting Standard (NZIAS16) applies to all Rivers and Drainage infrastructure assets considered in the scope of this valuation for the general purpose of financial reports.

Industry guidelines

All infrastructure assets valued have been done so in accordance with the methodology prescribed in the New Zealand Infrastructure Asset Valuation and Depreciation Guidelines 2006.

Assets have been valued to fair value. In the case of these specialised Rivers and Drainage assets, fair value is deemed to be depreciated replacement cost as explained in NZIAS16.

12.2 Valuation process and methodology

The last valuation was undertaken by BOPRC for 1 July 2020 and builds on valuations undertaken previously.

Asset register

Bay of Plenty Regional Council's Rivers and Drainage assets are contained within the GIS geospatial system and Tech 1 financial system. Valuations are undertaken within a spread sheet and migrated back into the Finance system.

Standard replacement costs and unit rates have been established where appropriate from information sourced from recent construction jobs, industry quotes and the latest labour, plant and material costs. Where historical tender prices have been used in the valuation they have been adjusted for inflation using the relevant index.

The Capital Goods Price Index (CGPI) provided by Statistics NZ (Category: Land Improvements: Reclamation & River Control, S2DD) has been used for all Rivers and Drainage assets.

The information is considered as accurate and complete for the purpose of the valuation.

Asset assumptions (valuation assumptions)

The assumptions that have been used in the valuation of BOPRC's Rivers and Drainage assets are as follows:

- Depreciation is by the straight-line method.
- Asset Base Life or Total Useful Life have been used as detailed in Table 49 below.
- The valuations are all reported in a Microsoft Excel format.
- Asset information is as complete as possible at 1 July 2020.
- Only utility assets have been valued.

Base life of assets used in this valuation are as follows:

Table 48 Current infrastructural asset base lives

Item	Base lives
Stopbank	Perpetuity (with settlement)
Rock work	Perpetuity
Concrete wall	50
Culvert	50
Edge planting	Perpetuity
Buffer zone	Perpetuity
Trenched willows	Perpetuity
Fencing	Perpetuity
Rubble	Perpetuity
Waterway	Perpetuity
Pump station	70
Pumps	35
Pump electronics	15
Pump electrical	30
Pump ancillary	40
Sluice gate	70
Flood-gate	70
Flap gate	25
Stoplog	40
Drop structure	40
Timber wall	40
Groyne (Mole)	70
Concrete structure	70
Gabion	20
Radial gate	40

12.3 Policies

Significant forecast assumptions have been used in preparing this plan. Those assumptions have come from:

- Legislative requirements;
- Council's funding, financial and operational policies and strategies;
- Relevant financial reporting standards issued by the New Zealand Institute of Chartered Accountants;
- Industry best practices and norms; and
- Generally Accepted Accounting Practice (GAAP).

Risks that threaten our expected future or outlook have been identified. If the risks were to eventuate, they would have an effect on our intended levels of service, actions and assets.

The assumptions made when preparing these forecasts were adopted in June 2019 and incorporate known financial results as at that date and estimates for the year to 30 June 2020. Events occurring after this date may have a significant effect on these forecasts.

Assumptions about assets

Assumptions on the useful life of Council's significant assets and the sources of funds for their future replacement are depicted in the following table.

Table 49 Assumptions on the useful life of significant assets and funding sources

Assets	Useful life	Source of funds for replacement
Buildings	10 to 100 years	Depreciation/loans
Plant and equipment	3 to 10 years	Depreciation/general funds
Infrastructural assets	20 to 70 years	Depreciation/loans

Stopbanks are maintained to convey their design flood carrying capacity. However, settlement of 50% of the freeboard will be allowed before stopbank reconstruction is undertaken.

To account for settlement, stopbank reconstruction will be required on average every 20 years. To account for this, a depreciation rate of 0.3% is used. In this instance, after 20 years, the stopbanks will have lost 6% of their volume and therefore value.

Rivers and Drainage assets are revalued annually. This is achieved by reviewing costs over the previous year and recalculating replacement costs and annual depreciation charges. Annual valuations are completed internally and externally peer reviewed.

Current external borrowing for Rivers and Drainage schemes will, on maturity, be refinanced using internal loans from Council's cash reserves.

Insurance

All the Rivers and Drainage assets, a value of $368M (2020 ORC), are covered by commercial insurance contracts (excluding live trees).

None of the Rivers and Drainage assets are covered by financial risk sharing arrangements.

Flood and disaster repair funding methods

There are three methods used to prepare financially for flood damages and disaster recovery.

(i) The annual flood repair allowance for each scheme.

(ii) Annual contributions to the Flood Damage Reserves (this reserve is able to be accessed, subject to Council approval, for flooding repairs resulting from flood events in excess of five year ARI).

(iii) Disaster Insurance for major events (including very significant flood events). Disaster insurance was covered by the LAPP scheme until 30 June 2014 and from then is covered by commercial insurance.

When an annual flood repair allowance is unspent at the end of a financial year it is transferred into the applicable Flood Damage Reserve.

Flood damage reserve cap

A review of the Flood Damage Reserve cap established that it would be prudent to have no cap on the reserve, for the following reasons:

- Floods since 2004 have demonstrated that repair costs can be substantial and have often exceeded previously recommended caps.
- As of 2014, the Council commercially insures infrastructural assets and if flood reserves reach sufficient levels, there is potential that schemes can self-insure for disasters. In the interim, as the flood reserve builds, the level of risk reduces and the ability to pay a higher excess increases and with this the insurance premiums reduce.
- The ongoing collection of flood reserves at a moderate rate provides a good level of intergenerational equity as storm events tend to follow cyclic climatic periods and resulting repair costs are quite variable.

Operational policies: Rivers and Drainage

A River Scheme Waterway Fencing Policy was adopted following consultation with River Scheme Advisory Groups in March and November 2013. This policy has resulted in a fencing allowance being established for the purposes of enabling this policy.

An Operational Climate Change Policy has been drafted clarifying the existing position for Rivers and Drainage assets. Climate change is included for the life of an asset. Stopbank construction and top ups include an allowance for climate change for the period until the next top-up is likely. Other structures including flood walls and culverts are constructed to a design that includes climate change over the asset design life, i.e. if a flood wall has a design life of 70 years it is to be designed for flood levels expected in 70 years' time.

12.4 Key planning assumptions and limitations of this plan

This intermediate-advanced AMP has been prepared based on the following assumptions:

- Currently available information;
- Condition assessments completed to date;
- Existing levels of service;
- Financial forecasts completed for 50 years.

12.5 Asset management financial assumptions

The following Rivers and Drainage asset management assumptions have been made in preparing the 50-year expenditure forecasts:

- Asset information is as complete as possible at 1 July 2020. This is based on the valuation data and report compiled by the Rivers and Drainage and Engineering Teams.
- Only Rivers and Drainage scheme assets have been valued.
- The determination of asset replacement value, depreciated value, and renewal projections are based on the valuation and condition assessment data as at 1 July 2020.
- All projected expenditure is stated in dollar values as at 1 July 2020, with no allowance made for inflation.
- Operational costs are based on historical expenditure, asset maintenance requirements and assessed costs.
- Maintenance and operations allocations are largely based on maintaining current service levels.
- The depreciation has been calculated on a straight-line basis.
- Confidence in the financial data used to produce the 50-year forecasts for this AMP has been assessed at 10%-80%. The lower confidence is associated with outlying years.
- Council staff have developed the AMP. Formal consultation will be undertaken with the LTP process.
- It is assumed that regulations relating to Rivers and Drainage will remain essentially the same over the planning period (i.e. 50 years to June 2071).

13 Audit and improvement

13.1 Our approach to this

Council is committed to applying and improving sound management practices in alignment with industry best practice. This is important to provide fiscally prudent and reliable services that our communities can have confidence in. This involves continually reviewing the efficacy of systems and procedures and working towards improvement in a cost-effective manner.

External review of our business is conducted systematically, with review by Audit New Zealand of our budget planning processes as part of the Long Term Plan process being a good example. This involves reviewing the methodology for budget generation, including how budgets relate to the AMP and the processes used in AMP budget development. External peer review is standard practice with the auditing of our annual valuations. Financial expenditure reporting is conducted routinely with Council and Advisory Groups.

Being well connected with the River Manager Special Interest Group is a fundamental way to ensure the way we manage our Rivers and Drainage schemes is current and fit for purpose. Internal processes such as documented reviews, communication with Council and Advisory Groups, and the Asset Management Steering Group are different methods for ensuring transparency and accuracy.

13.2 Past audits

As part of the development of this AMP, the Rivers and Drainage Assets and Engineering teams reviewed the improvement plan from the previous version of this AMP (2018-2068). Overall there was considerable progress made against the previous improvement plan. The following sub-headings capture the key improvement areas (those items that are still a work in progress are captured in the improvement plan section below).

Condition assessments

Assets covered by this AMP now have a systematic regime for condition assessment which is consistent with national best practice. This is a significant improvement in terms of risk management and asset replacement decision-making. To add to this, Council's in-house capability for geotechnical analysis has developed and built significant data about the geomorphological characteristics of soils in critical areas.

Technology One

Council has implemented this system and it is operational. Staff are competent at a functional level and are familiar enough with the system to provide a foundation for further learning. Tech 1 'champions' are in development and will continue to lead the realisation of further system functionality. The asset register which previously was held solely in spreadsheets is now maintained through Tech 1 and links directly with Council's mapping and financial systems. Further functionality will be realised as part of the implementation of this AMP's improvement plan below.

Project management

Council has strengthened our capability, capacity and systems in this respect. This ensures projects are appropriately managed, have a high success rate, and are fiscally prudent. The Procurement Team has fostered Council's development in this respect, working with staff that manage Rivers and Drainage related projects to apply good management.

13.3 Improvement plan

Overview

Council has adopted a strategic management approach to improvement planning, continually developing AMPs, and implementing improvement processes and practices. This is reflected by the establishment of Council's Strategic Asset Management Plan as part of the Long Term Plan 2021-2031 process, and Council's historic and ongoing commitment to sound asset management practices and planning procedures.

This improvement plan is integral to that approach, reflecting current business practice and identifying improvement actions to progress the AMP goals of this plan. Providing a better service to our customers and optimising resource use.

What are the key improvement areas?

Asset management work has been grouped into key asset management process areas for the purposes of improvement planning in Table 50 below. Improvement in these areas is critical to achieving sustained performance of the organisation at the lowest lifecycle cost.

Table 50 Key asset management process areas

Core business process	Key elements
Asset management/information systems	• Asset register • Plans and records • Financial system • GIS • Modelling • Project management • System Integration • Availability/usability
Asset data and knowledge processes	• Asset hierarchy • Maintenance records • Condition assessments • Performance monitoring and utilisation • Lifecycle cost data • Asset age/lives • Risk data (critically)
Operations and maintenance processes	• Maintenance management. • Contract monitoring and control • Operational expenditure analysis/review
Demand analysis and strategic planning processes	• Demand analysis • Failure prediction • Risk assessment • Renewal optimisation • Levels of Service reviews • Long Term Plan

Core business process	Key elements
Asset capital processes	• Project identification/priorities • Capital expenditure evaluation • Contract monitoring and control (capital works) • Construction/design standards • Asset handover • Asset rationalisation/disposal
Organisational/commercial	• Asset management review and improvement • Contracting policies • Internal quality assurance processes • Corporate commitment • Asset management roles • Corporate asset management team • Training programme

Improvement goals and projects

The tables that follow consider the key improvement areas described above and identify improvement goals. The improvement goals are grouped together into improvement projects. Currently the improvement goals all have equal priority and the intention is that the goals will be addressed through the development of improvement project plans as shown in Table 51 below.

Table 51 Improvement goals and projects

Project name	Project code	Project lead	Project resourcing
Tech 1 integration and optimisation	Tech 1	Rivers and Drainage Assets	$45,000 per annum additional
Business processes review and improvement	BPR&I	Rivers and Drainage Assets	Existing internal resource
AMP implementation and improvement	AMP I&I	Rivers and Drainage Assets	Existing internal resource
Engineering business improvement	EBI	Engineering	Existing internal resource
River Scheme Sustainability	RSS	Engineering	Existing internal resource
Training and support	T&S	Rivers and Drainage Assets	$20,000 per annum additional

Additional annual resourcing required identified in the table above will be funded by distributing the cost across the Rivers and Drainage schemes covered by this AMP. Optimising the use of Tech 1 and training staff so that they are confident in its use is critical to delivering fiscally prudent asset management. This additional cost is an investment that has the intention to save river and drainage schemes money by optimising life-cycle costs of assets and better managing the asset portfolios.

It is intended that some improvement goals and projects will be completed in the first year of the LTP 2021-2031, while others may require a more prolonged effort and greater resource investment. Most improvement goals and projects identified in the following tables are expected to be completed within the next three years.

Ongoing monitoring and implementation of the improvement goals – and pending project plans – will be the responsibility of the Project Lead's identified. The Organisational Asset Management Steering Group will play an important role in improvement goal implementation monitoring also. Integrated Catchments Group Managers that have a role in implementing improvement goals in this AMP are represented as part of this group.

Commitment and collaboration primarily between managers and staff in the Integrated Catchments Group will be critical in the successful delivery of the improvement goals and projects.

13.3.1 Asset management information systems

From the initial decision to proceed with asset management through to the final operational phases, BOPRC needs systems to support a management decision-making structure with accurate asset information. The information systems necessary to support this type of program are often based around information technology (IT) systems and good paper trails.

It is critical that the IT system is accurately specified to meet the asset management requirements. The needs analysis to accomplish this involves understanding:

- The full ramifications of lifecycle asset management on the Council.
- The benefits to be derived.
- What is required from the IT systems.

The resources required will include project management, implementation and ongoing support staff, software, hardware, data collection, and system operation and maintenance. The cost can represent a substantial business investment, and this warrants a dedicated project management team to ensure satisfactory implementation and completion.

Information systems of this magnitude should be driven from the bottom-up and top down; if the information meets the requirements at the workforce level, then the systems will have a high level of ownership and will produce data that is valid and up to date. By aggregating this data, the information can be fed upwards to provide accurate and critical information to the management of the unit, and Council as a whole.

The needs and the type of data required at the workforce level are different depending on the level of management. Advancements in IT mean information databases, financial and technical, can be integrated into a common system.

Table 52 Information systems

Process	Current practice	Improvement goal	Project	Issue(s) to be addressed
Asset Register	• Asset Register is held in Tech 1. All spatial assets get entered into Tech 1 via ArcGIS, non-spatial assets go straight into Tech 1. • Updates of the asset register are undertaken by Rivers and Drainage Assets staff through the year, this is consolidated annually prior to valuation.	• Continue to integrate Tech 1 so that its full functionality is utilised. • Implement the Tech 1 Strategic Asset Management module, track the capital works process. Allocate condition assessment in the asset register. This will be enabled when the Strategic Asset Management module of Tech 1 is functional.	Tech 1 Tech 1 Tech 1	Many of the current AM processes are undertaken outside of or concurrently to Tech 1. Encouraging utilisation of Tech 1 for all AM processes will improve the consistency and accessibility of AM processes and data across the activity. Currently condition assessment data is separately allocated from the asset register. Undertaking this improvement will combine this into one system - Tech 1. This will address any potential issue of not having up to date and reliable condition data for assets.
Plans and records (as-builts, modelling reports etc.)	• The Information Team has responsibility for maintaining plans and records, including the hardcopy data. Information is generally accessed through contract number. • Historical hard copy reports/plans (back as far as 1960) have been scanned and electronically stored for access. • No documented organisational process for the capture of new capital works into the asset register. • Objective records management system went live in October 2008.	• Confirm an asset information capture and storage policy with appropriate processes detailed, using flow-chart diagrams and explanatory narrative as appropriate for use by all staff involved in the planning, creation and management of Rivers and Drainage assets. • Work towards Tech 1 being the central repository for all asset related information. • Train Rivers and Drainage Operations/Assets and Engineering staff in the use of Tech 1 and asset information management processes.	BPR&I Tech 1 T&S	This goal will improve the reliability and accessibility of historical hard copy reports/plans and reduce time spent locating information and data. Once complete Rivers and Drainage will have an asset information capture and storage policy and a software solution to implement the policy.
Financial system	• Tech 1 is Council's financial system and is used to manage budgets. • All financial reporting originates from Tech 1, including historic cost information from 2005. • Tech 1 is Council's electronic purchase order system. • Opex and capex planning is completed by Rivers and Drainage Assets staff in spreadsheets then loaded into Tech 1.	• Scope the feasibility of using Tech 1 to track costs (operating and capex) against individual assets. • Scope the feasibility of the integration of the Tech 1 asset register and financial forecasting system to find planning and reporting efficiencies.	Tech 1 Tech 1	Double handling of Opex and Capex planning leading to inefficiencies and increased risk of errors carried across the two current platforms. If it is determined that either of the Tech 1 improvement functionalities are feasible, then a business case can be made to implement this which will reduce the inefficiencies of the current platforms.
GIS	• ArcMap is the core GIS system. • GeoView2 is available on desk tops council wide. • BOPRC has a dedicated GIS department (there are also GIS skills within the Rivers and Drainage and Engineering groups). • Editing rights are limited to avoid any data issues in the systems. Version control is in place with asset layers updated annually.	• GIS data is captured and stored efficiently using ArcGIS and Tech 1. • That staff capability and capacity meets the foreseeable business requirements in relation to GIS data capture, storage and use. • Ensure GIS maps accurately reflect what is built and planned. • Asset GIS information is externally accessible so that communities and stakeholders can view the application area of the BOPRC Flood Protection and Drainage Bylaw 2020.	Tech 1 T&S BPR&I BPR&I	Increase efficiency of data capture and storage across ArcGIS and Tech 1. Increase staff capability and capacity to be able to meet business needs.

Process	Current practice	Improvement goal	Project	Issue(s) to be addressed
Advanced AM modules –modelling – particularly relates to stop bank design	• Hydraulic modelling software provides assessments and predicts impacts of future conditions on the flooding defences network. • Modelling is done through a mix of in-house capacity and out sourcing to external consultants. • Models are used to determine current capacity, future upgrades and potential future climate change capacity issues for each scheme. • Some schemes are yet to be modelled as whole of catchment (hydrology and hydraulics). • Separate modelling servers operational – useable by externals. • WaterRide software operational.	• Develop a modelling archive, including indexing and version control capability, system and process. • Modelling guidelines developed. • Balance between in house and external capability achieved to create efficiencies and business continuity. Using most appropriate software and technology to deliver objectives.	EBI EBI EBI EBI	There is a need to build on existing processing and modelling skills to increase efficiency of use and quality of modelling software and outputs. This project will begin to deliver on this.
Capital project management	• Internal project management system operational. • Engineering Team plans and delivers most capital works. • Rivers and Drainage Operations delivers routine capital works, e.g. culvert replacements. • Rivers and Drainage Assets maintains asset register and leads planning and consultation through AMP development.	• Capital project planning is developed in alignment with this AMP and connected with Tech 1 and other business systems as appropriate. • Capital projects are appropriately scoped, designed, approved and managed in consultation with Advisory Groups and Council. • All significant projects (cost >$50,000) are managed in the corporate project management framework. • All projects that involve creation or modification of assets are appropriately linked with or feed information to Tech 1.	EBI EBI BPR&I Tech 1	This goal will allow for integrated capital project planning across Council and better visibility and implementation of project scoping, design, approval and management of these projects.
System integration	• Tech 1 is being fully integrated into asset management processes.	• GIS/Asset register/Finance and Project Management are integrated through the use of Tech 1. • The Strategic Asset Management module in Tech 1 is integrated and staff are competent in it's use.	Tech 1 Tech 1	Currently only specific components of the Tech 1 system are integrated with the asset management processes. Undertaking these improvement goals will more fully integrate the systems and reduce administrative workload for staff.
Availability/ usability	• Systems are available for those that need them (i.e. GeoView2 viewer). • Tech 1 is relatively user friendly. • Overall speed of systems is good. • All staff have access to GeoView2 and Tech 1.	• Training for staff in the use of Tech 1 is delivered as needed. • User guides, support, and Tech 1 'champions' to be available. • Tech 1 reporting capability is understood and operational.	T&S T&S Tech 1	There is a continual need to keep staff trained in the use of Tech 1 so as to ensure ongoing utilisation of the system and to therefore realise the benefits of Tech 1.

13.3.2 Asset data and knowledge processes

One of the key assessment areas of asset management deals with data and knowledge factors such as the quality, accuracy, availability, and means of storing asset-related data and information. The asset data and knowledge BOPRC holds forms the basis of every decision. In fact, the extent and quality of the data dictates the quality and timeliness of decisions made by BOPRC.

The asset data and knowledge element assesses how BOPRC acquires and maintains knowledge of its assets. That is, how well do we really understand our assets?

Data standards are the rules governing the collection, organisation, and maintenance of data about assets. Good data is critical to both making sound decisions and to the confidence we have that the decision being recommended is the right decision at the right time. High levels of confidence are generated from implementing the best practices throughout the organisation and from good data.

The table below identifies the key elements of the recorded asset data and the accuracy and completeness of the existing date.

Table 53 Asset data and knowledge

Process	Current practice	Improvement goal (3-year focus)	Project	Issue(s) to be addressed
Asset hierarchy	• Asset Hierarchy used in the valuations has been transferred to the Tech 1 system for use in the AM and Works Module.	• Critical assets are identified and prioritised in the asset hierarchy.	BPR&I	Critical assets can further de designated through the AM system. Further formal prioritisation and establishment of a criticality hierarchy/framework will contribute towards designation of critical assets and reduce risk.
Maintenance records	• Currently finalising transition to Tech 1 as the central repository for all maintenance records.	• All maintenance records to be managed through Tech 1.	Tech 1	A centralised repository for maintenance records will address the issue of missing maintenance data. This will increase workflow efficiency and visibility of asset records for all staff.
Condition assessments	• Stopbanks and major asset group's condition visually reviewed on a systematic cycle. • Assessment of critical assets is prioritised. • Formal condition assessment initiated and documented in objective. • Regular maintenance assessments made, faults recorded or corrected.	• Use condition information in Tech 1 to inform renewal planning. • Tech 1 is updated to reflect results of condition assessments. • Competency and capacity is maintained to ensure appropriate transfer of knowledge and business continuity – internal capability with external back up.	Tech 1 Tech 1 T&S	Tech 1's full capability is not currently utilised. Maintaining up to date condition information in Tech 1 will allow proper use of Tech 1 to have more accurate and readily available renewal planning outputs. Having this data and information captured in one place will also allow for the transfer of knowledge within the organisation and help maintain overall business continuity in key asset information areas.
Performance monitoring/ utilisation	• Network modelling using modelling software. • Ongoing proactive maintenance programme: o Pump stations, desilting, tree maintenance etc. • Work plans prepared for major scheme maintenance and requests.	• Track maintenance history by asset type to identify trends in failure.	BPR&I	Currently trending maintenance history by asset type is not undertaken. Implementing this improvement will allow this to occur and result in the ability to identify failure trends for each asset type.
Life cycle cost data	• Tech 1 has the capability to provide this function but cost data has only recently started being logged in Tech 1 against assets. • Can track costs by asset type. • Expenditure is also tracked on a scheme basis due to targeted rates.	• Increase staff competency in the use of Tech 1. • Use Tech 1 to develop life-cycle cost profiles for assets, asset types, and schemes.	T&S Tech 1	This goal will address the issue of staff competency and utilisation of features already available in life-cycle cost profiling.
Asset age/lives	• Asset age and life is stored and updated in Tech 1. • AMP sets expected life for asset types. • Asset life effects renewals and depreciation.	• Develop and document process for determining remaining asset lives using AMP expected life forecasts, latest condition data, and maintenance history. • Review AMP asset expected life forecasts based on condition assessment data, replacement data, and industry best practice.	BPR&I BPR&I	This goal is related to continuous improvement of the activity and asset age/life expectancy forecasts that are prepared for the AMP. Using readily available data in Tech 1 will enable this review to be accurate and timely given the time constraints often associated with developing AMPs.
Risk data (criticality)	• Critical assets identified in the Tech 1 asset register. • Condition assessments methodology determines risk rating – risk rating score entered into Tech 1 against assets. • Condition assessment reports circulated amongst Council managers, Advisory Groups and Council as appropriate. • Condition defect work identified is planned and delivered based on operator judgement of urgency.	• Continue with current condition assessment methodology. • Modify condition assessment methodology as appropriate to continue to align with national best practice. • Optimise the use of Tech 1 to link condition assessment data with remedial work planning, delivery and reporting.	BPR&I BPR&I Tech 1	This is also a continual improvement item related to full utilisation of functionality already currently available in Tech 1. Condition assessment data is critical to decision making and therefore progressing this goal will address issues of poor or out of date condition data.

13.3.3 Operations and maintenance processes

Operate

Assets are operated to support BOPRC's objectives and service delivery requirements. They are required to meet physical, functional, and financial requirements over their effective life. This process area covers the activities that the scheme operators use to:

- Prepare annual operations plans;
- Implement and improve the operations program that outlines the activities and resources involved in managing and implementing operations. It includes measures against which actual performance can be monitored;
- Ensure the asset meets its functional requirements and is operated to deliver its service function and value to the community and scheme stakeholders;
- Meet all statutory and technical requirements for health, safety, security, and reliability;
- Achieve and sustain defined levels of physical, functional, and financial performance throughout the asset's life.

Maintain

The asset maintenance approach is designed to establish the right balance of preventive, predictive, and reactive maintenance by implementing improved maintenance and operational procedures that will enhance work planning and scheduling.

The aim of maintaining assets is to meet service delivery performance requirements by controlling fixed plant, equipment, and component aging by optimising whole-of-life costs.

This approach:

- Allows BOPRC to agree upon maintenance standards.
- Provides a structure in which changes are incorporated into maintenance operations.

Maintenance management systems have greatly assisted the way assets can be efficiently operated and maintained. Some benefits include:

- Improved support and reduced disruption to operations.
- Increased understanding of the asset portfolio.
- Better value from budgets.
- Maintained asset conditions and performance.
- Effective assessment of maintenance needs, monitoring, and reporting.
- Adherence to technical and statutory requirements.
- Continuous improvement of maintenance strategies and delivery.

The table below identifies the key elements of the operations and maintenance processes.

Table 54 Operations and maintenance processes

Process	Current practice	Improvement goal (3-year focus)	Project	Issue(s) to be addressed
Maintenance management	• Maintenance schedule defined in the AMP. • Maintenance is predominantly proactive. • Reactive maintenance mainly following a flooding event. • Maintenance budget plans developed in spreadsheet then migrated into Tech 1.	• River Scheme Sustainability (RSS) project to provide guidance on scheme economic sustainability and potential enhancements to standard management practices. • Reconfirmed objectives, deliverables and timeframes for RSS project by end of 2021/2022. • Tech 1 capability fully utilised to centralise/integrate asset management budget planning and expenditure. • Tech 1 capability fully utilised to automate (where possible) processes, including maintenance plans, tasking, work delivery recording and reporting. Maintenance plans appropriately scheduled, and completion of work recorded, in Tech 1.	RSS RSS Tech 1 Tech 1 Tech 1	Fully integrating maintenance management, scheduling and planning into Tech 1 will reduce double handling of this process. Administrative time will be reduced as some processes will be able to be automated using Tech 1.
Contract monitoring and control	• Procurement Team provides guidance on how work should be monitored. • Monitored by each manager. • List of panel contractors established.	• Contract monitoring is recorded to document inspections, including health and safety audits.	BPR&I	Better record keeping of inspections and audits including health and safety.
Operational expenditure analysis/ review	• Annual budget is established, based on Asset Management Plan process. • Operations budgets reviewed yearly.	• Utilise Tech 1 functionality to consolidate budget planning and expenditure tracking. • Appropriate Rivers and Drainage and Engineering staff have direct access to budget plan and expenditure data through Tech 1. Expenditure reporting is automated and accessible via Tech 1.	Tech 1 Tech 1 Tech 1	This will address the issue of not having one specific centralised system for asset management. Utilising Tech 1 will bring annual budgeting and expense management into one software system and reduce the risk of lack of oversight across the activity.

13.3.4 Demand analysis and strategic planning process

The AMP is the means by which BOPRC aligns its asset portfolio with its service delivery requirements. It documents what assets are needed and how those assets support BOPRC's service delivery strategy. It allows BOPRC to plan and control recurrent expenditure by adopting a whole-of-life approach to asset management. The AMP then becomes an integral part of the strategic and operational planning process and links with the strategic plans for BOPRC's other resource areas such as Human Resources, Information Technology, and Finance.

To achieve this, the AMP should clearly document:

- An understanding of the demand drivers that impact on service delivery and the strategies in place to manage demand.
- The processes used to predict the way in which individual assets or their components can fail to meet the KPIs of service delivery.
- The risks associated with asset acquisition and management and the risk of failure of assets to support service delivery.
- Optimised renewal decision, giving an overview of the deployment, condition, failures, and performance of the assets.
- The lifecycle funding strategy for 10 years, showing proposed investment and sources of funding with the likely impacts on the operating budget and an analysis of the gap between existing assets and required assets.
- The improvement programmes and strategies used to align the existing asset portfolio with service delivery needs. This will include the need for new assets, renewals, refurbishment, operations and maintenance, and disposals.
- The method by which BOPRC presents their long-term strategic planning information to their customer and stakeholder groups and how the feedback from customers is included in their long term strategic planning.
- The way in which BOPRC is able to link its business goals with the AMP.

The table below identifies the key elements of demand analysis and the strategic planning processes.

An Infrastructure Strategy was developed in 2020. This document identifies the significant issues and options associated with infrastructure over the next 30 years.

Table 55 Demand analysis and strategic planning

Process	Current practice	Improvement goal (3-year focus)	Project	Issue(s) to be addressed
Demand analysis	• From an operation perspective service demand is analysed to include: ▪ Climate Change as required. ▪ Community Demand (resulting from land use changes and risk mitigation e.g. for businesses wanting increased protection). • Options modelling. • Council's Climate change position statement consulted through LTP. • Rivers and Drainage Scheme Advisory Groups are consulted on behalf of targeted ratepayers. • Rock Supply Chain Procurement Strategy in development.	• River Scheme Sustainability (RSS) project is progressed to provide direction to Council. • Reconfirmed objectives, deliverables and timeframes for RSS project by end of 2021/2022. • Rock Supply Chain Procurement Strategy operational.	RSS RSS BPR&I	Implementing the RSS project will provide a long term view of the demand on the schemes taking into account climate change and other demand considerations. These are discussed further in Sections 4.5 and 6.3. Currently there is a lack of visibility on the rock supply availability and associated demand requirements of each scheme. While this is managed based on staff experience and judgement a formal procurement strategy is under development to reduce the risk of supply chain constraint going into the future.
Failure prediction	• Hydraulic modelling is the predominant tool used for failure prediction (via overtopping breach analysis). • Geotechnical investigations are completed prior to capital works to inform design. • Geotechnical Engineer requested to complete investigations in areas identified as at risk. • Condition assessments inform failure prediction and prevention. • Modelling and historical flood records used to identify impact of failures. • Floodplain management strategies include stopbank breach modelling. • Stability and seepage assessments are undertaken based on historical and hydraulic capacity and condition reports. When problems identified, strengthening programmed. • Stability analysis completed in areas where risk identified based on underlying geology, history and criticality. • Overdesign events modelled.	• Maintain current systems and implement new technology and methods as appropriate. • Consolidate records using Tech 1 where possible. • Continue with geotechnical analysis to reduce knowledge gaps and manage and potential risk. Ensure all geotechnical analysis is appropriately recorded and filed.	BPR&I Tech 1 EBI EBI	Geotechnical analysis is currently completed prior to capital works; however, the analysis is site specific and not widespread across the schemes. Continuing to do this will gradually fill any knowledge gaps and reduce any potential risk across the scheme assets. Using hydraulic modelling is a suitable tool for failure prediction however there is a need to continuously improve this analysis. Keeping up to date with new technology and methods will help to improve the overall reliability of failure prediction and therefore help reduce the risk of failure by better informing asset management decision making.
Risk assessment	• A risk register has been developed with the AMP. • Risk framework for organisation adopted - based on NZ/AS 4360. • Critical assets identified in asset register and on GIS. • Condition of critical assets assessed 2020. • Emergency Response Plan for Critical Assets adopted. • Rivers and Drainage report to organisational risk management framework quarterly.	• Review and maintain the risk register and risk action plan at least annually. • Staff familiar with Emergency Response Plan for Critical Assets. • Operators Guide for Flood Response developed and approved. • Flood Warning Manual is reviewed annually and staff are trained in flood response.	BPR&I T&S BPR&I T&S	Regular reviews of response plans, risk register and relevant manuals will address any issues related to keeping staff familiar with and trained in the implementation of these activities. This is an ongoing initiative that helps reduce the risks to the activity both in a business as usual and emergency management context.

Process	Current practice	Improvement goal (3-year focus)	Project	Issue(s) to be addressed
Renewal optimisation	• Valuation data/asset register provides basis for renewals. • Decisions to renew assets are largely made by considering asset age compared with expected asset remaining life. • Condition assessments are a key factor to determine expected asset remaining life. • Risk and consequence of asset failure is considered in asset renewal decision-making, as is the economics of maintaining vs renewing the asset. • Stopbanks are topped up periodically – normally at 20 year intervals (or when survey and modelling shows that there has been a reduction of more than 50% of the freeboard capacity).	• Condition rating data integrated into planning, reporting, and decision-making on renewals. • Performance of assets data utilised in a prescribed way to inform-decision-making on renewals.	BPR&I EBI	Currently condition and performance data is available for most assets. This however is not always necessarily incorporated into all planning, reporting and decision-making on renewals. Continuing to focus on this improvement goal and putting in place prescribed processes and methodologies to utilise this data will help in making more informed decisions related to renewals.
Levels of service (LoS) review	• Development of LoS undertaken as part of the AMP. • Technical LoS are well established for each scheme. • Levels of service to be consulted on with the LTP.	• Consult with the community (Scheme stakeholders) on service level options and costs at least annually and for specific projects. • With potential increases in the cost of maintaining services levels, it is necessary to develop costs and options per scheme. • The River Scheme Sustainability Project should determine options and implications for scheme levels of service.	BPR&I RSS RSS	Currently most of the consultation process with the community occurs every LTP cycle. Consulting with scheme stakeholders at least annually will lead to better level of service outcomes for each scheme and a more informed and engaged customer base. This is particularly important given the indicated likely potential increases in the cost to operate and maintain the schemes.
LTP	• AMP being reviewed and updated prior to next LTP, ensuring strong linkages. • Ensure linkages between AMP and LTP are clear and budgeting for improvement is provided for.	• AMP and LTP are consistent with each other.	AMP I&I	This is a business as usual continuous improvement goal to keep consistency in asset management planning between the Rivers and Drainage AMP and the LTP.
Infrastructure Strategy	• Infrastructure Strategy (IS) developed in 2020. To be reviewed and updated prior to next AMP review, ensuring strong linkages.	• IS, AMP and LTP are consistent with each other.	AMP I&I	As per above. Also includes the IS to ensure continued consistency for each iteration of the documents.

13.3.5 Asset capital processes

Creation/acquisition

Asset creation is providing or improving an asset where the outlay can reasonably be expected to provide benefits beyond the year of the outlay. The main reasons for creating an asset are to:

- Satisfy or improve a level of service.
- Provide for new demand from customers.
- Provide a commercial return.

Once an asset is created, BOPRC takes on the full cost of ownership for the rest of its life. We can, of course, optimise the operating costs, but we cannot alter the basic costs relating to the capital invested, its depreciation, and the operations and maintenance required.

Renewal

Renewal decision-making and management is a key ingredient of the advanced asset management lifecycle. The essence of responsible asset management is choosing the right option, which requires sound asset management processes, appropriate information systems, and adequate data.

Once the appropriate asset management information systems are in place, the data must be analysed, and decisions must be made. The key is to derive the greatest benefit from the resources invested while meeting the business objectives of BOPRC and their customers' expectations.

Bay of Plenty Regional Council must be aware that reduced or delayed maintenance and renewal will reduce immediate costs but may also:

- Decrease levels of service.
- Increase the risk of failures.
- Shorten the effective life of the asset.

In the area of capital investment, effectiveness should be based on an acceptable benefit/cost or return on capital, with new investment being made as late as possible (just-in-time). This requires accurate risk assessment.

A key ingredient for cost effectiveness will be the ability of managers to select the most cost effective renewal strategy for each asset, such as:

- Better preventive (planned) maintenance.
- Rehabilitation just prior to failure.
- Regular rehabilitation program.

This requires a renewal decision-making process that enables investment to be made in the area of greatest return to BOPRC or optimised renewal decision-making (ORDM).

If BOPRC delays investment in the area of infrastructure renewal, then they can expect a greater number of failures. This constitutes a risk cost (or a loss) through the consequences of these failures. This will mostly relate to loss of service or system failure, but in some cases, it could result in litigation or even loss of life. Risk management (loss reduction) will become a critical activity over time.

Disposal/rationalisation

The nominal end of the lifecycle of any asset is often simply when the asset owner decides to remove the asset from their portfolio. This removal is intended to free the owner from any further responsibility or liability associated with the asset. Assets are abandoned as they reach the end of their useful life or when there is no value or market for the functions they provide.

Asset rationalisation and disposal is a vital strategy that must be considered as part of all AMPs.

The table that follows identifies the key elements of asset capital processes.

Table 56 Asset capital processes

Process	Current practice	Improvement goal (3-year focus)	Project	Issue(s) to be addressed
Project identification/ priorities	• Projects may be identified through third party developers. • Extreme weather events can change priorities. • Internally approved cost estimating tool used for pricing works. • Projects and priorities are communicated/agreed with the scheme stakeholders by the existing consultation mechanisms e.g. Scheme Advisory Groups.	• Utilise Tech 1 capability to integrate and optimise capital planning processes. • Utilise well recorded and prepared condition data when evaluating project priorities. • Performance data – capacity review timing, scheduling, and data analysis to link with Tech 1.	Tech 1 BPR&I Tech 1	Currently Tech 1 is not well utilised when it comes to integrating available condition data and capital planning optimisation. Implementing this would allow for better more reliable planning decision making and ultimately reduce double handling of processes for cost estimation and capital works planning.
Capital expenditure Evaluation	• New capital expenditure is fit for purpose. • Scheme Advisory Groups are consulted and represent ratepayers. • Processes in place as part of project management system for larger projects that take into account: o Whole of life cycle cost. o Options analysis/feasibility. o Project risk.	• Follow a robust business case process (as per the project management process) for all projects. • Utilise Tech 1 capability to track and report on capital expenditure.	BPR&I Tech 1	As with improvement goal above, utilising Tech 1 will address the issue of having project business cases and reporting in a variety of locations. Tech 1 will centralise these processes by utilising the inbuilt capability of the software.
Contract monitoring and control – capital works	• Contracts are managed internally. • Internal project managers responsible for financial performance and progress including: o Standard reporting. o Auditing of projects. • Contract Procedures Manual in use. • Project design process implemented. • Procurement Team and procedures in place.	• All capital works are managed in accordance with contract procedures. • All capital works follow project management system (including project completion reviews). • All relevant staff trained in contracts and projects procedures. • Review, update and implement engineering design standards to ensure that all assets are designed, constructed and handed over to the council in accordance with the standards.	EBI EBI T&S EBI	This is a continuous improvement and monitoring goal to keep undertaking the processes and procedures already established. Reviewing the engineering standards will address any issues related to outdated or obsolete standards being implemented within the scheme. This will also continue to allow for consistency of quality of the assets handed over to Council.
Asset handover	• New or Altered Assets Form/process in place to capture asset information. • Budget planning process uses asset register to generate budgets, so new or altered asset information is accounted for following completion of annual asset register/valuation process.	• Processes that involve records management have been reviewed, documented and improved where appropriate. • Procedures in place to ensure the quality of assets being handed over. Document and flowchart the handover process to include: o Check lists for external parties. o Construction audits and design checks. o As-builts. • Optimise the use of Tech 1 throughout asset development, hand over and ongoing management.	BPR&I BPR&I Tech 1	The utilisation of Tech 1 for already well established processes and procedures will allow for consistency, reliability and accessibility of asset handover records across the Rivers and Drainage activity.

Process	Current practice	Improvement goal (3-year focus)	Project	Issue(s) to be addressed
Asset rationalisation /disposal	• Flood damage a key cause of asset disposal. • Valuation process accounts for disposals and additions. • Asset Management Plan provides policy and procedure. • Valuation undertaken annually.	• Process in place for disposals to be updated in asset register and GIS annually.	BPR&I	There is currently no formal process for disposals at present. The improvement goal is to implement this so that the assets are updated across the asset register and within GIS. This is to ensure that obsolete assets do not remain active in the asset register.

13.3.6 Organisational/commercial strategies

Commercial strategies

Commercial strategies form the basis for the implementation of asset management planning into the field through internal or external service providers. Good commercial tactics are necessary for BOPRC to drive efficiencies through all aspects of an asset's lifecycle from conception to disposal.

Organisational issues

The organisational issues element involves the determination of whether organisational factors such as structure are appropriate to deliver asset-related services. Under this element we assess how BOPRC's structure, roles, and responsibilities support the asset management functions.

Bay of Plenty Regional Council shows its commitment to asset management through:

- The direct sponsorship of the asset management programme.
- Clear budget commitments to asset management.

The make-up, role, and responsibilities of the asset management team are important, especially in:

- Asset management policies and strategies.
- Asset management analysis and reporting.
- Asset management support services.

People issues

The people issues element involves staff related issues such as adequate training and support. The skills and attitudes of staff drive BOPRC to achieve its goals and deliver services in the most efficient manner.

- The training available to staff about lifecycle asset management and how these training programs are integrated into the professional development programs for individual staff;
- The training programs related to the implementation of new processes and practices are completed as part of the initial implementation. Ongoing training relates to the way in which BOPRC sustains its skill levels through induction and promotion of staff;
- How BOPRC manages and takes advantage of the knowledge held by individual staff members;
- How BOPRC provides equipment to support the asset management activities and how best practices are identified and implemented in this area;
- Assessment of the information support systems necessary for the various staff.

The way in which the Council's structure, roles and responsibilities support the lifecycle asset management functions is assessed as follows.

Table 57 Organisational/commercial

Process	Current practice	Target practice (3-year focus)	Project	Issue(s) to be addressed
AM review/ improvement	• Organisational Asset Management Steering Group operational. • Strategic Asset Management Plan initiated and approved through LTP 2021-2031. • SAMP/AMP benchmarked against OAG criteria. • Rivers and Drainage Assets Team to monitor and report on AMP improvement goal implementation. • AMP reviewed annually.	• Improvement goals in this AMP to be implemented and reported on through the Organisational Asset Management Steering Group and through the Integrated Catchments Managers group.	AMP I&I	Reporting on the AMP improvement goals at an organisational level gives better consistency and transparency across Council in terms of implementation of the goals. Many of the improvement goals are applicable to other activities within Council and therefore need the backing of management.
Contracting policies	• Contracts Procedures Manual. • Procurement Policy. • Delegations Authority Policy.	• Review and update policies every three years. • Records of all contracts in Engineering and River and Drainage maintained and implemented according to Policy and Procedures.	BPR&I EBI	This addresses consistency across the activity with respect to contract administration and procurement and ensures that records of these are readily available.
QA processes	• Reviews undertaken by senior or corporate staff as required. • Peer review, including use of external peer review, standard practice, e.g. valuations. • Condition and performance assessment framework monitors physical quality of assets. • Organisational Asset Management Steering Group ensures consistency/transparency across the organisation.	• Tech 1 capability is more fully utilised to provide transparency and consistency, e.g. Tech 1 is used to generate maintenance schedules, and work completed in accordance with the schedules is easily viewable and able to be reported on in an automated fashion. • Tech 1 functionality is scoped to optimise the scheduling of condition and performance work, data capture and reporting. Optimisations could include - time efficiency, more predictability, better data sharing capability, automated reporting, cost saving, more reliable linking of work to AMP. Optimisations are delivered where appropriate.	Tech 1 Tech 1	Currently there are procedures in place with respect to quality assurance. Utilising Tech 1 as a central source of information for these will mean that records are less likely to be misplaced and quality assurance will therefore be more consistent and robust across the activity.
Corporate commitment	• Council is committed to embedding and improving asset management best practice. • Operational staff need support and training with new systems, e.g. Tech 1. • Organisational Asset Management Steering Group operational. • Strategic Asset Management Plan initiated and approved through LTP 2021-2031.	• All staff that interface with asset management information systems (e.g. Tech 1) have the support and training required to operate successfully. • Organisational Asset Management Steering Group forum is used for AMP improvement plan implementation monitoring.	T&S AMP I&I	Many of the improvement items listed in this AMP are contingent on the use and implementation of Tech 1 across the activity. This will require training and support for staff to be able to implement these improvement items in terms of using Tech 1 on a day to day basis. The risk is that if insufficient training is given then staff will be less likely to uptake the use of Tech 1.

Process	Current practice	Target practice (3-year focus)	Project	Issue(s) to be addressed
AM roles	• Rivers and Drainage Asset Team owns the AMP functions. • Manager assigns tasks across the organisation to keep the AMP fit for purpose. • Inter-dependency between teams that have a role in managing assets under this plan is high (R&D Operations, R&D Assets, Engineering).	• Carry out annual review of job responsibilities and adequate resourcing in conjunction with improvement tasks.	AMP I&I	As per above improvement item, implementation of all of the improvement items will require resourcing across multiple Council teams. Therefore, there is a risk of not having enough resources to undertake these goals. Regular annual reviews will help to keep job responsibilities and resourcing levels at the appropriate level to implement the improvements.
Training programme	• Training programmes developed as part of staff performance review. • Training is monitored and developed by each group.	• Staff to undertake AM training as needed. • Resources developed to support the optimised use of Tech 1. • Tech 1 'champions' operational in teams that interface with the management of assets under this AMP – as a support mechanism to staff.	T&S T&S Tech 1	Implementing resources for Tech 1 support and Tech 1 'champions' will help overcome the potential issue of inadequate support of Tech 1 by staff. Combined with AM training staff will be equipped to achieve the improvement goals listed in this AMP.

Appendix A

Asset information

A1 Data confidence and reliability

Table 58 provides the confidence framework from the National Asset Management Group's International Infrastructure Management Manual (NAMS IIMM) used to determine the confidence in the asset data used in this AMP.

Table 58 Asset data – confidence grades

Confidence grade	General meaning
Accurate	Data based on sound records, procedure, investigations and analysis, documented properly and recognised as the best method of assessment.
Minor inaccuracies	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example the data is old, some documentation is missing, and reliance is placed on unconfirmed reports or some extrapolation.
50% estimated	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade highly reliable or reliable data is available.
Significant data estimated	Data based on unconfirmed verbal reports and/or cursory inspection and analysis.
All data estimated	All data has been estimated, with no checks, inspections or verification

Table 59 following reflects the confidence in the asset data for the Rivers and Drainage activity.

Table 59 Overall confidence data – accuracy

Asset type	Accurate	Minor inaccuracies	50% estimated	Significant data estimated	All data estimated
Erosion protection		□			
Pump stations		□			
Stopbanks		□			
Structures		□			
Waterways		□			

Table 60 Overall data completeness

Asset type	60%	70%	80%	90%	100%
Erosion protection				□	
Pump stations				□	
Stopbanks				□	
Structures			□		
Waterways				□	

Table 61 Performance of assets

Asset type	Highly reliable	Reliable	Uncertain	Very uncertain
Erosion protection		□		
Pump stations	□			
Stopbanks	□			
Structures	□			
Waterways	□			

A2 Asset inventory summary

Table 62 below is a summary of the Rivers and Drainage assets currently owned by BOPRC, including average age, and expected useful life. The Optimised Replacement Cost (ORC) and Annual Depreciation are as at 1 July 2020.

Table 62 Asset inventory summary

Asset	Asset group	Base life (year)	Average age (years)	Optimised replacement cost (ORC) ($)	Annual depreciation ($)
Berm rock lining	Erosion Protection	Perpetuity	3	520,389	0
Buffer zone	Erosion Protection	Perpetuity	–	204,387	0
Concrete structure	Structures	70	35	2,289,258	32,704
Concrete wall	Structures	50	29	5,147,320	102,946
Consent (Okere control gates)	Structures	35	9	1,805,576	51,585
Culvert	Structures	50	35	7,518,615	150,372
Drop structure	Structures	40	29	376,062	9,402
Edge planting	Erosion Protection	Perpetuity	–	2,859,643	0
Fencing	Erosion Protection	Perpetuity	10	$840,044	0
Flap gate	Structures	25	20	442,658	17,706
Flood gate	Structures	70	17	2,780,208	39,718
Gauging station	Structure	70	5	48,516	693
Geotech	Stopbank	Perpetuity	8	5,846,634	0
Groyne (Kaituna Mole)	Structures	70	63	336,045	4,801
Headwall	Structures	40	3	38,652	966
Pump – electrical	Pump Stations	30	22	299,270	9,976
Pump – electronics	Pump Stations	15	13	478,551	31,903
Pump station	Pump Stations	70	26	7,990,592	114,154
Pumps	Pump Stations	35	21	3,449,928	98,589
Radial gate (Okere)	Structures	40	25	317,877	7,947
Rock groyne	Structures	Perpetuity	3	22,012	0
Rock work	Erosion Protection	Perpetuity	6	57,512,198	0
Rubble	Erosion Protection	Perpetuity	8	407,651	0
Sluice gate	Structures	70	32	58,994	843

Asset	Asset group	Base life (year)	Average age (years)	Optimised replacement cost (ORC) ($)	Annual depreciation ($)
Stopbank	Stopbanks	Perpetuity (with settlement)	22	243,453,212	730,354
Stop log	Structures	40	16	216,439	5,411
Timber wall	Structures	40	19	36,838	921
Toe rock batter	Erosion Protection	Perpetuity	–	631,557	0
Trenched willows	Erosion Protection	Perpetuity	7	5,452,726	0
Trenched willows and permeable groynes	Erosion Protection	Perpetuity	1	441,395	0
Waterway	Waterways	Perpetuity	–	16,665,726	0
Total				**368,530,913**	**1,415,663**

A3 Asset types

A3.1 Erosion protection asset

Erosion protection is used to:

- Protect stopbanks and natural channel banks from erosion.
- Maintain channel stability.
- Reduce sediment deposition.

The erosion protection asset comprises of:

- Buffer zone.
- Edge planting.
- Fencing.
- Rockwork.
- Rubble.
- Trenched willows.

Erosion protection comprises 19% of the Optimised Replacement Cost (ORC) for all the assets, with a total value of $68,991,850.

A3.2 Common issues

- Damage from stock on buffer zone planting.
- Willows require ongoing maintenance and subject to pests and diseases, alternatives are more expensive.
- Flood damage costs.
- Vandalism of fencing.
- Diseases on vegetative planting.
- Use of invasive species is limited.
- Have gorse and other weed control programmes in place.
- Large cost in future to maintain rock work, hard protection more costly in the long term compared with soft protection.
- Bay of Plenty Regional Council has conducted field trials of native species for edge planting to determine the most appropriate solution. Natives are not as hardy and have been damaged in previous flood events.

A3.3 Pump stations

Pump stations for the Rivers and Drainage activity are used to discharge drainage and flood flows when gravity outlets have either been blocked or inhibited in some way. Pump station components generally include:

- Pumps.
- Pump stations (i.e. structure).
- Pump electricals.
- Pump electronics (e.g. computer electronics, telemetry and SCADA systems).

Pump stations are inspected fortnightly for operational capability and receive programmed maintenance throughout their life cycle.

Pump stations make up only 3% of the ORC for all of the Rivers and Drainage assets, with a total value of $12,311,790.

A3.3.1 Common issues

- Electricity supply failures.
- Pump failures.
- Insufficient capacity due to increasing required performance standards e.g. community expectations, land settlement, climate change.
- Vandalism.
- Weed control – causing pumps not running to capacity.
- Land ownership and access issues.
- Not fish friendly.

Rangitāiki Drainage Scheme communal pumps are not covered under this AMP as Council does not own these assets, although they do manage them. These assets belong to the communal pump schemes.

A3.4 Stopbanks

Stopbanks are compacted earth embankments built alongside rivers to provide protection to the bordering land from flooding. Stopbanks are the most significant asset in Rivers and Drainage infrastructure. The total Optimised Replacement Cost (ORC) of these assets is $243.4M (as at 1 July 2020); representing 67% of the total network value.

Stopbank asset condition is monitored by visual inspections, physical surveys and scheme reviews including detailed computer modelling. Full asset performance assessment including geotechnical investigation is at its early stages. Concrete and timber walls forming part of stopbanks are included in asset type structures.

A3.4.1 Common issues

- Stock damage.
- Stopbank alignment being too close to the river channel increasing the risk of undermining.
- Stopbank narrowness in some rural locations e.g. Ōpōtiki.
- Settlement of stopbanks requiring top-up.
- Keeping up with changes in stopbank height (i.e. channel capacity) to maintain existing levels of service and taking into account silting and/or aggradation of river beds, climate change and increased rainfall intensity, tectonic subsidence and sea level rise.
- Toe erosion and old, large trees compromising stopbank integrity.
- Geothermal activity threatening foundations.
- Foundation stability due to geotechnical conditions, original design and construction methods.
- Land ownership and access issues.
- Encroachment of neighbouring urban properties with fences, gardens etc.
- Stopbank breaches during severe weather events.

A3.5 Structures

Bay of Plenty Regional Council's Rivers and Drainage schemes have a number of structures that assist with the overall function of the activity. The structures assets that form part of the Rivers and Drainage infrastructure include:

- Culverts.
- Concrete structures.
- Concrete walls.
- Drop structures.
- Flood gates.
- Groyne (Mole).
- Radial gates.

- Sluice gates.
- Stop logs.
- Timber walls.
- Headwalls.
- Gauging station.
- Rock groynes.

Structures assets undergo a programme of regular maintenance with asset condition assessment currently becoming more formal and structured.

Structures make up 5% of the total ORC of all of the Rivers and Drainage assets, with a total value of $19.6M.

A3.5.1 Common issues

- Geothermal activity causing corrosion and undermining foundations.
- Tidal and saline erosion of flood gates and other structures.
- Blockages due to debris in flood gates and consequential backflow.
- Vandalism e.g. welding floodgates open.
- Public safety e.g. on the Kaituna mole.
- Health and Safety of scheme operators e.g. safety when clearing weed from screens in storms.
- Fish passage for new and existing assets and other environmental requirements.
- Earth dam displacement and earthquake damage to structures.
- Scouring.
- Corrosion of metal structures.
- Land ownership and access issues.

A3.6 Waterways

A3.6.1 Drains and canals

The drains and canals assets are channels excavated to provide drainage (drains) or sufficient flow capacity for design floods (canals). These assets do not include natural streams.

Drains and canals contribute to 5% of the total ORC for all of the assets, with a total value of $16.6M.

The drains and canals assets have an estimated life of perpetuity and are therefore not subjected to depreciation.

Condition of the waterways is generally monitored by:

- Visual inspections.
- Physical surveys.
- Scheme reviews including detailed computer modelling.

A3.6.2 Common issues

- Siltation of the channel and disposal of this material.
- Organic farms e.g. controls around weed spraying and desilting.
- Excessive weed growth.
- Bank erosion.
- Environmental issues e.g. fish migration spawning, wildfowl.
- Environmental issues e.g. timing of maintenance.
- Pollution and contaminated sites.
- Pest and weed control e.g. invasive exotic species.
- Compromised access e.g. barriers, roadside working.
- Unauthorised crossings.
- Adjacent services restricting capacity.
- Rivers – accumulation of gravel e.g. can affect the maintenance of assets adjacent to the waterways, can reduce overall capacity and height of stopbanks, may increase erosion in varying places in the river.

- Regular maintenance is required to ensure design capacity is maintained.
- Tectonic subsidence altering the flow gradients.
- Land ownership and access issues.

A3.6.3 Rivers and streams

A number of rivers and streams are maintained by BOPRC. These assets do not have any economic value (i.e. are not considered as part of the valuation), however, they do require maintenance and this requires ongoing maintenance and operational budgets to allow maintenance works to go ahead.

Some of the key issues that relates to the maintenance of rivers and streams are noted below.

A3.6.4 Common issues

- Siltation and gravel aggradation and/or degradation.
- Vegetation control.
- Weed control.
- Access for maintenance purposes.
- Edge planting.
- Environmental issues e.g. timing of maintenance.

A4 Scheme asset information

A4.1 Kaituna Catchment Control Scheme

The Kaituna Catchment Control Scheme includes the Kaituna River, Lake Rotorua and Lake Rotoiti catchments. The scheme consists of two discrete areas divided at Okere: Upper Kaituna and Lower Kaituna.

A4.1.1 Asset information

Table 63 below summarises the expected life, age, condition and financial information for the asset groups found in the Kaituna Catchment Control Scheme.

Table 63 Asset information

Asset Group	Quantity (m)	Average base life	Average estimated asset age	ORC ($)	ODRC ($)	Total depreciation ($)
Consent 35 (Okere)	NA	35	9	1,805,576	1,404,971	400,605
Erosion protection	29,056	Perpetuity	-	9,458,820	9,458,820	0
Geotech	NA	Perpetuity	NA	963,214	963,214	0
Pump stations (9)	-	42	34	8,151,355	5,635,360	2,515,995
Stopbanks	79,026	Perpetuity (with settlement)	NA	53,138,309	48,234,213	4,904,096

Asset Group	Quantity (m)	Average base life	Average estimated asset age	ORC ($)	ODRC ($)	Total depreciation ($)
Structures	NA	51	19	6,035,354	3,255,447	2,779,963
Waterways	98,803	Perpetuity	-	1,899,150	1,899,150	0
Total				81,451,778	70,851,175	10,600,659

A4.1.2 Asset condition

Bay of Plenty Regional Council has many methods to monitor the condition of the Kaituna Scheme assets. This information is critical to the overall life cycle management of the assets, with regards to maintaining the asset at minimum cost, whilst maintaining the required level of service.

Surveying, geotechnical investigations, control measurements and ongoing visual inspections are some of the methods used in assessing the conditions of flood protection and drainage assets. Comprehensive reports are generated at the completion of the 10 year stopbank performance assessments (15 years for Upper Kaituna).

Table 64 Asset condition

Kaituna Scheme Asset Condition 2020		
Asset type	**Sub component**	**Average condition**
Erosion protection	Rock work Edge planting	2 good 2 good
Pump stations (9)	Electrical Structure Electronics (incl. telemetry and SCADA)	1 very good 2 good 1 very good
Stopbanks	Stopbanks (visual – surface level) Stopbanks (below ground i.e. geotechnical inspection required).	2 good
Structures	Culverts and flood gates (large) Ōhau Channel weir Okere control gates Kaituna mole Culverts (minor), timber and concrete walls, flood gates (minor), sluice gate, drop structure	1 very good 2 good 4 poor 4 poor TBC
Waterways		TBC (annual inspections are not well documented and visual only).

A4.2 Rangitāiki Drainage Scheme

A4.2.1 Asset information

Table 65 below summarises the expected life, age, condition and financial information for the asset groups found in the Rangitāiki Drainage Scheme.

Table 65 Asset information

Asset Group	Quantity (m)	Average base life	Average estimated asset age	ORC ($)	ODRC ($)	Total depreciation ($)
Erosion protection	575	Perpetuity	N/a	192,462	192,462	0
Structures	NA	50	40	3,966,816	1,723,313	2,243,503
Waterways	370,458	Perpetuity	N/a	14,246,357	14,246,357	0
Total				18,405,636	16,162,132	2,243,503

A4.2.2 Asset condition

The following information relates to the condition of the Rangitāiki Drainage Scheme assets. This information is critical to the overall life cycle management of the assets, with regards to maintaining the asset at minimum cost, whilst maintaining the required level of service.

Table 66 Asset condition

Rangitāiki Drainage Scheme Asset Condition 2020		
Asset type	**Sub component**	**Average condition**
Erosion protection	Rock work/rubble	2 good
Structures	Culverts and flood gates	TBC
Waterways		TBC

A4.3 Rangitāiki-Tarawera Rivers Scheme

Rangitāiki-Tarawera Rivers Scheme provides flood protection and channel edge stability to land within the Rangitāiki and Tarawera Catchments. It has the largest catchment area of all the schemes.

A4.3.1 Asset information

Table 67 summarises the assets within the scheme indicating the expected life, age, condition and financial information for each item.

Table 67 Asset information

Asset Group	Quantity (m)	Average base life	Average estimated asset age	ORC ($)	ODRC ($)	Total depreciation ($)
Erosion protection	216,028	Perpetuity	N/A	30,109,517	30,109,517	0
Geotech	NA	Perpetuity	NA	4,875,125	4,875,125	0
Pump stations (1)		40	16	922,696	655,800	266,896
Stopbanks	133,428	Perpetuity (with settlement)	N/A	85,313,440	79,037,195	6,276,245
Structures	NA	56	18	2,100,740	1,319,217	781,522
Total				123,321,518	116,025,655	7,324,663

A4.3.2 Asset condition

The following information relates to the condition of the Rangitāiki-Tarawera Rivers Scheme assets. This information is critical to the overall life cycle management of the assets, with regards to maintaining the asset at minimum cost, whilst maintaining the required level of service.

Table 68 Asset condition

Rangitāiki–Tarawera Scheme Asset Condition 2020		
Asset type	**Sub component**	**Average condition**
Erosion protection	Rock work Edge planting	2 good 2 good
Pump station (1)	Electrical Structure Electronics.	1 very good 2 good 2 good
Stopbanks	Stopbanks (visual - surface level) Stopbanks (subsurface and level i.e. geotechnical inspection and survey required)	3 moderate
Structures	Floodgates (large) Culverts (minor), timber and concrete walls, flood gates (minor), drop structure	2 good TBC

A4.4 Waioeka-Otara Rivers Scheme

The Waioeka-Otara Rivers Scheme provides flood protection, channel edge stability and some drainage and pumping to Ōpōtiki and the surrounding land on the floodplain.

A4.4.1 Asset information

Table 69 below summarises the assets in the Waioeka-Otara Rivers Scheme indicating the expected life, age, condition and financial information for each item.

Table 69 Asset information

Asset Group	Quantity (m)	Estimated base life	Estimated average asset age	ORC	ODRC	Total depreciation
				($)	($)	($)
Erosion protection	114,131	Perpetuity	NA	12,213,724	12,213,094	0
Pump stations (1)	NA	40	24	293,291	162,452	131,469
Stopbanks	65,019	Perpetuity (with settlement)	NA	38,628,312	36,241,471	2,384,915
Structures	NA	37	25	2,748,841	1,334,153	1,414,688
Waterways	25,854	Perpetuity	0	496,962	496,962	0
Total				54,381,130	50,448,132	3,931,073

A4.4.2 Asset condition

The following information relates to the condition of the Waioeka-Otara Rivers Scheme assets. This information is critical to the overall life cycle management of the assets, with regards to maintaining the asset at minimum cost, whilst maintaining the required level of service.

Table 70 Asset condition

Waioeka-Otara River Scheme Asset Condition 2020		
Asset type	**Sub component**	**Average condition**
Erosion protection	Rock work Edge planting	2 good 2 good
Pump stations (1)	Electrical Structure Electronics	2 good 3 moderate 1 very good
Stopbanks	Stopbanks (visual - surface level) Stopbanks (subsurface and level i.e. geotechnical inspection and survey required)	3 moderate
Structures	Culverts and floodgates (large) Culverts (minor), timber and concrete walls, flood gates (minor), drop structure	2 good 2 good

A4.5 Whakatāne-Tauranga Rivers Scheme

The Whakatāne-Tauranga Rivers Scheme provides flood protection, channel edge stability and drainage to the Whakatāne River Catchment, including the Tauranga River (prior to 2014 Tūhoe Settlement, this was known as the Waimana River). All schemes (except Rangitāiki drainage and Kaituna) have Floodplain Management Strategies. These Strategies are non-statutory documents that pull together various measures available to authorities and the community for managing flood risk. These strategies include stopbank and river works, upper catchment management, statutory plans, emergency management and education.

A4.5.1 Asset information

Table 71 summarises the assets within the scheme, indicating the expected life, age, condition and financial information for each item.

Table 71 Asset information

Asset Group	Quantity (m)	Estimated base life	Estimated average asset age	ORC ($)	ODRC ($)	Total depreciation ($)
Erosion protection	121,170	Perpetuity	N/A	17,081,339	17,081,339	0
Geotech	NA	Perpetuity	NA	8,295	8,295	0
Pump stations (3)	0	40	27	2,943,818	1,710,894	1,232,924
Stopbanks	103719	Perpetuity (with settlement)	N/A	66,373,151	62,325,112	3,751,979
Structures	NA	50	32	4,777,743	1,808,281	2,969,462
Waterways	1210	Perpetuity	0	23,258	23,258	0
Total				91,207,604	82,967,732	7,954,365

A4.5.2 Asset condition

The following information relates to the condition of the Whakatāne-Tauranga Rivers Scheme assets. This information is critical to the overall life cycle management of the assets, with regards to maintaining the asset at minimum cost, whilst maintaining the required level of service.

Table 72 Asset condition

Whakatāne-Tauranga River Scheme Asset Condition 2020		
Asset type	**Sub component**	**Average condition**
Erosion protection	Rock work Edge planting	2 good 2 good
Pump stations (3)	Electrical Structure Electronics	1 very good 2 good 1 very good
Stopbanks	Stopbanks (visual - surface level) Stopbanks (subsurface and level i.e. geotechnical inspection and survey required)	1 very good
Structures	Culverts and floodgates (large) Stoplogs (Whakatāne) Culverts (minor), timber and concrete walls, flood gates (minor), sluice gate, drop structure	3 moderate 2 good TBC

Appendix B

Supporting information

B1 Consents

B1.1 Discharge consents

The table below details the Rivers and Drainage related discharge consents held by Council as at August 2020.

Table 73 Rivers and drainage related consents (as at August 2020).

Consent No.	Purpose	Property address	Expiry
20074	Divert flood water from Waingaehe Stream and discharge floodwater into Lake Rotorua.	Holden's Bay, Rotorua	01/10/2026
20075	Divert water from Lake Rotomā and discharge to Lake Rotoehu for the purpose of lake level and flooding control at Lake Rotomā.	Lakes Rotomā and Rotoehu	01/10/2026
20105	Controlling outflows of excess water from Lake Rotomanhana and discharging to Lake Tarawera.	Lakes Rotomahana and Tarawera	01/10/2026
21825	Divert Ohineangaanga Stream into the Raparapahoe Canal.	Te Puke	01/10/2026
21842	Divert flow of stream to diversion channel.	Ngongotahā Bridge	01/10/2026
22059	Discharge drainage water from a pump station to Omeheu Canal.	Poplar Lane	01/10/2026
61321	Shingle extraction from Waioeka River.	Waioeka River	Expired sec 124
61322	Shingle extraction from Otara River.	Otara River	Expired sec 124
61910	Divert coastal water to provide for the raising of the Mataatua Reserve and Muriwai Drive stopbank to the design 1% AEP level.	Mataatua Reserve	30/11/2038
61983	Discharge diquat to waterways on the Rangitāiki Plains	Rangitāiki Plains	Expired sec 124
63912	Place structure for flood overflow.	Thornton Road, Matatā	30/03/2043
64684	To repair bank erosion and to remove large tree growth from the beds of various rivers and streams in the Bay of Plenty region.	Various stream/rivers throughout Bay of Plenty region	Expired sec 124
64711	Construct a stopbank for flood protection.	Woodlands Road, Ōpōtiki	31/03/2042
65089	Discharge from Bell Road No.1 Drain to the Kaituna River via the Bell Road C Pump Station.	Bell Road, Pāpāmoa	31/07/2043

Consent No.	Purpose	Property address	Expiry
65210	Maintenance, use and occupation of space in the coastal marine area.	Lower reaches of the Whakatāne River and Wairere Stream	31/08/2043
65211	Maintenance, use and occupation of space in the coastal marine area.	Lower reaches of the Otara and Waioeka Rivers	31/08/2043
65212	Maintenance, use and occupation of space in the coastal marine area.	Lower reaches of the Rangitaiki and Tarawera Rivers	31/08/2043
65213	Maintenance, use and occupation of space in the coastal marine area.	Lower reaches of the Kaituna River and the Maketū Estuary	31/08/2043
65548	Maintenance, use and occupation of space in the coastal marine area.	Kaituna mole	31/08/2043
65614	Earthworks and temporary stormwater discharge for Edgecumbe-Rangitāiki Flood Protection works.	Eastern side of the Rangitāiki River (joint consent with WDC and BOPRC)	30/07/2019
65615	Widening works in the bed of Reid's Central Canal.	Reid's Central Canal (joint consent with WDC and BOPRC)	30/07/2019
65616	Installation of a dam spillway structure and associated erosion protection works for the purpose of improving flood protection.	Between Rangitāiki River and Rangitāiki Floodway/Reid's Central Canal (joint consent with WDC and BOPRC)	31/08/2044
65617	The damming, diversion and discharge of stormwater and the installation of structures to protect Edgecumbe from surface and storm flooding.	Rangitāiki Plains/Edgecumbe (joint consent with WDC and BOPRC)	31/08/2044
65835	Discharge of stormwater from pump station in the north-west of Edgecumbe, and associated structures.	Rangitāiki Plains/Edgecumbe (joint consent with WDC and BOPRC)	31/12/2045
65979	Okere Control Gates.	Lake Rotoiti outlet	22/10/2045
65980	Ōhau Channel Weir	Lake Rotorua outlet	22/10/2045
67071	Install, use and maintenance a culvert in the Coastal Marine Area.	Whakatāne River, Muriwai Drive, Mataatua Reserve	30/03/2047
67173	Kopeope Canal Remediation.	Kopeopeo Canal	14/11/2029
67784	Construct, use and maintenance of a rock wall in the Coastal Marine Area.	Waioeka Rivermouth	31/03/2049
67992	Install, use and maintenance of two culverts to enable the transfer of water between the river and the lagoon.	Thornton Lagoon/Rangitāiki River	31/10/2049
68275	Disturb a contaminated site, divert water.	Kopeopeo Canal	
RM15-0048	Discharge and use of aquatic herbicides.	Rangitāiki Plains Discharge Scheme within the Tarawera River Catchment	31/05/2027
RM16-0345	Associated earthworks for the College Road stopbank construction.	College Road, Edgecumbe	13/03/2053

B1.2 Coastal Permits

The Bay of Plenty Regional Coastal Plan covers the entire coastal environment including the coastal marine area:

Of which the landward boundary is the line of mean high water springs, except where that line crosses a river, the landward boundary at that point shall be whichever is the lesser of –

(i) One kilometre upstream from the mouth of the river; or

(ii) The point upstream that is calculated by multiplying the width of the river mouth by five.

It includes Rules to regulate some activities in the coastal marine area. This includes building of structures, disturbance of the foreshore or seabed, reclaiming the sea, discharging contaminants and other activities.

As both a consent holder and consenting authority, BOPRC is responsible for ensuring compliance with the conditions of its consents, and also for monitoring whether the conditions have been met.

Conditions are generally those required to mitigate effects such as:

- Water quality.
- Ecological effects from disturbance and flow regime changes.
- Erosion protection.

The following tables provide information on coastal consents currently held by the Council relating to the Rivers and Drainage activity.

Table 74 Coastal related permits – Whakatāne-Tauranga Coastal Permit, 65210, term 35 years (to 31/08/43).

Type (asset code)	Use	Map reference	Legal descriptions	Location
Rock rip-rap (WKR05RR1)	Erosion protection	W15 6231 5387 to W15 6215 5374	CMA Lot 1 DPS 72551	True right bank of Whakatāne River
Flap-gate culvert (WKR06CV1)	Discharge stormwater	W15 6216 5375		
Rock rip-rap (WKR07RR1)	Erosion protection	W15 6212 5372 to W15 6196 5368		
Flap-gate culvert (WKR08CV1)	Discharge stormwater	W15 6196 5386		
Flap-gate culvert (WKR10CV1)	Discharge stormwater	W15 6180 5367	CMA	
Flap-gate culvert (WKR11CV1)	Discharge stormwater	W15 6170 5365	CMA	
Rock rip-rap (WKR11RR1)	Erosion protection	W15 6170 5365 to W15 6161 5363		
Flap-gate culvert (WKR11CV2)	Discharge stormwater	W15 6162 5364	Lots 1 2 DPS 89239 Lots 1 DPS 72031 Lots 1 2 3 DPS 75728	
Rock rip-rap (WKR12RR1)	Erosion protection	W15 6161 5362 to W15 6149 5364		
Flap-gate culvert (WKR12CV1)	Discharge stormwater	W15 6151 5364		
Rock rip-rap (WKR14RR1)	Erosion protection	W15 6141 5363 to W15 6132 5361		

Type (asset code)	Use	Map reference	Legal descriptions	Location
Rock rip-rap (WKR15RR1)	Erosion protection	W15 6131 5362 to W15 6124 5362	CMA	
Rock rip-rap (WKR31RR1)	Erosion protection	W15 5992 5363 to W15 5961 5317	CMA Lot 18 DPS 9222 Lot 37 DPS 10787 Lot 21 DPS 8899 Lot 22 DPS 14067 Lot 10 DPS7522 - Riverbank and Esplanade Reserves	
Flap-gate culvert (WKR37CV1)	True right bank of Whakatāne River	W15 5961 5317		
Rock rip-rap (WKR38RR1)	Erosion protection	W15 5959 5316 to W15 5953 5304		
Flap-gate culvert (WKR39CV1)	Discharge stormwater	W15 5953 5304		
Rock rip-rap (WKR40RR1)	Erosion protection	W15 5953 5303 to W15 5928 5283		
Culvert (WKR41CV1)	Discharge stormwater	W15 5928 5283		
Rock rip-rap (WKR41RR1)	Erosion protection	W15 5928 5283 to W15 5924 5282		
Rock rip-rap (WKL16RR1)	Erosion protection	W15 6126 5384 to W15 6122 5287	CMA	True left bank of Whakatāne River
Rock rip-rap (WKL21RR1)	Erosion protection	W15 6083 5409 to W15 6081 5410	CMA PT Lots 3 4 DP 21268 PT Lots 1 2 DPS 11166 Allots 19 20 165 216 PT 28B2E1 Rangitāiki Psh Closed Rd Sec 10 Blk Ii Whakatāne Sd and Pts Orini Canal and Whakatāne River (Allot -165 And Sec 10 Owned by Whakatāne District Council Allots 19 20 Owned by Maori owners)	
Flap-gate (WKL21FG1)	Discharge stormwater	W15 6080 5411		
Rock rip-rap (WKL21RR2)	Erosion protection	W15 6081 5412 to W15 6088 5411		
Rock rip-rap (WKL22RR1)	Erosion protection	W15 6084 5402 to W15 5953 5336		
Rock rip-rap (WRR00RR1)	Erosion protection	W15 6162 5361 to W15 6162 5357	CMA Lots 49 50 PT 48 DP 13036 & PT 10 DP 7871	True right bank of Wairere Stream
Retaining wall (WRL00RW1)	Erosion protection	W15 6160 5361 to W15 6160 5357		True left bank of Wairere Stream
Rock rip-rap (WRL00RR1)	Erosion protection	W15 6160 5360 to W15 6161 5358		
Retaining wall (WRL00RW2)	Erosion protection	W15 6161 5358 to W15 6161 5356		

Table 75 Coastal related permits – Waioeka-Otara Coastal Permit, 65211, term 35 years (to 31 August 2043).

Type (asset code)	Use	Map reference	Legal descriptions	Location
Rock rip-rap (OT00RR1)	Erosion protection	W15 8594 4659 to W15 8602 4668	CMA Allots 339 343 346 Pt Allots 340 342 345 Opotiki Tship Blk Iii Opotiki Sd - Pt Eroded-Pt Volkners Is-Rec Res	True right bank of Otara River
Rock rip-rap (OT01RR1)	Erosion protection	W15 8604 4669 to W15 8608 4674	CMA	True left bank of Otara River
Flap-gate culvert (OTR01CV1)	Discharge stormwater	W15 8609 4675	CMA	True right bank of Otara River
Rock rip-rap (OT03RR1)	Erosion protection	W15 8616 4682 to W15 8630 4724	CMA Gaz 81-496 Allot 218 Of Sec 1 Opotiki Tn-Pt Eroded-Rec Res Gaz 81-496 Allot 271 Of Sec 1 Opotiki Tn-Rec Res	
Flap-gate culvert (OTR03CV1)	Discharge stormwater	W15 8623 4692	CMA	
Flap-gate culvert (OTR05CV1)	Discharge stormwater	W15 8629 4704	CMA	
Rock rip-rap (WAL07RR1)	Erosion protection	W15 8507 4736 to W15 8519 4733	CMA Allot 439 Waiotahi Parish	True left bank of Waioeka River
Rock rip-rap (WAL08RR1)	Erosion protection	W15 8519 4732 to W15 8529 4716		
Rock rip-rap (WAL23RR1)	Erosion protection	W15 8543 4642 to W15 8554 4653	CMA Allot 444 Waiotahi Parish Allot 444A Waiotahi Parish	

Table 76 Coastal related permits – Rangitāiki-Tarawera Coastal Permit, 65212, term 35 years (to 31 August 2043).

Type (asset code)	Use	Map reference	Legal descriptions	Location
Rock rip-rap (RAR01RR1)	Erosion protection	W15 5148 5856 to W15 5126 5828	CMA Allot 439 Waiotahi Parish Pt Allot 274 Rangitāiki Psh Blk V Awaateatua Sd - Thornton Lagoon Wildlife Management Reserve	True right bank of Rangitāiki River
Rock rip-rap (RAL07RR1)	Erosion protection	W15 5091 5823 to W15 4493 5736	Pt Allotment 176 Rangitāiki Psh Blks Iv V Awaateatua SD	True left bank of Rangitāiki River
Rock rip-rap (TAR01RR1)	Erosion protection	V15 4336 6098	CMA	True right bank of Tarawera River
Pump station (TAR04PS1)	Drainage	V15 4336 6065	CMA Allots 107 108 109 110 Rangitāiki Psh Blks Iii Iv V Vi Awaateatua Sd	
Flap-gate (TAR04FG1)	Drainage	V15 4336 6064	CMA Allots 107 108 109 110 Rangitāiki Psh Blks Iii Iv V Vi Awaateatua Sd	
Rock rip-rap (TAR05RR1)	Erosion protection	V15 4326 6069 to V15 4318 6045	CMA Pt Allots 108a 345 & Clsd Rd Matata Psh Blks Iii Vi Awaateatua Sd - Awaiti Development Block	
Rock rip-rap (TAL01RR1)	Erosion protection	V15 4328 6104 to V15 4323 6093	CMA Pt Sec 6 Blk Vi Awaateatua S D - Wildlife Res-	True left bank of Tarawera River
Rock rip-rap (TAL02RR1)	Erosion protection	V15 4322 6092 to V15 4322 6091		
Rock rip-rap (TAL05RR1)	Erosion protection	V15 4320 6065 to V15 4314 6046	CMA Pt Allots 108a 345 & Clsd Rd Matata Psh Blks Iii Vi Awaateatua Sd -Awaiti Development Block	

Table 77 Coastal related permits – Kaituna Coastal Permit, 65213, term 35 years (to 31 August 2043).

Type (asset code)	Use	Map reference	Legal descriptions	Location
Kaituna mole (KAR00TM1)	Erosion protection	V14 1115 7814	CMA Secs 6 7 So 46938 Pt Sec 1 So 38964 Blk Vi Te Tumu Sd - Lp & Rec Res	True right bank of Kaituna River
Rock rip-rap (KAR01RR1)	Erosion protection	V14 1115 7814 to V14 1097 7736		
Flood-gate (KARXXFL5)	Discharge floodwater	V 14 1092 7726		
Flood-gate (KARXXFL6)	Discharge floodwater			
Flap-gate (KARXXFG1)	Discharge stormwater			
Culvert (KARXXCV1)	Discharge stormwater			
Culvert (KARXXCV2)	Discharge stormwater			
Rock rip-rap (KAR07RR1)	Erosion protection	V14 1066 7767 to V14 1061 7767	CMA Secs 6 7 So 46938 Pt Sec 1 So 38964 Blk Vi Te Tumu Sd - Lp & Rec Res Pt Sec 3 So 25204 Blk Vi Te Te Tumu Sd - Bal At 6623/003/07	
Rock rip-rap (KAR03RR1)	Erosion protection	V14 1087 7787 to V14 1092 7793	CMA Pt Sec 3 Blk Vi Te Tumu Sd	True left bank of Kaituna River
Rock rip-rap (MARXXRR1)	Erosion protection	V14 1351 7587 to V14 1096 7729	CMA Pt Sec 1 Blk Vi Te Tumu Sd Sec 2 So 12541 Sec 19 So 12521b Tumu Kaituna 10b Pt 9b Ml 1916 Blk Iv Maketu Whakapoukorero Pt 3b Block Ml 11450 Blk Iv Maketu Sd Whakapoukorero 5a & 5b2 Lot 2 Dps 68882 Blk Iv Maketu Sd Sec 17 Blk Iv Maketu Sd	True right side of Maketū Estuary
Flap-gate (MARXXFG1)	Discharge stormwater	V14 1291 7643	CMA	
Flap-gate (MARXXFG5)	Discharge stormwater	V14 1127 7732	CMA Pt Sec 1 Blk Vi Te Tumu Sd	
Flap-gate (MARXXFG4)	Discharge stormwater	V 14 1157 7729		
Flap-gate (MARXXFG3)	Discharge stormwater	V14 1189 7708	CMA	

Type (asset code)	Use	Map reference	Legal descriptions	Location
Flap-gate (MARXXFG2)	Discharge stormwater	V14 1210 7671	Sec 2 So 12541 Sec 19 So 12521b Tumu Kaituna 10b Pt 9b Ml 1916 Blk Iv Maketu	
Culvert (MARXXCV1)	Discharge stormwater	V14 1242 7645		
Flap-gate (MARXXFG6)	Discharge stormwater	V14 1353 7586	CMA Whakapoukorero Pt 3b Block Ml 11450 Blk Iv Maketu Sd	
Flap-gate/culverts (MARXXCV2)	Discharge stormwater			
Flap-gate (MARXXFG7)	Discharge stormwater			

B2 Design standards

B2.1 Design flows

Design flows are established during design of stopbanks and drainage schemes. Table 79 provides the nominal design standards currently adopted for each stopbank or drainage scheme. Design levels of stopbanks are based on a design rainfall frequency which translates into a design flow. The normal design process for stopbanks is to convert the design flow into a design level and then to add on a freeboard.

Drainage system pumps and canals are based on removal of a three day design rainfall.

A current design flow is also included in the table. In some cases this is a design flow at the closest river gauging station, where there is no gauging station the calculated design flow is provided at a reference location. The source of this information is hydraulic capacity reviews and modelling completed by the BOPRC, details of which are included below. Table 78 also includes an assessment of whether the asset currently meets the design standard. In most cases the forward works programme includes allowances for work where the design standard is not currently achieved. At times landowners have not agreed to works to achieve design standards, this is noted in the table.

B2.2 Freeboard

Freeboard is an additional height allowance used in the design of stopbanks to cover unaccounted for variables inherent in that design. Freeboard is a standard engineering provision for unaccounted for imprecision/uncertainty and makes allowance for risk tolerance plus phenomenon not explicitly included in the hydraulic calculations e.g. settlement, waves, aggradations, bend effects and debris blockage and passage.

Freeboard allowances in the Bay of Plenty vary by location and are dependent on accuracy of modelling inputs. In urban areas the Regional Council generally nominate freeboard between 500 and 800 mm, whereas in rural areas it ranges between zero and 450 mm. Through urban areas a differential freeboard is frequently applied, with lower freeboard specified for areas on the opposite bank protecting rural areas to that of protected urban areas. This is to ensure rural areas are flooded before urban areas which helps cater for ‘overdesign’ flood events.

B2.3 Stopbank design standards (technical levels of service)

Where a design standard is a design river flow, the flow is provided by the closest flow gauging station. This may differ to the flow at the location but enables flood managers and stakeholders to check design flow against flow gauging stations during a storm event to assist with risk assessment. The flow rates do not include freeboard; this is additional to the flow rate provided in the table.

B2.4 Drainage Scheme design standards

Drainage schemes are designed to provide floodable low lying land with effective drainage to undertake productive pastoral activities. The design standard set is to provide drainage through pumping and conveyance to remove excess water at a rate that is the equivalent to a design storm. This varies between schemes from 28 mm rain/day to 37.5 mm rain/day for a three day storm.

B2.5 Survey datum

All survey reference levels are to Moturiki datum. For example 1.5 m RL means 1.5 m above the Moturiki Datum.

Table 78 Stopbank and drainage scheme design standards (technical levels of service).

Location	Nominal design level in 2020	Design flow plus freeboard	Meets design standard (in 2020)
Waioeka–Otara Rivers Scheme			
Waioeka urban right bank	1% AEP (100 year) plus 450 mm freeboard.	1915 m^3/s at Cableway.	Yes
Waioeka rural left and right bank	5% AEP (20 year) plus 300 mm freeboard.	1380 m^3/s at Cableway.	Yes
Waioeka rural coastal left bank	50% AEP (2 year) plus 300 mm freeboard.	Tide 1.42 m RL or 766 m^3/s at Cableway.	Yes
Waioeka left bank for 1 km upstream of SH2 bridge	20% AEP (5 year) plus 300 mm freeboard.	980 m^3/s at Cableway.	Yes
Mill Stream right bank downstream of Clark Cross Road	1% AEP (100 year) plus 450 mm freeboard.	Downstream where Waioeka River dominant 1,915 m^3/s at Cableway. Upstream where Mill Stream dominant 60.8 m^3/s at Mill Stream.	Yes
Mill Stream downstream of Matchett Road	5% AEP (20 year) plus 300 mm freeboard.	Downstream where Waioeka River dominant 1,380 m^3/s at Cableway. Upstream where Mill Stream dominant 28.5-47.6 m^3/s Mill Stream.	Yes
Peterson's ring bank	20% AEP (5 year) plus 300 mm freeboard.	1.5 m RL at Ōhiwa tide gauge.	Yes
Otara Urban left bank	1% AEP (100 year) plus 450 mm freeboard.	1,111 m^3/s at Browns Bridge.	Yes
Otara rural right bank downstream of Gow Road	5% AEP (20 year) plus 300 mm freeboard.	Downstream tide 1.5 m RL upstream 840 m^3/s at Browns Bridge.	Yes
Otara rural coastal right bank	50% AEP (2 year) plus 300 mm freeboard.	Downstream tide 1.42 m (Moturiki Datum), upstream 443 m^3/s at Browns Bridge.	Yes
Otara rural left bank	10% AEP (10 year) plus 300 mm freeboard.	721 m^3/s at Browns Bridge.	Yes
Otara rural right bank	10% AEP (10 year) plus 300 mm freeboard.	721 m^3/s at Browns Bridge.	Yes
Gault ring bank	2% AEP (50 year) plus 400 mm freeboard.	995 m^3/s at Browns Bridge.	Yes

Location	Nominal design level in 2020	Design flow plus freeboard	Meets design standard (in 2020)
Duke Street Pump Station	10 year 24 hr storm of 160 mm.	Drainage co-efficient to clear a 10 year, 24 hr rainfall of 160 mm, with a runoff of 40% from the 210 ha catchment in 30 hrs.	No. Proposal to change LoS to clear floodwaters in 48 hrs.
Whakatāne-Tauranga Rivers Scheme			
Whakatāne right bank downstream of Yacht Club	1% AEP (100 year) plus 600 mm freeboard.	2,820 m^3/s at Valley Road (Rating is being reviewed. Design flow is likely to change).	Yes
Whakatāne right bank from Valley Road recorder to Yacht Club	1% AEP (100 year) plus 800 mm freeboard.	2,820 m^3/s at Valley Road (Rating is being reviewed. Design flow is likely to change).	Yes
Whakatāne left bank downstream of Pekatahi Bridge SH 2	1% AEP (100 year) plus 500 mm freeboard. Rural banks (no design criteria, existing RL maintained).	2,820 m^3/s at Valley Road (Rating is being reviewed. Design flow is likely to change).	Yes
Whakatāne right bank from Pekatahi Bridge (SH 2) to Landing Road Bridge	1% AEP (100 year) plus 500 mm freeboard. Rural banks (no design criteria, existing RL maintained).	Right bank urban area 2,820 m^3/s at Valley Road. Right bank rural (Rating is being reviewed. Design flow is likely to change).	Yes
Waioho Canal	1% AEP (100 year) plus 600 mm freeboard.	132 m^3/s at SH 2.	Yes
Te Rahu Canal downstream of SH 2 at Awakeri	1% AEP (100 year) plus 600 mm freeboard.	22.4 m^3/s.	Yes
Kopeopeo Canal (east)	20% AEP (5 year) plus 270 mm freeboard.	Eastern drain gravity inflow 6.3 m^3/s plus pumped inflow (drainage co-efficient 28 mm/d for 3-day storm).	Yes
Kopeopeo Canal (west)	20% AEP (5 year) plus 270 mm freeboard.	Gravity inflow plus pumped inflow (28 mm/d for 3-day storm).	Yes
Rangitāiki-Tarawera Rivers Scheme			
Tarawera right bank downstream of SH 30	1% AEP (100 year) plus 300 mm freeboard.	95 m^3/s at Awakaponga.	Yes
Tarawera left bank downstream of SH 2	1% AEP (100 year) plus 300 mm freeboard.	95 m^3/s at Awakaponga.	Yes
Tarawera left bank from SH 30 to SH 2	1% AEP (100 year) plus 150 mm freeboard.	95 m^3/s at Awakaponga.	Yes
Rangitāiki River – rural from SH 30 to Mouth	1% AEP (100 year) plus 300 mm freeboard.	804 m^3/s at Te Teko.	No
Rangitāiki River – urban (Te Teko, Edgecumbe, Thornton)	1% AEP (100 year) plus 600 mm freeboard.	804 m^3/s at Te Teko.	Yes
Rangitāiki Floodway	1% AEP (100 year) plus 300 mm freeboard.	85 m^3/s in floodway when 804 m^3/s at Te Teko.	Yes

Location	Nominal design level in 2020	Design flow plus freeboard	Meets design standard (in 2020)
Awaiti, Omeheu, 109 Canals	20% AEP (5 year) plus 300 mm freeboard.	Drainage co-efficient of 28 mm/day for 3-day storm.	Yes except a section of Omeheu right bank.
Awakaponga	10% AEP (10 year) plus 300 mm freeboard.		Yes but not for the right bank (owners declined).
Old Rangitāiki Channel	20% AEP (5 year) plus 150 mm freeboard (coinciding with 50% AEP in Tarawera River and 50% sea level).		Yes
Wilson's Creek	10% AEP (10 year) plus 300 mm freeboard (coinciding with 50% AEP in Tarawera river and 50% sea level).		Yes
Rangitāiki Drainage Scheme			
Drains, canals and pump stations	20% AEP (5 year)	Drainage co-efficient of 28 mm/day for 3-day storm	Yes

Location	Nominal design level in 2020	Design flow plus freeboard	Meets design standard (in 2020)
Kaituna Catchment Control Scheme			
Lower Kaituna			
Kaituna River: Mangorewa to Te Matai, Mangorewa River for 600 m	10% AEP (10 year) no freeboard.	200 m^3/s at Te Matai.	Yes
Kaituna River: downstream of Te Matai.	1% AEP plus 500 mm freeboard.	400 m^3/s at Te Matai.	Yes
Bells Road No.1 Drain	20% AEP (5 year).	Drainage co-efficient of 37.5 mm/day for 3-day storm.	Yes
Singletons Drain	10% AEP (10 year) no freeboard.	Drainage co-efficient of 37.5 mm/day for 3-day storm.	Yes
Parawhenuamea Stream	10% AEP (10 year) no freeboard.	29 m^3/s.	Yes
Waiari Stream upstream of SH 2	10% AEP (10 year) no freeboard.	72 m^3/s.	Yes
Waiari Stream downstream of SH 2	1% AEP (100 year) plus 300 mm freeboard.	148 m^3/s (when 300 m^3/s in Kaituna) or 86 m^3/s (when 500 m^3/s in Kaituna).	Yes
Ohineangaanga downstream of SH 2	1% AEP (100 year) plus 300 mm freeboard	87 m^3/s.	Yes
Raparapahoe downstream of SH 2	1% AEP (100 year) plus 300 mm freeboard.	110-136 m^3/s at Raparapahoe drop structure (110 when Kaituna at 500 m^3/s).	Yes

Location	Nominal design level in 2020	Design flow plus freeboard	Meets design standard (in 2020)
Raparapahoe from SH 2 to Quarry Road	10% AEP (10 year) no freeboard.	66 m^3/s at Raparapahoe drop structure.	Yes
Kopuroa downstream of SH 2	1% AEP (100 year) plus 300 mm freeboard.	76 m^3/s at SH 2 (not gauged) when Kaituna 500 m^3/s at Te Matai.	Yes
Lower Kaituna Drainage			
Drains, canals and pump stations, Lower Kaituna	20% AEP (5 year).	Drainage co-efficient of 37.5 mm/day for 3-day storm.	Yes (except Bell Rd A&C pump stations)
Upper Kaituna			
Waingaehe – downstream of SH 30	1% AEP (100 year) plus 500 mm freeboard.	17.2 m^3/s at SH 30 (not gauged).	Yes
Puarenga – downstream of SH 30	1% AEP (100 year) plus 500 mm freeboard.	53.2 m^3/s.	No small section of right bank.
Utuhina – downstream of SH 5	1% AEP (100 year) plus 500 mm freeboard.	55 m^3/s at Utuhina.	No
Waiowhiro – downstream of SH 5	1% AEP (100 year).	36 m^3/s (estimated 1998).	Yes meets design standard. No stopbank required.
Ngongotahā – downstream of Ngongotahā Road	1% AEP (100 year) plus 500 mm freeboard.	67 m^3/s (estimated 2001).	Yes
Waiteti – downstream of Ngongotahā Road	1% AEP (100 year).	105.4 m^3/s.	Yes meets design standard. No stopbank required.
Streams of Haupara Bay – downstream of SH 30	10% AEP (10 year) + 600 mm freeboard.	Not assessed recently.	Yes meets design standard. No stopbank required.
Streams of Gisborne Point – downstream of SH 30	10% AEP (10 year).	Not assessed recently.	Yes meets design standard. No stopbank required.

B2.6 Design flow reports

Waioeka–Otara Rivers Scheme

Waioeka and Otara Rivers Hydraulic Capacity Review, Operations Publication 2012/03, Pak.

Whakatāne-Tauranga Rivers Scheme.

Hydraulic Modelling of Lower Whakatāne River and Floodplain, 2004, Wallace.

Hydraulic Capacity Review of the Waioho Stream and Canal, Operations Publication 2006/10, Pak.

Hydraulic Capacity Review of the Te Rahu Canal, Internal Report 2007/04, Pak.

Kopeopeo Canal Contamination Remediation Project Flood Management Plan, memo to Crabbe, 2014, West.

Rangitāiki-Tarawera River Scheme.

Rangitāiki Plains Hydraulic Modelling, 2011, Wallace.

Reach 10 modelling, integrated hydraulic modelling of the Awaiti, Omeheu, ORC and Awakaponga Canals and floodplain system, Operations Publication 2012/06, West.

Rangitāiki Drainage Scheme.

Reach 10 modelling, integrated hydraulic modelling of the Awaiti, Omeheu, ORC and Awakaponga Canals and floodplain system, Operations Publication 2012/06, West. *(Includes Wilsons Creek).*

Kaituna Catchment Control Scheme.

Lower Kaituna:

Hydraulic Modelling of the Kaituna River, 2009, Wallace.

Kaituna River Major Scheme Hydraulic Review, Operations Publication 2005/01, Surman. *(Includes Parawhenuamea Stream flow estimate).*

Kopuroa Stream Capacity Review, Internal Report 2007/20, Medwin.

Hydraulic Capacity Review Report Bell Road No.1 Drain, 2007, Hydraulic Modelling Services

Ohineangaanga and Raparapahoe Stream Bridge Capacities, Operations Report 2000/02, Surman.

Raparapahoe Stream Capacity Review, Internal Report 2001/19, Medwin.

Waiari Capacity Review, Internal Report 2007/03, Medwin.

Upper Kaituna:

Kaituna Asset Management Plan Operations Report 2003/09, Wallace. *(Waiowhero and Ngongotahā Stream flow estimates).*

Puarenga Stream Hydraulic Capacity Review, Internal Report 2007/12, Pak & Balagatas.

Utuhina Stream Flood Modelling and Mapping, Feb 2014, Wallace.

Waingaehe Stream Hydraulic Capacity Review, Operations Publication 2008/02, Freeman & West.

Waiteti Stream Hydraulic Capacity Review, Internal Report 2007/06, Pak.

B2.7 Maps of scheme design standards

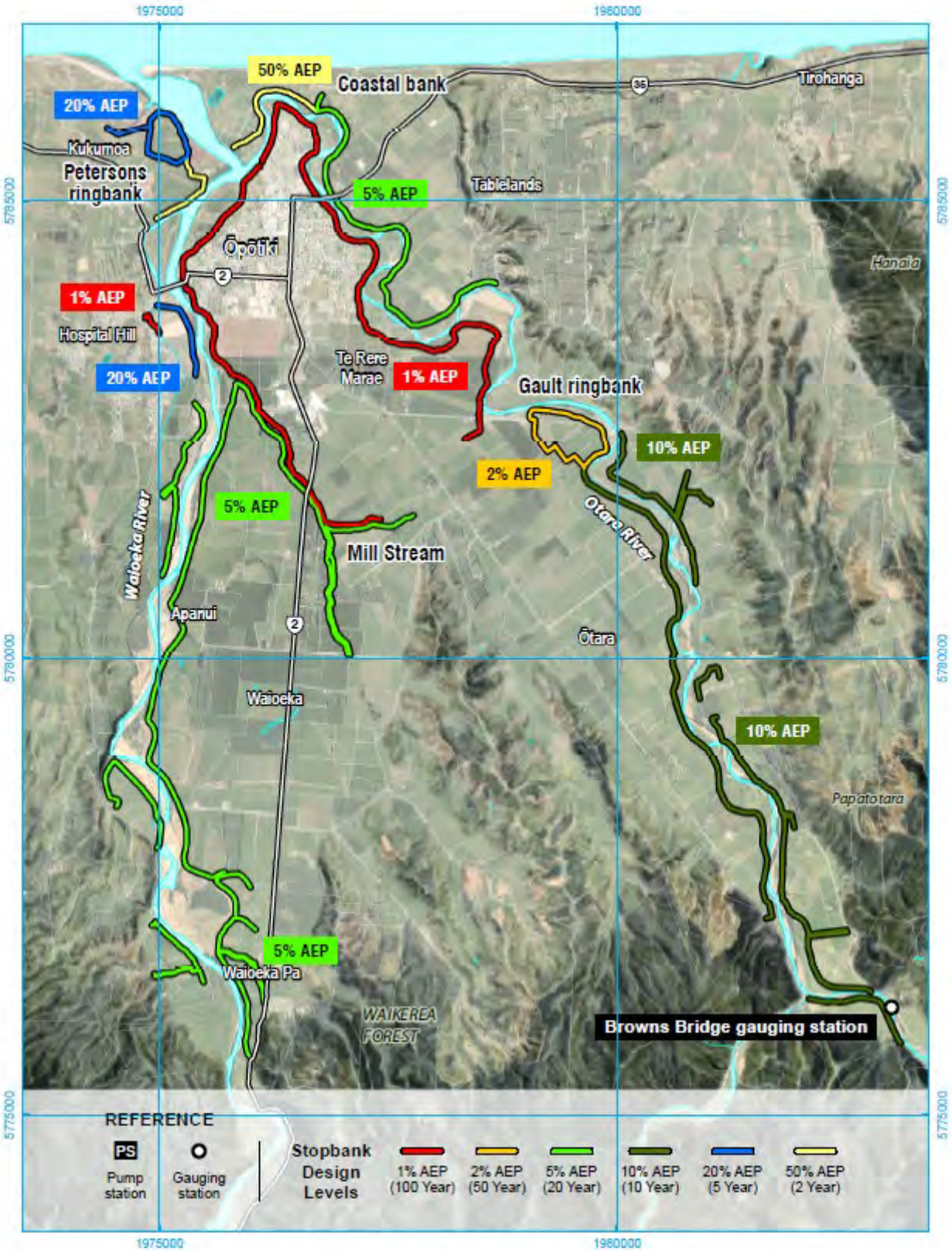


Figure 32 Waioeka-Otara Rivers Scheme stopbank design standards

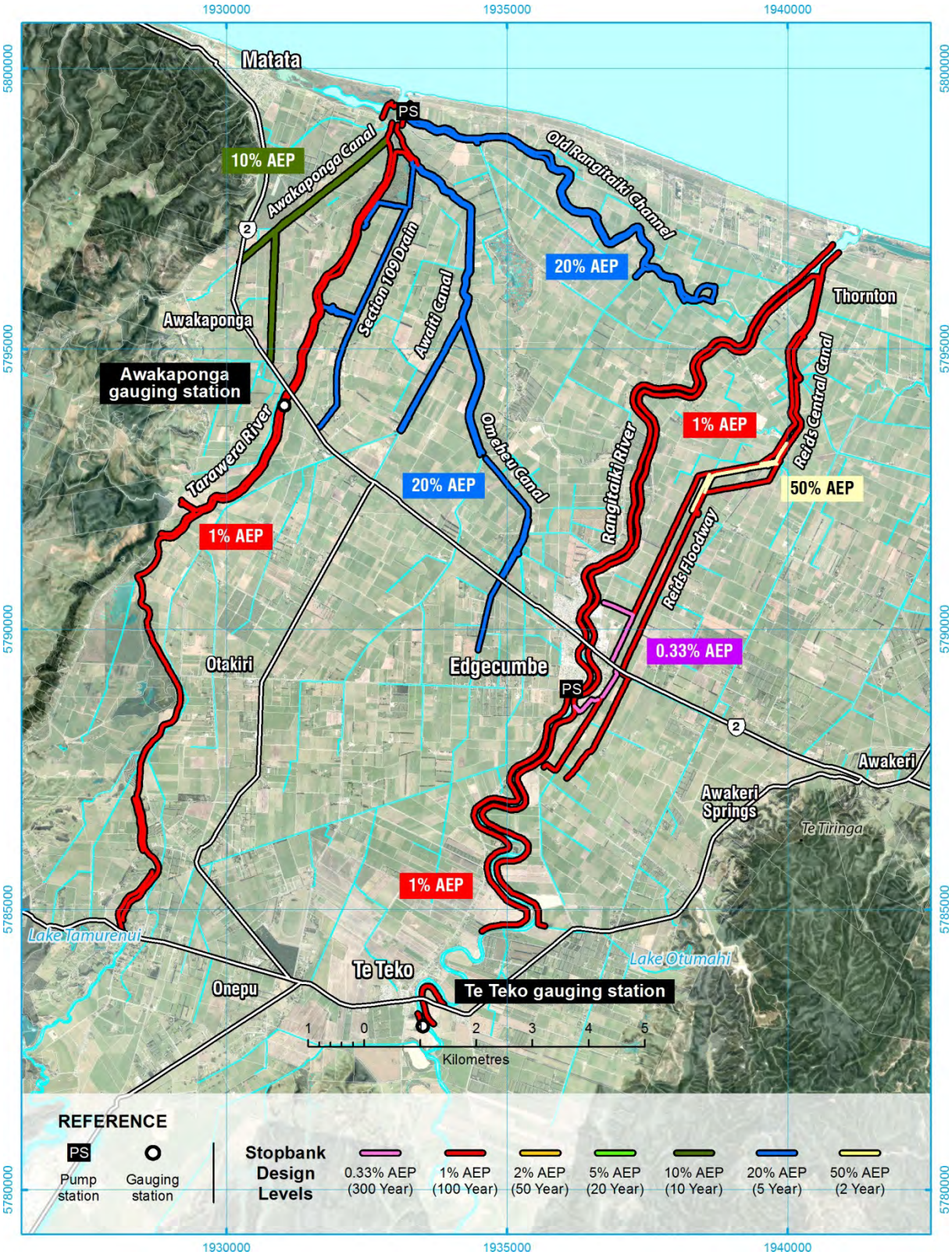


Figure 33 Stopbank design standards for Rangitāiki-Tarawera Rivers Scheme

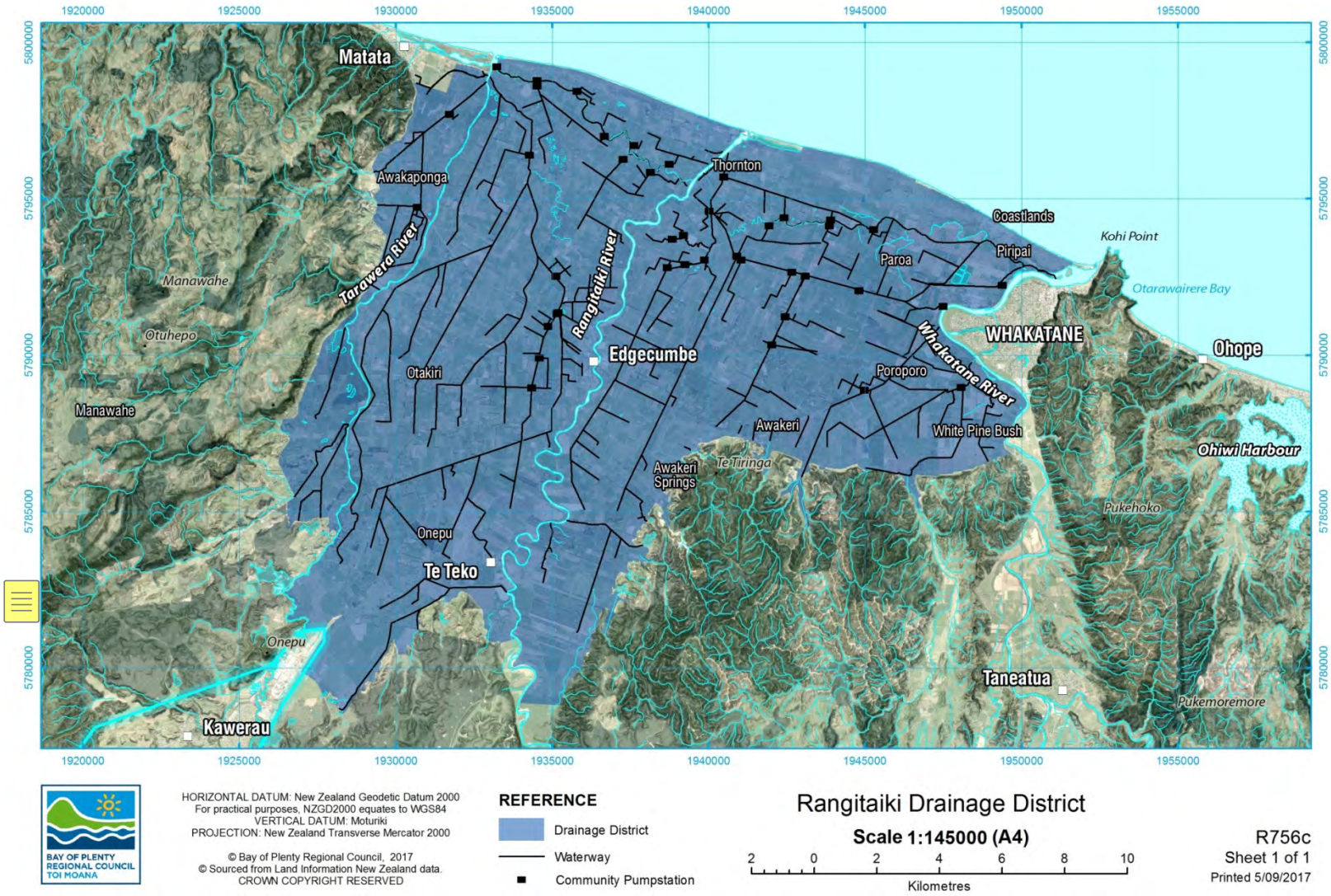


Figure 34 Boundary of Rangitāiki Drainage Scheme

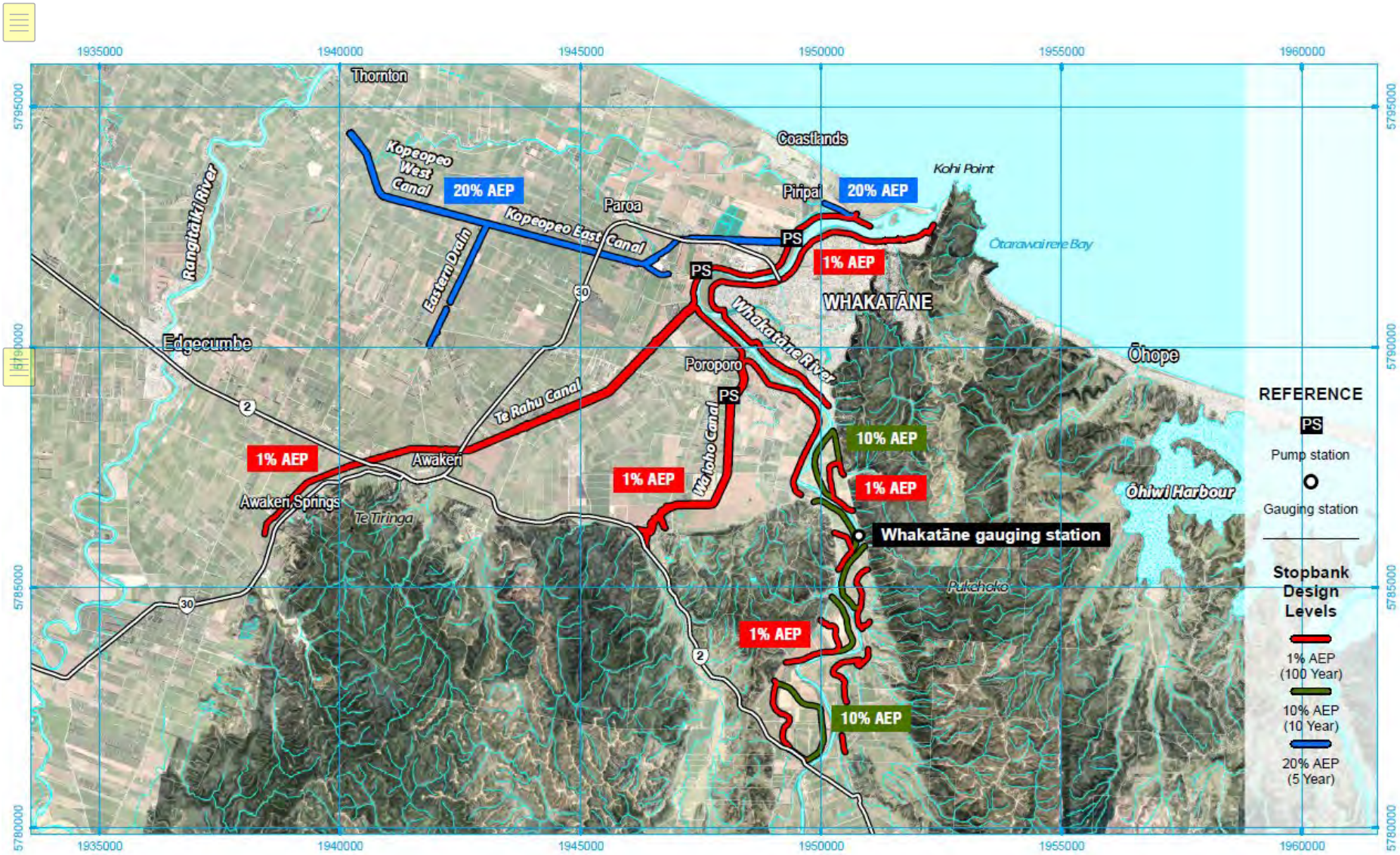


Figure 35 Stopbank design standards for Whakatāne-Tauranga Rivers Scheme

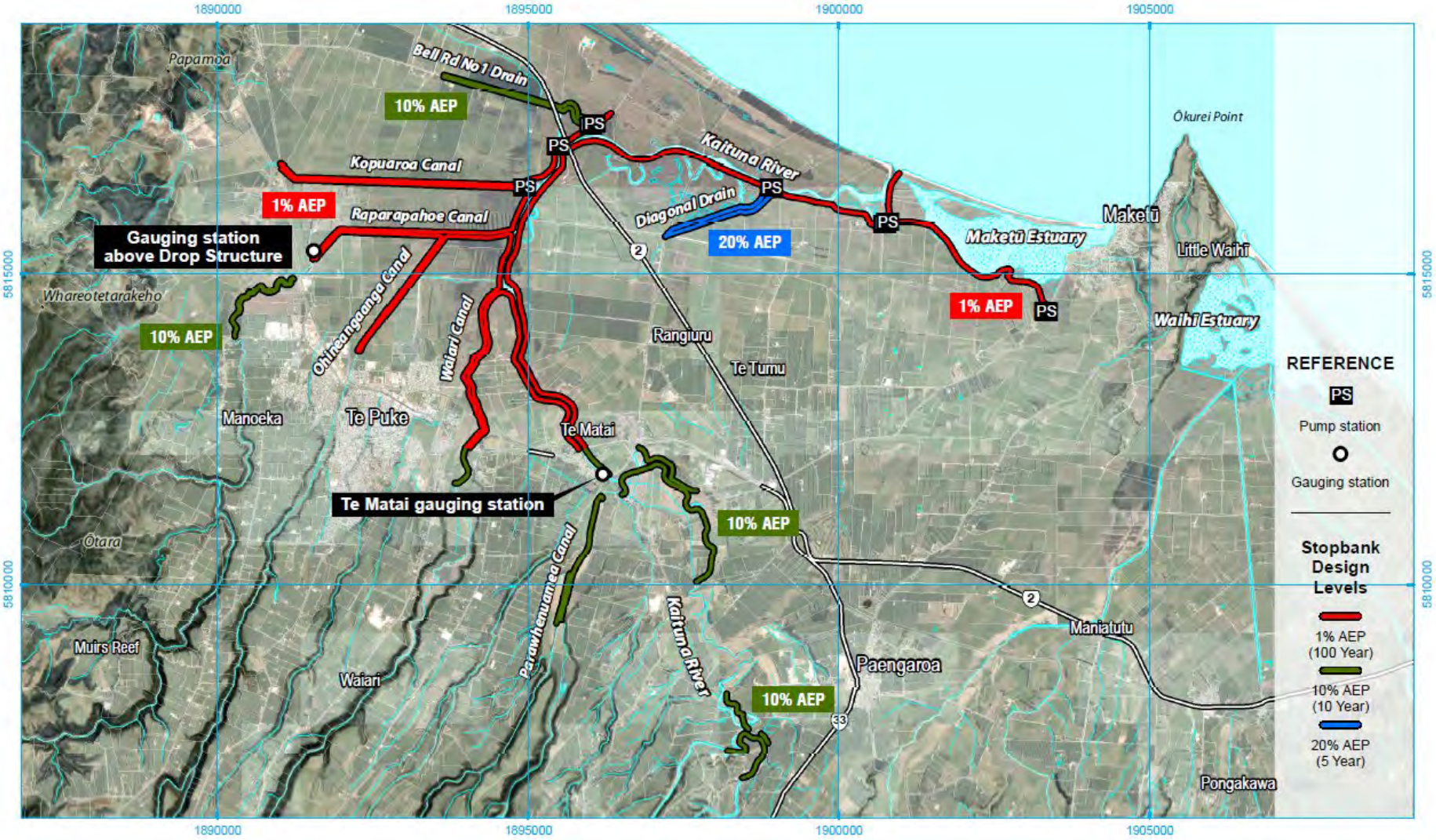


Figure 36 Stopbank design standards for Kaituna Rivers Scheme (Lower)

Figure 37 Asset design standards for Kaituna Rivers Scheme (Upper)

Regional Parks and Coastal Catchments Asset Management Plan 2021-2031

Bay of Plenty Regional Council
5 Quay Street
PO Box 364
Whakatāne
New Zealand

Contents

Part 1:

Executive summary

Part 2:

Introduction

2.1 Purpose of the AMP

Provide a short introduction about the Scope and Purpose of the plan. This is not about the asset itself, but what the AMP is trying to achieve. Timelines, tables and figures can be useful here if appropriate.

Describe the relationship with other plans – diagram or figures are useful.

Describe the AMP framework for the document itself – diagram or figure.

2.1.1 Asset management and service delivery

Asset management relates to the prudent management of infrastructure assets to provide a service to the community in a cost-effective way linked to mandated levels of service via Bay of Plenty Regional Council's community consultative process.

2.1.2 Asset management objectives

This Asset Management Plan (AMP) has been specifically developed to represent the current investment, resources and objectives of the Coastal Catchments team and Bay of Plenty Regional Council. The overall goal of this AMP is to express the required outcomes of the regional parks programme and other capital projects undertaken by the Coastal Catchments team, how the assets incorporated as part of this activity will be maintained and operated, the type and level of services that will be provided, and how these will be funded over the next 10 year period.

In order to fulfil the Council outcomes, vision, goals and objectives outlined in this document, BOPRC is adopting a systematic approach to the long-term management of its assets and services by preparing this AMP.

Bay of Plenty Regional Council is committed to best practice asset management and to achieving the following key objectives:

- Comply with all statutory requirements.
- Continually improve service delivery to the community.
- Ensure capital projects are robust, meet sustainability criteria and are delivered to plan.
- Keep the plan and processes as simple as possible.

2.1.3 Purpose of this plan

The purpose of this plan is to formally document the management philosophy that is applied to the parks assets and services. This approach ensures that acceptable levels of service (LOS) are provided in the most cost effective manner and contributes to the achievement of the Long Term Plan (LTP).

This long-term planning approach is considered necessary to appropriately identify the future projected capital and operating expenditure.

The key purpose of this plan is to:

- Provide a document which outlines the long-term strategy for the management of Council's two regional parks and their physical assets, and the assets created through other capital projects undertaken by the Coastal Catchments team on behalf of Council.
- Detail the level of service (LOS) that is provided to the community and how this is expected to change so that appropriate funding can be allocated to achieving and maintaining these levels of service.
- Identify and manage the potential risks involved with the provision of these regional parks and other capital projects, including the Kaituna River Re-diversion.
- Identify the lifecycle costs needed to provide the required LOS to the community.
- Provide robust justification for future works programmes.
- Provide clarity around the future direction of the Activity and the key asset management improvements that will assist the team to prudently manage assets.
- Growth and demand?

2.1.4 Timeframe for the plan

This AMP has been developed to cover a 10 year timeframe and considers that the assets included for the regional parks have an indefinite life overall. The intention is to review this AMP on a three yearly basis in line with the development of the Long Term Plan. This current review (2020) is complete and will see the next review undertaken in the 2023/2024 financial year.

2.2 Scope of the plan

This plan is BOPRC's tactical plan for managing regional parks in a cost-effective way whilst achieving levels of service and long term strategic goals. It provides an analysis of the assets and sets the foundation for the long term service and financial requirements for the Activity.

This plan has been developed taking into account the Local Government Act 2002 (LGA) and the general ethos outlined in the International Infrastructure Management Manual (IIMM). The plan has been developed to a "Minimum-Core" level as defined by the AM Continuum in the latest IIMM (2015).

Key sections of this asset management plan are:

- Introduction

  Provides an overview of asset management, the purpose and objectives of the AMP and the linkages between strategic direction and service delivery.

- Summary of regional parks and other capital projects

  This section provides a high level summary of the two regional parks, summarises the key stakeholders and the regulatory structure and the Business Processes.

- Service provision

  This section introduces the levels of service framework, discusses growth and demand and community consultation and their implications on service provision.

- Risk management

  Details BOPRC's Risk Framework and summarises the main Activity Risks that have been identified along with mitigation and monitoring measures.

- Lifecycle management
  - Provides a detailed analysis of the assets by Park and project with the currently available information
  - Summarises the Operational, Maintenance and Capital programmes and financial forecasts
  - Outlines key issues that need to be addressed
- Financial summary

2.3 Relationships with other plans

Asset Management Plans are a key component of service delivery and infrastructure management. A number of other strategic, tactical and operational plans relate to and support the delivery of the service and are linked into the AMP.

There are a number of key Acts that help to direct the provision of the regional parks activity. These include:

- The Resource Management Act 1991 and Amendments.
- The Local Government Act 2002 and Amendments.
- Health and Safety at Work Act 2016.
- Heritage NZ Pouhere Taonga Act 2014

Bylaws, policies and standards also help to direct the provision of the regional parks activity.

Long Term Plan

- A requirement of the LGA is to provide detailed information regarding management of assets and infrastructure over a 10 year period (as a minimum).
- Defines how levels of service have been developed and provides a platform for consultation.
- Defines how the Regional Parks and Coastal Catchments levels of service contribute to the Council Outcomes.
- The AMP is the detailed working plan delivering the outcomes and services set out in the LTP, for example, levels of service, performance and ongoing management costs.

Annual Plan

- Provides a detailed plan of Council's actions and financial requirements annually.
- Works identified in the AMP should be represented in the Annual Plan.

Regional Policy Statement

- Promotes the sustainable management of the region's natural and physical resources. It sets objectives, policies and methods for managing these resources.

Regional Parks Policy (2003)

- In 2003, Bay of Plenty Regional Council approved the Policy on Regional Parks that allows it to secure land for use by the public. The policy gives priority to coastal peninsulas and spits, harbour headlands, salt marshes and land by lakes, rivers and wetlands.

Parks Management Plans

- These Plans set out how Bay of Plenty Regional Council, and key stakeholders, intend to manage the Regional Parks over the next 10 years. The Plans guide the day-to-day and long-term management of the parks and will set a context for the future use and conservation of the natural heritage and cultural resources situated there.

Other Plans and Policies

- Council have a number of plans, policies, and strategies that inform the AMP and direct certain operational activites.
- Some of Council's priority projects are identified through Co-Governance Joint Council Committees, such as Te Maru o Kaituna River Authority and its Action Plan, or the Rangitaiki River Forum's Te Ara Whanui document.
- At a management level, Council prepares 'Service Plans' for each team annually, which include a number of internal measures in addition to the Long Term Plan KPIs.

Figure 1: Summary of Asset Management Plan Scope

2.4 Overview of services covered

2.4.1 What do we do?

*What are the **services** (not assets) covered in this AMP? Include a concise description of the service.*

Activity summary

Bay of Plenty Regional Council owns and operates two regional parks for the benefit of the community. The parks are:

- Te Rae o Pāpāmoa / Pāpāmoa Hills Cultural Heritage Regional Park
- Onekawa Te Mawhai Regional Park

Both parks are covered under one AMP. The AMP is recent, but defined by comprehensive inventories with a high level of confidence in condition ratings and valuation. As aspirations and longer term management direction become more defined for both parks, the AMP is in the position to support ongoing management through Council's systems and the AMP Improvement Plan.

In addition, the Coastal Catchments team has recently been tasked with planning and delivering environmental and cultural enhancement services through capital projects on behalf of Council, particularly those identified through co-governance forums arising out of Treaty of Waitangi settlement legislation, such as Te Maru o Kaituna River Authority and the Rangitāiki River Forum, but also including works to directly achieve Council's Community Outcomes. For example, the recently-completed Kaituna River Re-diversion and Te Awa o Ngatoroirangi / Maketū Estuary Enhancement Project, and upcoming projects in the Waihī Estuary and Rangitāiki catchments.

2.4.2 How do we manage the activities

Overview

Regional park management in the Bay of Plenty is undertaken with multi-jurisdictional and co-management collaboration between parks agencies and tangata whenua. Tangata whenua are partners in both BOPRC regional parks and the relationship is one defined by with ongoing mahi and korero on key issues.

Other capital projects undertaken by the Coastal Catchments team are planned and delivered by staff with the appropriate level of partnership, collaboration or involvement with tangata whenua and other stakeholders, depending on the complexity, significance, cost and risk.

The team structure and partnerships

The internal management team who oversee the operation and management of the regional parks in Council is small, with half a full time employee (FTE) being provided for the management of the parks and the responsibility for the asset management processes. With increasing visitation, particularly at Pāpāmoa Hills, there is the need to plan for a future resource audit to ensure the resources are in place to deliver the outcomes desired. Council is unusual in that it is a parks agency that does not have dedicated parks staff in name or a named 'parks department'. There are a number of other stakeholders and partners who help to oversee and deliver the parks activity and these are listed under Key Partnerships and Stakeholders in the above overview section.

Other Coastal Catchments team capital projects are led by individual staff and assigned the appropriate level of time to plan, deliver and report on them.

2.4.3 Why do we do it?

Describe the rationale for providing the service and comment on any negative effects of providing the service.

Link the Business drivers from Rivers and Drainage AMP.

Why we do this programme

The LGA provides for the Regional Council to own and operate regional parks. These provide the community with healthy environments for their recreational enjoyment as well as protecting cultural heritage and landscape values from development.

Community outcomes that the programme contributes to

The Long Term Plan outlines the Community Outcomes that set out how Council's work will make a difference to the community. There are four Community Outcomes that set the direction for Council's activities as set out in the LTP. Regional parks contributes to three Community Outcomes as set out below:

- **A vibrant region**

  We work with and connect the right people to create a prosperous region and economy.

- **A healthy environment**

  We manage our natural resources effectively through regulation, education and action. We work cohesively with volunteers and others to sustainably manage and improve our natural resources.

- **Freshwater for life**

  We listen to our communities and consider their values and priorities in our regional plans.

Figure 2: Council's Strategic Framework and Community Outcomes (2020)

Significant negative effects

The LGA requires an outline of any significant negative effects (not positive effects) that the activity may have on the social, economic, environmental and cultural well-being of the (local) community.

Regional park services generally provide a significant public good to the community with respect to recreation, and the less studied benefits to the economy, the environment, our social conditions and public health. However there are some adverse impacts that are generally well managed. Most issues are easily mitigated through appropriate management and operational techniques and on-going monitoring.

The following table summarises the key negative effects:

Table 1: Potential negative effects

Negative Effect	Potential Mitigation
Social	
Health and safety risks associated with operations	Parks are closed during extreme weather events, hazard assessments are undertaken for each park, hazards are identified on park information boards and any high risk areas have barriers in place etc., levels of service for maintenance is consistent so as to limit trips and falls etc.
Risk posed by moving assets near water	Risks from the operation and maintenance of culverts, automatic slide gates, piers, steep riprap, deep water and fast-moving water are all managed with appropriate on-site controls and signage. There is also a potential risk of flooding, which is comprehensively managed by Council's Flood Warning Manual, which is updated as new assets are added.
Impact of visitors on archaeological heritage	The construction of defined walkways to prevent erosion. Visitors have the sensitivity of site brought to their attention and more overt interventions pending greater heritage protection measures being in place if required.
Economic	
Health and safety risks associated with the operation	Costs of potential claims are minimised through undertaking appropriate risk identification and mitigation measures.
Costs of providing the service increase, impacting on rates	Manage the investment needed via investment plans to secure non rate revenue funding to ameliorate the rate investment requirement. Ongoing vigilance to the cost of operation through reducing costs where possible, working with other partners and stakeholders to secure joint benefits. Business planning to articulate the longer term view to income and expenditure including income initiatives.
Environmental	
Environmental Impacts relating to chemical handling	Ensure that chemicals are stored correctly and HSNO chemical handling standards are followed.
Animal damage impacting on archaeological sites and increasing soil erosion	Stock restricted from sensitive areas, suitable areas of land retired and vegetated. Regenerating areas are fenced off.
Control of pests	Implement pest control plans to protect native flora and fauna.
Cultural	
Competing use between heritage protection and recreational use of the parks	Quarterly meetings with Iwi Advisory Committees to discuss conflicting uses or new ideas.

Additional details of both parks, their assets and the management strategies are provided in Section 7 of this AMP.

Part 3:
Strategic environment

Ownership and operation of regional parks is a discretionary function available to regional councils under the LGA. Some councils have significant regional park assets (such as Auckland and Wellington), while others have none. Bay of Plenty Regional Council currently has two which operate under the Regional Parks Policy (2003).

The Coastal Catchments team's other capital projects have arisen out of Council's empowering legislation and the action plans created in partnership with co-governance entities such as Te Maru o Kaituna River Authority and the Rangitāiki River Forum.

Part 4:
Assets we own

4.1 Overview

Include a high-level summary of the assets that support the activity including a breakdown of asset class. Less is more – utilise infographics or diagrams as much as possible.

Further detail on the assets can be included in an appendix.

Parks assets

The settings and values at both parks provide regional infrastructural assets that unlike other infrastructure include a number of appreciating and "intangible" assets. These assets include significant trees, tracts of regenerating native bush, significant archaeological and cultural sites.

Many assets present at the parks are 'attached to the land' and don't depreciate. The majority of assets have come from the legacy of farming on the land prior to becoming parks.

The majority of assets are in condition 2 or 3 and have long life spans ahead of them. The asset profile of the parks sees these assets anticipated to see out their entire useful lifespan. Only interpretive signs and the natural short lifespan these normally have are the main renewal priority.

Assets are typically:

- Fencing and stiles
- Pathways/walkways car parks
- Dams
- Toilets
- Farm buildings and dwellings
- Woolshed
- Cattle yards
- Water supply-tanks and pumps, farm water pipe network
- Park furniture
- Timber plantations
- Signage

4.1.1 Pāpāmoa Hills Regional Park

Asset summary

Asset Type	Book Value as at 30 June 2020
Land	$3,759,000
Buildings	$292,000
Other Improvements	$551,000
	$4,602,000

There are 10.2 ha of forestry within the park; primarily *Pinus radiata*. There are four stands of *Pinus radiata* with small areas of *Acacia melanoxylon* and *Cupressus lusitanica* of varying ages. The *Pinus radiata* stand that was planted over the former quarry site is planted on thin soils was removed in 2014. The harvest value of these stands fluctuates with the market and the value of these wood lots is consistently variable.

Data confidence

Data confidence for the parks assets is high and previous work has addressed inventory, valuation and data confidence levels pursuant to the AMP improvement plan. This work undertook an asset data capture project where assets and condition data were recorded and the assets valued at a component level.

4.1.2 Onekawa Te Mawhai Regional Park

Asset summary

Asset Type	Book Value as at 30 June 2020
Land	$1,998,000
Buildings	$405,000
Other Improvements	$176,000
	$2,579,000

Water is reticulated as required for domestic and farming activities. The park uses bore water shared with a neighbouring property.

4.1.3 Other Assets

Asset Summary

Asset Type	Book Value as at 30 June 2020
Land Improvements	$2,894,000
Other Improvements	$1,461,000
	$4,355,000

The other assets created and managed by the Coastal Catchments team on behalf of Council include those recently completed through construction of the Kaituna River Re-diversion Project, with other projects in progress or in the planning or design stages. These assets include:

- 45 ha of land, including constructed wetlands
- Stop bank and associated toe loading and berm infrastructure
- Sheet piling and reclamation infrastructure
- Culverts
- Slide gates
- A concrete building and associated hydraulic and electrical controls
- Stilling wells
- Rock riprap
- A pier
- A floating pontoon
- A ‘salinity block,’ a fenced compound and two debris clearance yards
- A boat ramp and associated carpark (to be transferred to Western Bay of Plenty District Council)
- Safety rails, gates and fences
- Signs

Part 5:
Growth and demand

5.1 Overview of drivers

Briefly describe each of the drivers of demand in a table format. Specific impacts are discussed in the next section.

Add or delete drivers as appropriate for activity. Potential drivers are:

- *Regulatory/Policy*
- *Population changes*
- *Staff numbers*
- *Land use changes*
- *Climate change/sea level rise*
- *Technology*
- *Sustainability*
- *Environmental impacts*

If appropriate reference Environmental Stewardship (from the Rivers and Drainage AMP) as an appendix.

Visitor usage – growth and demand

Council is continually reviewing the best cost-effective way to ensure the regional community has access to open space opportunities. This includes working with other land owners (such as other government agencies) to ensure opportunities are investigated across the region, to ensure appropriate and cost effective provision of open space for the region.

Maximising the use and potential of the existing parks is important. Increasing visitor numbers will have the added benefit of raising the profile of the park, and conversely also the expectations of what the park delivers. By maximising the use of the existing parks there is likely to be more public involvement and potential opportunities for external funding.

Pāpāmoa Hills Regional Park

Demand management is practiced continuously to maintain the total demand at reasonable and sustainable levels. Visitor numbers have steadily increased over the last two years. Steps to meet the increased visitor demand are highlighted in the park's management plan.

Areas for development/improvement will include:

- Way finding and interpretation
- Trails
- Car parking and visitor facilities
- Native plantings
- Alternative access

Onekawa Te Mawhai Regional Park

The Onekawa Te Mawhai Operational Management Plan will continue to address growth and demand issues. A range of actions have been developed that will improve the facilities at the park, and will assist in encouraging additional users to the park.

5.2 Demand projects

Outline the programme of projects that has been developed to respond to changes in Demand for the service.

Include a table of programmes each tagged with the driver it is delivering against. Include commentary on whether these programmes are expected to fill all or part of the 'gap'/issue that they are intended to address.

5.3 Non-asset demand management options

5.3.1 Demand management options

What non-asset based demand management options have and could be implemented? For example, education, or expanding hours of service.

5.3.2 Demand management programme

A table of non-asset based demand management programme.

Part 6:
Levels of service

6.1 Customers and stakeholders

This section outlines the key customers and stakeholders for the activity.

- *Who are our customers and stakeholders? This could be presented in a table with the bullet points*
  - *What do they value and what are their expectations?*
  - *What are the limitations of delivering on their expectations? (i.e. regulatory or budget constraints mean that a user or stakeholders particularly expectation cannot be delivered).*
- *The SAMP also covers customers and stakeholders, so highlight specific customers only and focus in the values with respect to the activity.*

Community consultation

Council consults the regional community on the regional park programme each year through the LTP and Annual Plan processes. Council also undertakes more targeted consultation and engagement for each of the regional parks. The Pāpāmoa Hills Cultural Advisory Committee for the Pāpāmoa Hills Regional Park meets quarterly to discuss matters regarding the park. This provides a forum for iwi/hapū representatives to provide advice on cultural and technical aspects of operations within the park. The Onekawa Te Mawhai Operational Management Plan states that Council will engage with the community, iwi, Heritage New Zealand and other interested parties on appropriate operational matters.

6.2 Customer LOS statement and performance measures

This section translates the SAMP LOS statements into specific performance measures for the activity.

The regional parks activity has one overarching LOS which is to “Manage our regional parks sustainably”. It is linked to the following Community Outcomes:

- A healthy environment
- Freshwater for life
- A vibrant region

How regional parks support the Community Outcomes

The following table shows how the regional parks programme contributes to the Community Outcomes.

Table 2: Contribution to Community Outcomes and linkages to levels of service

Community Outcome	Activity Strategic Outcomes (Levels of Service)	Customer Value	Customer Performance Measure			Technical Performance Measure					Performance Measure Procedure
			Measure	Current Target	Proposed Target	Factors of Influence	Measure	Current Target	Current Performance	Proposed Target	
A healthy environment, Freshwater for life, A vibrant region	The regional community has ***access*** to and enjoys the unique characteristics of the Bay of Plenty through an ***integrated system*** of open space.	Accessibility	No. of regional parks provided.	2 Parks	None, optimising current parks as the opportunity arises.	▪ Core information regarding regional parks.	▪ Core information such as opening hours are available on the website.	▪ 100% of the time	▪ 100%	▪ 100% of the time	▪ Annual review of regional parks opening hours and information advertised on the website, in brochures and on signage.
						▪ Wayfinding and Interpretation. (Directional/Educational)	▪ In place for all operative regional parks in accordance with management plans.	▪ 100% of the time	▪ 50%	▪ 100%	▪ Annual review park management plans. ▪ Maintenance contract reporting (frequency as per contract).
						▪ Usage of parks.	▪ No. of people and vehicles per annum for all parks.	▪ 100,000	▪ 100,000	▪ 3% per year to 25,674 by 2019	▪ Track counter tabulated annually. ▪ Vehicle counter tabulated annually.
	Costs are ***appropriate*** for the services and facilities ***provided.***	Affordability	Total cost per hectare of regional park maintained (based on operative budget).	< $2,100	As for current (inflation adjusted).	▪ Operational and maintenance expenditure.	▪ Managed to within ±10% of operational budget as per the Annual Plan programme.	▪ 100% compliance	▪ 100%	▪ 100% compliance	▪ Quarterly and Annual Report to the Council.
						▪ Maximise external funding (capital and maintenance).	▪ Review yearly prior to Annual Plan process.	▪ 100% compliance	▪ 0%	▪ 100% compliance	
	Decision-making processes are *transparent* **and** *easily understood* **and enables** *participation.*	Community Engagement	Regional community to be informed and consulted in the formation of each parks management plan as per Council processes.	100% compliance	100%	▪ Regional parks management plans.	▪ Develop each plan, based on community aspirations, in consultation with tangata whenua, district and city councils, Heritage New Zealand, and other park users or agencies that identifies how the park will be developed and managed.	▪ 100% compliance	▪ 100%	▪ as per current	▪ Adoption of final park management plan. ▪ Submissions and hearing minutes.
						▪ Management Committee.	▪ Established and maintained for each park (Bay of Plenty Regional Council and tangata whenua representatives).	▪ 100%	▪ 100%	▪ as per current	▪ Annual review park management plan. ▪ Meeting minutes as per meeting frequencies.
	Regional parks are ***well maintained***.	Quality	Percentage of park users who rate their	Pāpāmoa = 70% Onekawa =70%	Pāpāmoa = 85% by 2022 and ongoing	▪ Parks management plan and supporting documents.	▪ Develop and maintained in accordance with management plans for all regional parks.	▪ 100% compliance	▪ 100%	▪ By 2022	▪ Annual reporting. ▪ Annual performance review against park management plans.

Community Outcome	Activity Strategic Outcomes (Levels of Service)	Customer Value	Customer Performance Measure			Technical Performance Measure					Performance Measure Procedure
			Measure	Current Target	Proposed Target	Factors of Influence	Measure	Current Target	Current Performance	Proposed Target	
	Values in parks are ***identified, protected, enhanced, interpreted*** and ***promoted***.	Whole of Community Benefits	experience as satisfactory or higher.		Onekawa = 85% by 2022 and ongoing		▪ Review AMP and management plans on a three yearly basis ▪ Each parks management plan is to address the cultural, heritage, landscape or other values as appropriate.				▪ Triennial Asset Condition survey. ▪ Annual review parks management plan.
	Health and Safety risks are *minimised.*	Safety	No health and safety incidents attributable to lack of management of Parks assets.	Zero	Zero	▪ Maintain a health and safety register and system to identify and mitigate potential health and safety incidents and a system to record and investigate incidents.	▪ 100% of reported incidents and hazards are recorded and investigated.	▪ 100% compliance	▪	▪ As for current	▪ Report accidents to Human Resources as they are reported. ▪ Annual review of H&S system.

6.2.1 How we determine performance

Reference the SAMP where the LOS statements are found.

Describe how the specific performance measures come about. What process was undertaken? Is it a Council wide organisation level approach to periodic reviews and/or is staff judgement and experience relied on to determine the measures and targets?

For the parks assets, success is determined by the Long Term Plan KPIs around visitor numbers and visitor satisfaction, plus feedback from the Cultural Advisory Group and Heritage New Zealand.

For the Kaituna River Re-diversion assets, the level of success is determined by the extent to which ecological and cultural values are improved over time in response to the project's implementation. Specific measures are set out in the resource consent conditions for the project, which includes a Monitoring Plan and Annual Reports, as well as a mechanism for feedback and reporting to a Tangata Whenua Collaboration Group and the wider community.

6.2.2 What did we measure last time?

Discuss the previous AMP LOS performance measures and how we went.

Highlight the trends of these measures.

On what measures we were above or below of targets?

Did these measures need improving?

6.2.3 Performance measures (2021 – 2031)

Measure	Type	Status	Current	Target High	Target Low
The number of visitors to regional parks	Outcome	Existing LTP	119250	120000	115000
Percentage of park users who rate their experience as satisfactory or higher.	Output	New - SP FY21		80%	70%

A table of performance measures that demonstrate delivery of the customer values identified in the SAMP (link to the SAMP where these are discussed). Show a clear linkage between the statements, measures and targets.

Show the latest result from the previous AMP.

Where there are new measures or discontinued measures leave the corresponding previous performance or new performance targets blank.

Insert a table with a minimum of the following headings:

Customer Values	*Service Attributes*	*LOS (Level of service) statement*	*Customer Measures*	*Result for 2020/21*	*Performance Targets*		
					2021/22	*2022/23*	*2023/24*
e.g. Provision of Service, Health, Safety and Environment, Resilience, Environmental, Financial	*e.g. Quality, reliability, responsiveness, customer service, efficiency, public health, safety, resilience, sustainability, affordability*						

6.3 Any issues to be aware of

6.3.1 Future LOS

What are any potential gaps in LOS based on the new performance targets? *What are the challenges of meeting the LOS targets?*

Part 7:
Capital planning

Our capital projects to deliver against KPIs, in light of condition, performance, demand, and risk. They should be linked to the Growth and Demand impacts that are being planned for, and the LOS gaps identified.

Provide a link to Rivers and Drainage AMP Design Standards in Appendix where appropriate to the activity.

7.1 Pāpāmoa Hills Regional Park

Key issues

The main issues that relate to the Pāpāmoa Hills Regional Park are as follows (taken from the park Management Plan):

Table 3: Pāpāmoa Hills Regional Park key considerations

2004-2016 Management Plan	2016-2026 Management Plan
The existing vehicle access to the property from SH 2 is limited to operational vehicles only, a requirement of the resource consent.	This should continue without change. Despite a change in the road's status, the carriageway is no safer and still poses serious safety issues for non-operational vehicle access. Access once within that part of the park remains unsuitable and not safe.
Access from SH 2 is not supported by the roading authorities. The Welcome Bay intersection is substandard, and public access is therefore currently not available from Welcome Bay Road or Reid Road.	This should continue without change. Despite a change in the road's status, the carriageway is no safer and still poses serious safety issues for non-operational vehicle access. The current access from the end of Poplar Lane is also the traditional access and should remain so, with enhancements.
The extent and number of cultural and archaeological features within the park means that almost any ground disturbance is likely to have an impact on these sites. There is no power or potable water supply on the top ridges (destination points).	While power or potable water need not be installed at these locations, improvements to water supply for stock at some locations should be pursued using best practice and modern technology (e.g., solar), providing subsequent installation proposals are sympathetic to the landform and archaeology constraints.
In cases, the presence of waahi tapu sites may restrict public access.	Continue the park's ability to restrict public access in cases of the presence of waahi tapu sites.
There are public safety concerns associated with the old quarry.	Tree removal and planting work has been undertaken. Continue to monitor the area and discourage public access.
Current activities on adjacent land may constrain some aspects of the park's future development.	Indicate that the park will be automatically 'reversely sensitive' to existing orchards and farming operations.
	Extensive presence of cultural and archaeological features means every fencepost and plant requires consideration of an Archaeological Authority. Consider a comprehensive 'blanket' Archaeological Authority for all operations and activities in the park.

2004-2016 Management Plan	2016-2026 Management Plan
	Stock grazing requires farming infrastructure not currently on the park. Current park operations area/ storage too highly visible. Resolve through design and location choice, but accept that some decisions may be operationally inconvenient.
	Park values and significant sites not fully understood. Resolve via an Interpretation and 'way finding' plan for the park, and implement as resources permit.
	Due to the sensitivity of the cultural and archaeological sites within the park, many land uses are not appropriate. In the areas that are not part of the revegetation plan, the best and most appropriate long-term land use is grazing by sheep, as this creates a dense protective sward of short pasture and minimises erosion and soil damage. Some grazing by cattle is also compatible, although animal weights, stocking rates and grazing intensity are all factors that need to be carefully managed.

Key policies and actions

The Park Management Plan (reviewed in 2020) outlines a number of goals, policies and actions for on-going sustainable management of the park. Some of the actions and policies will result in operational or capital works programmes and these have been included in Table 4.

The identified goals for the management of the park include:

- Promote and manage the park in ways that are not in conflict with its cultural values.
- Protect the archaeological features within the park.
- Maintain an undeveloped character to the park that conserves the dominant open rural landform punctuated with native plantings.
- Native habitats will be protected and/or enhanced where practicable.
- To manage introduced and pest plants and animals in a manner that preserves and protects heritage and ecological values.
- To promote a range of opportunities for the community to appreciate the park.
- To provide for commercial activities within the park where such activities do not compromise the cultural and historical values of the park, and are consistent with the park vision.
- To provide vehicle and pedestrian access to the park that is consistent with the park vision.
- To provide for on-going pastoral and forestry management in the park that provides for the efficient use of the land, in a manner that protects the cultural and heritage values of the park in the future.
- Buildings and structures will be provided and maintained only where they are necessary to achieve park management policies, or are specifically provided for in this plan.
- To recognise that tangata whenua need to be able to promote, and provide important advice relevant to, kaitiakitanga in regards to the management of the park.

- To recognise that the future of the park will be dynamic and that opportunities to protect and enhance the park and the overall visitor experience will need to be provided for.

Table 4: Maintenance, operation and capital actions

Timeframe	Actions
2020-2023	• Improved wayfinding and information signage at key points within the walking track network. • Educational signage at the entrance and within the park. • Establish waharoa/pou at Park entry point • Establish a visitor shelter • Securing long-term access arrangements. • Protective work on archaeological sites • New car parking space and toilet block to provide for increasing visitor demand. • New walking track entranceway and visitor interaction space displaying the park's cultural history. • Removal or replacement of the trig beacon. • Further boundary rationalisation if opportunity exists.
2024 – 2034	• Information centre/ranger base (if demand exists). • Progressive retirement and revegetation of steep / marginal land in line with the Revegetation Plan for the park (average 5 ha per year). • Monitor visitor numbers and urban growth, and consider the long term opportunities to link to cycle and walking networks in adjacent suburbs, and consider how a northern access point to the park might be established to achieve this. • Consider opportunities to link the park with Summerhill Recreation Farm more closely.
2034-2054	• Progressive retirement and revegetation of steep/marginal land in line with the Revegetation Plan for the park (average 5 ha per year). • Consider new/additional entry points to the regional park.

7.2 Onekawa Te Mawhai Regional Park

Key policies and actions

The Park Management Plan outlines a number of actions for on-going sustainable management of the park.

7.3 Pāpāmoa Hills Regional Park

Pāpāmoa operational management and key asset descriptions

Leases, licenses and easements

The park is maintained as an operating farm for park management purposes.

One grazing licence covers the entire grazeable area of the park. The licence does not prevent public access to the land.

There are water easements across Lot 2 DP 345423 and Lot 5 DP 309001, which are used to provide water to the neighbouring properties.

Fire control

At the present time there are no formal procedures in place for fire protection, other than the park rules, which state that fires are not permitted.

Access into park

Vehicle access to the park is for operational and service vehicles only and this access is from SH 2, opposite Bell Road intersection. No disabled access is currently available. A range of access options were considered as part of the resource management issues scoping study for the park. It was concluded that of the four access options available, the Poplar Lane option would obtain resource consent approval and be cost effective. This is the current access point to the park for the public.

Structures

Civil Defence Repeater Station

The combined Tauranga and Western Bay of Plenty District Civil Defence Emergency Management Office has a repeater site located within the park boundaries. This consists of a modified circular concrete farm shed, which contains radio equipment and power supplies, and an adjacent six metre wooden pole on which a variety of high-gain 'Yagi'-type antennae are mounted. This repeater station is an important part of an extensive emergency communications network across the sub-region.

Trig Station

A survey benchmark is located on top of Karangaumu Pa and is marked by a trig station. The trig is significant to the Institute of Surveyors and the surveying sector. Although such markers are no longer absolutely required by surveyors the removal of trigs around New Zealand from pa sites e.g., Maungawhau/Mt Eden, Mauao and at this site conversation has recently started with the Cultural Advisory Committee requesting council staff to investigate its removal.

An effect of the trig is that it draws attention to the fact that it is the highest point within the park and as a consequence it is a common destination point for park visitors. This has created problems by the establishment of a desire line over the fragile pa terraces.

Access track and car park

There is also an internal gravel access track that is suitable for four-wheel drive vehicles. The consent conditions specify that this access track is to provide for operational vehicles only. The full distance of the track to the top of the park is 1,500 m. The track is not open to the public and is primarily used by the park ranger and other contractors.

Investment property

Properties leased to third parties under operating leases are classified as investment property, unless the property is held to meet present or future service delivery objectives, rather than to earn rentals or for capital appreciation. Investment property is measured initially at its cost, including transaction costs. After initial recognition, BOPRC measures all investment property at fair value as determined annually by an independent valuer. Gains or losses arising from a change in the fair value of investment property are recognised in the income statement.

Water and sanitary assets

There are four dams on the park fed by natural springs that are used for retaining water for farming activities. Two of the dams hold resource consents from BOPRC, the other two are small and do not require consents.

The public toilet is a Novaloo unit system connected to an Eco Toilet Aquatron Low Flush System. The building is re-locatable and sits on a concrete footing.

Water sources

Pāpāmoa Hills Cultural Heritage Regional Park has a groundwater bore and solar pump system that it utilises for stock drinking water.

7.4 Onekawa Te Mawhai Regional Park

Operations and maintenance plan

Most of the built assets are farm related and the 2014 Park Management Plan will see the onus of maintenance on the grazing licensee evolve into more integrated park management.

Assets include fences (except boundary fences) gates, drains, water supply and other improvements on the land.

Grazing is leased on an annual basis.

Part 8:
Risk

8.1 Overview

This section covers the risk management implemented by BOPRC and how these apply to the current and future activities.

The objective of Risk Management is to identify the specific business risks, together with any possible risks to the health and safety of employees, other contractors and the general public, associated with the ownership and management of the assets. This can be used to determine the direct and indirect costs associated with these risks, and form a priority-based action plan to address them.

Council policy and operation cannot influence all the factors contributing to these events. Council has a responsibility to assess the risks in order to best manage the assets with the resources available to avoid and mitigate the effects of any event.

In addition, Council has highlighted a number of key risk areas across the activity including:

- General: Public Health and Safety Incident – causing injury and or damage.
- Flooding: this risk exists for dwellings and land in the lower-lying parts of Maketū Township in the event that culverts are kept open during extreme Kaituna River floods that coincide with very high sea levels (they are mapped in a flood hazard zone in the District Plan). This risk is mitigated through a detailed procedure that has been incorporated into Council's Flood Warning Manual.

These are discussed in further detail in the Risk Registers and the overall Action Plan contained in this section of the AMP.

8.2 Risk register

A risk register in table format specific to tactical risks for BoPRC. Include a reference to, or a description of, the wider Council risk register.

If the table is large, then keep only the biggest risks here and move the whole table to an appendix.

The risk register provided in the following table considers the most pressing risks for the current and future regional parks activities of Council.

Table 5: Asset management risks - general

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable	Risk Type	Gross Risk (No effective measures in place)			Current Practice/Strategy (Avoidance and mitigation measures)		Residual Risk (Considering measures in place)			Person(s) Responsible	▶ Management Options
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
PL01	**Lack of internal resources** – the ability to attract key staff and or retain skilled staff. High workload vs. lifestyle, insufficient resourcing to appropriately address asset management issues.	Organisational	3	5	**15**	▪ Career development programme and training. ▪ City/District promotion (lifestyle). ▪ Dedicated HR staff/ recruitment consultancies. ▪ Staff handover/exit process – HR processes. ▪ Benchmarked salary levels / remuneration review. ▪ Annual staff satisfaction surveys – best places to work. ▪ Promoting positive work environment – social, team building. ▪ Policies (e.g. EEO, Stress Management, Personnel). ▪ Flexible working hours. ▪ Good organisational structure. ▪ Succession planning.	Good	2	4	**8**	▪ regional parks Activity Manager	▪ Review the requirements for the current activity and determine whether 0.5 FTE is appropriate for the requirements. Undertake a parks resource audit for BOPRC FTEs. Consider 'parks' titles and the formation of specific parks roles and at what stage in a specific parks department would be required. ▪ Continue current practice and review flexibility within individual contracts and working hours. Family/lifestyle friendly policies. ▪ Review and monitor work levels of staff. ▪ Instigate park ranger internship programme in conjunction with wider industry. Join a parks professional body, e.g., Parks Managers Group to grow involvement in a parks professional network to secure best practice information exchange and expertise, staff exchange and industry mentoring. ▪ Review and improve succession planning. ▪ Improve team approach, backup roles.
PL02	**Loss of Knowledge** – inability to retain knowledge or have sufficient systems in place to manage data/information, especially regarding asset performance and condition. Loss of institutional knowledge. IT failure.	Organisational	3	3	**9**	▪ Processes and practices – guidelines to be followed e.g. Objective. Established, quality filing system. ▪ Team of competent, trained staff, development into roles. ▪ IT practices (backup, virus, security etc.). ▪ Asset changes/updating process – developing AMIS (GIS / Finance One). ▪ NZ Standards e.g. building code. ▪ Contracts manual. ▪ Responsibilities defined.	Average	2	3	**6**	▪ regional parks Activity Manager	▪ Continue development of integrated AMIS in-house. ▪ Develop processes to ensure that asset knowledge is transferred, stored and accessible and audited (externally), including maintenance information. Define mentors/coaches and successors. ▪ On-going training for staff. ▪ Programme condition surveys on assets. ▪ Best practice manuals e.g. NAMS, BOPRC environmental code of practice. ▪ Join a parks professional body, e.g., Parks Managers Group to grow involvement in a parks professional network where international parks AM best practice can be obtained as a part of membership.
PL03	**Inadequate Asset Management –** not up to date, or insufficient quality of process and output.	Operational Legislative	3	4	**12**	▪ Asset Management processes and practices and organisation structure. ▪ Asset Management System (Spreadsheet, GIS, AMIS). ▪ Use of Professional Services. ▪ Resourcing of Internal Services. ▪ Identifying gaps.	Fair	3	3	**9**	▪ regional parks Activity Manager	▪ Maintain Asset Management Plan - Improvement Plan. ▪ Continuing Staff Development in Asset Management, including Join a parks professional body, e.g., Parks Managers Group to grow involvement in a parks professional network where international parks AM best practice can be obtained as a part of membership. ▪ On-going external review of AM planning. ▪ On-going budget provision. ▪ Document asset management processes, develop business rules. ▪ Update and improve AMIS/AM information systems and interfaces e.g. with GIS or financial system. ▪ Improve information flow to asset management e.g. as-built drawings, contractor audit information.

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable	Risk Type	Gross Risk (No effective measures in place)			Current Practice/Strategy (Avoidance and mitigation measures)		Residual Risk (Considering measures in place)			Person(s) Responsible	▶ Management Options
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
PL04	**Inadequate Condition/Performance Assessments –** reliable data for renewals/replacements and valuations.	Operational	3	4	**12**	▪ Internal and external feedback, Complaints / Job Tracker. ▪ Ongoing condition assessment programmes for most assets. ▪ Maintenance contracts. ▪ Asset Management Systems (e.g. GIS, AMIS).	Fair	3	3	**9**	▪ regional parks Activity Manager	▪ Regular assessments. ▪ Staff training and continuity regarding assessments. ▪ Develop condition assessment programme and methodology for all assets. ▪ Develop a process to ensure that knowledge is transferred, stored and accessible. Define champions and successors. External backup.
PL05	**Non-compliance with Legislation and Consent Conditions** – inability or failure to comply with consents, statute and national standards. Increase in requirements.	Legislative	3	3	**9**	▪ Compliance with resource consents, RMA and LGA. ▪ Contract Conditions. Service contract standards. ▪ Consents database and Monitoring of Consent requirements (CS-VUE). ▪ Internal audits and continuous monitoring. ▪ Dedicated Consents Manager. ▪ Knowledge and awareness among key staff. ▪ Local government and national networking. ▪ Feedback from and liaison with Councils, DoC, HPT and Iwi. ▪ Use of external advice/resources.	Good	1	3	**3**	▪ regional parks Activity Manager	▪ Monitoring of expiring consents and identifying new consents to be improved (define responsibilities). ▪ Identify upfront what resource consents are required and develop a framework to ensure all legislative requirements are met. ▪ Key staff to keep updated on current legislation. ▪ Maintain regular communications to staff. ▪ Development of Council procedures including handover from Capital to Operations. ▪ Continue communicating effects of legislative change to Council/ Annual Plan/ Long Term Plan process.
PL06	**Moderate Natural Hazard Damage** – (slips/flooding/coastal erosion/wind) causing damage to assets and or hindering development.	Public and Environmental Health Organisational	4	3	**12**	▪ Emergency/Incident Response Plan. ▪ District Plan. ▪ Hazard identification, iMap, monitoring, use of geotech consultants. ▪ Complaints/Job Tracker feedback. ▪ Maintenance contracts (with out of region resources). ▪ Resource sharing agreement between councils. ▪ National and Council Engineering Standards. ▪ Building code/standards. ▪ Management Plans.	Fair	3	3	**9**	▪ regional parks Activity Manager	▪ As per current practice. ▪ Liaise with national and regional policy makers to identify hazards and ensure emergency response mechanisms are in place in the event of a hazard occurring. ▪ Undertake certified arborist assessment of potential dangerous trees, likely to be unmanaged farm forestry species. ▪ Consider additional pohutukawa plantings by design in targeted groupings and locations to secure slope areas. ▪ Close trails in high winds/storms.
PL07	**Extreme Natural Hazards Damage** – (earthquake/tsunami/volcanic/major storm event) causing damage to assets and or hindering development.	Environmental Public Health Organisational Financial	5	3	**15**	▪ Emergency/Incident Response Plan. ▪ District Plan. ▪ Hazard identification. ▪ Complaints/Job Tracker feedback. ▪ Civil Defence. ▪ Maintenance contracts (with out of region resources). ▪ Resource sharing agreement between councils. ▪ National and council engineering Standards. ▪ Building code/standards. ▪ Lifelines Group.	Fair	5	2	**10**	▶ regional parks Activity Manager	▪ Liaise with national and regional policy makers to identify hazards and ensure emergency response mechanisms are in place in the event of a hazard occurring. ▪ Staff training, awareness of roles. ▪ Implementation of policies and management plans. ▪ Close trails in high winds/storms. ▪ Site signage and identification of safe height zones for Tsunami both for park users and nearby beach users and residents likely to seek the park's high ground for both regional parks.

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable	Risk Type	Gross Risk (No effective measures in place)			Current Practice/Strategy (Avoidance and mitigation measures)		Residual Risk (Considering measures in place)			Person(s) Responsible	▶ Management Options
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
PL8	**Lack of Political Alignment –** or inability of elected members to fulfil roles and responsibilities or disregard for community views. Change in the make-up of Council could alter ability to achieve long-term objectives.	Organisational Reputation/ Image	3	4	**12**	▪ Councillors roles well defined and implemented. ▪ Legislative requirements/Long Term Plan process. ▪ Reports to Council. ▪ Induction of new politicians (Councillor induction/handbook/workshop/ conferences/inter-council tours). ▪ Bulletins to Councillors. One-on-one contact and forums. Councillors are made aware of who to talk to.	Good	2	3	**6**	▪ CE ▪ regional parks Activity Manager	▪ Continued communication to Council. ▪ Manage process through CE/Executive Leadership Team (ELT). ▪ Join a parks professional body, e.g., Parks Managers Group to link decision makers to other decisions makers from other agencies to discuss governance-to-governance, alternate investment streams (non-rate revenue) and best practice leadership that can be obtained as a part of membership
PL9	**Decrease in Funding** – Both internal to pay debt, rates and including failure to acquire external subsidies.	Organisational	4	3	**12**	▪ Monitor other funding opportunities. ▪ Prioritising projects/Annual Plan/Long Term Plan process. ▪ Liaising with other councils. ▪ Skill of staff/resources submitting external applications and reporting internally to Council.	Good	3	2	**6**	▪ regional parks Activity Manager ▪ Group Manager Finance	▪ Maintain and manage clear lines of communication with key external agencies. ▪ Forecast likely scenarios regarding effects of budget changes. ▪ Increasing efficiency. ▪ Undertake investment plan to programme the implementation of securing alternate investment streams (non-rate revenue). ▪ Rationalise spending – prioritise activities.
PL10	**Inadequate Communications and PR Management** – e.g. a lack of communication, or information overload being ignored, reporting only negative information, promising the undeliverable and raising expectations, coming on too strong.	Reputation/ Image Public Health Safety Financial Operational	3	3	**9**	▪ Dedicated corporate communications team. ▪ Some timely communication to affected customers (public/ratepayers, councillors, staff, contractors). ▪ Existing corporate communications procedures and protocols (who gets what & when). ▪ "Customer service interface. ▪ Access to communications tools – internet, intranet, newsletters, bulletins. ▪ Communications Plan. ▪ Management committee.	Good	2	2	**4**	▪ regional parks Activity Manager	▪ Communications and promotions plans to grow understanding of park values amongst a new 'constituency' for the parks. ▪ More communication/PR involvement at earlier stage of contracts/capital works/projects. ▪ Improve integration of communications across BOPRC/Contractors to inform external customers. ▪ Include communications/customer service component in project debrief process. ▪ Build further customer service understanding of Council issues/projects. ▪ Develop education resources. ▪ Rebrand signage in BOPRC branding. ▪ Develop interpretation signage and wayfinding at sites. ▪ On line virtual tours, to save on expenses and reprint park brochures.

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable	Risk Type	Gross Risk (No effective measures in place)			Current Practice/Strategy (Avoidance and mitigation measures)		Residual Risk (Considering measures in place)			Person(s) Responsible	▶ Management Options
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
PL11	**Public Health and Safety Incident** – causing injury and or damage to residents/visitors/staff or property resulting in claims and or negative publicity (e.g. poorly designed or maintained facilities etc.).	Public Health Reputation/ Image	5	4	**20**	▪ Inspection contract, hazard identification (certified arborists/toilet block). ▪ Complaints/Job Tracker feedback. ▪ Maintenance contracts including vegetation control/ track maintenance. ▪ Structure/safety audits and renewals (dam). ▪ Local council's engineering standards. ▪ Building code/standards/guidelines. ▪ Building WoF. ▪ Specialised standards (e.g. agrichemical). ▪ Programmes in place to identify areas, issues, risks that may impact on assets. ▪ Fencing. ▪ Signage. ▪ Long Term Plan Consultation. ▪ ACC/Indemnity insurance. ▪ Health and Safety Representative. ▪ Corporate Auditing of Health and Safety. ▪ Approved Health and Safety Contract Plans. ▪ Emergency response. ▪ Training/staff induction/manuals/Personal Protective Equipment/Incident Register (HR). ▪ Contractor inductions.	Good	4	3	**12**	▪ regional parks Activity Manager	▪ Undertake a Hazards Review for the two regional parks. ▪ Develop Standard Operating Procedures for both regional parks. ▪ Review Council's liability and H & S Policy. ▪ Monitor usage and Complaints/Job Tracker. ▪ Design standards maintained. ▪ Asset management planning. ▪ Levels of service determined from community consultation (Long Term Plan process). ▪ Local government networking. ▪ Ensure BOPRC is carrying out appropriate renewals and managing the budget correctly. ▪ Review and develop safe working methods and practices where necessary. ▪ Incident reporting. ▪ Monitor usage and complaints. ▪ Identify problem areas quickly and respond. ▪ Condition assessments. ▪ Improved fencing and signage where identified in the Hazards Review.
PL12	**Vandalism –** of assets (e.g. furniture, structures, signs, graffiti).	Reputation/ Image Operational Public Health Financial	3	5	**15**	▪ Design, planting and lighting. ▪ Security patrols, custodians. ▪ Safety inspections. ▪ Maintenance contracts. ▪ Complaints/Job Tracker. ▪ Respond to community concerns/visitor book. ▪ Fencing and locking parks and depots. ▪ Restricting vehicular access.	Good	2	3	**6**	▪ regional parks Activity Manager	▪ Monitor reoccurrence and investigate appropriate design.
PL13	**Staff Abuse –** Staff receiving physical, verbal or emotional abuse from members of the public (field or office).	Health Reputation/ Image	4	3	**12**	▪ Workplace support in place for staff. ▪ Review procedures for threats to staff at remote locations. ▪ Wellness leave. ▪ Appropriate people with good knowledge. ▪ Training. ▪ Health and Safety incident register. ▪ Carry cell phones.	Good	2	3	**6**	▪ regional parks Activity Manager	▪ Develop Standard Operating Procedures for both regional parks. ▪ Ongoing training depending on individual needs. ▪ Make public aware of contractors role. ▪ Available back up.
	Need to add specific risks and their controls from Kaituna Re-diversion and other capital project assets. Will have to be done in the next iteration of the AMP.					▪					▪	▪

8.2.1 Risk action plan

Table 6 is compiled from the Risk Register and highlights the most significant residual risks faced by the parks activity. The main risks are listed in order of severity (Residual risk) as assigned in consultation with key council officers.

Actions that are required to achieve the desired improvements are indicated along with how progress on these actions will be monitored and reported. Where applicable, Action Tasks will detail timeframes for achievement, and responsibility for these actions.

8.2.2 Monitor, measure, report, review plan and actions

Management options listed in the risk tables have been refined into actions for each risk listed. These are the actions that are required to cost-effectively reduce the residual risk by increasing the region's ability to minimise the chances of the risk event occurring, or minimising the consequences should it occur.

Actions should consider the overall management of the asset, not just the minimisation of risk. If possible, proposed actions should align with other initiatives to:

- Reduce capital investment costs.
- Reduce operating and maintenance costs.
- Reduce business risk exposure (BRE).
- Increase effective asset life/value.
- Increase level of service.

The resulting action plan for risk treatment needs to be practical and achievable such that the necessary resources and time frames are realistically met. The actions also need to be able to be monitored and measured.

The monitoring/reporting column of the Risk Action Table specifies:

- **Responsibility**: Nominated person responsible for ensuring the risks are managed and that improvements are carried out in accordance with the programme;
- **Timeframe**: Achievable target date to be monitored and reported against; and
- **Method and frequency of monitoring**: This entire Action Table will be monitored by the Asset Management Steering Group, but there will be certain actions that are being monitored and reported in other forums. These forums are to be specified and the frequency with which these actions will be reviewed.

The actions listed will be reported, monitored and reviewed regularly at the Asset Management Steering Group.

As necessary, this group will need to revise timeframes, responsibility, and even the appropriateness of continuing with the proposed action, or adding new actions.

As actions are complete, the residual risk should reduce in most cases. The risk tables will need to be reviewed against these and updated to reflect these improvements.

Table 6: Asset management risk action plan - park and land

Risk Reference	Risk Descriptor	Risk Type	Residual Risk	Action	Responsibility	Monitoring / Reporting	Timeframe
PL11	***General:* Public Health and Safety Incident** – causing injury and or damage to residents/visitors/staff or property resulting in claims and or negative publicity (e.g. poorly designed or maintained facilities etc.).	Public health reputation/ Image	**12**	▪ Review council's liability and H & S Policy. ▪ Develop Hazards Plans for each park. ▪ Design standards maintained. ▪ Asset management planning. ▪ Levels of service determined from community consultation (Long Term Plan process). ▪ Ensure BOPRC is carrying out appropriate renewals and managing the budget correctly. ▪ Review and develop safe working methods and practices where necessary.	• Regional parks Activity Manager	• On-going monitoring (e.g. Quarterly AM steering group meetings).	E.g. Quarterly
PL03	***General:* Inadequate Asset Management –** not up to date, or insufficient quality of process and output.	Operational Legislative	**9**	▪ Maintain Asset Management Plan - Improvement Plan. ▪ Continuing staff development in asset management. ▪ On-going external review of AM planning. ▪ On-going budget provision. ▪ Document asset management processes, develop business rules. ▪ Update and improve AMIS/AM information systems and interfaces.	• Regional parks Activity Manager	• On-going monitoring (e.g. Quarterly AM steering group meetings).	E.g. Quarterly
PL04	***General:* Inadequate Condition/Performance Assessments –** reliable data for renewals/replacements and valuations.	Operational	**9**	▪ Regular assessments. ▪ Staff training and continuity regarding assessments. ▪ Develop condition assessment programme and methodology for all assets. ▪ Develop a process to ensure that knowledge is transferred, stored and accessible. Define champions and successors. External backup.	• Regional parks Activity Manager	• On-going monitoring (e.g. Quarterly AM steering group meetings).	E.g. Quarterly

Risk Reference	Risk Descriptor	Risk Type	Residual Risk	Action	Responsibility	Monitoring / Reporting	Timeframe
PL08	***General:* Moderate Natural Hazard Damage** – (slips/flooding/coastal erosion/wind) causing damage to assets and or hindering development.	Public and Environmental Health Organisational	**9**	▪ As per current practice. ▪ Liaise with national and regional policy makers to identify hazards and ensure emergency response mechanisms are in place in the event of a hazard occurring. ▪ Undertake certified arborist assessment of potential dangerous trees, likely to be unmanaged farm forestry species. ▪ Consider additional pohutukawa plantings by design in targeted groupings and locations to secure slope areas. ▪ Close park/car park in high winds/storms.	• Regional parks Activity Manager	• On-going monitoring (e.g. Quarterly AM steering group meetings).	E.g. Quarterly
PL15	***Regional parks:* Lost Opportunity for Future Parks** from delays in purchasing, increases in land development rates, increased site-specific costs due to previous land management regimes.	Reputation/ Image Financial Public Health	**9**	▪ Build political support. ▪ CE lead negotiations. ▪ Demonstrate wins with existing parks. ▪ Designation/public works. ▪ Direct approach to sellers.	• Ce • Regional parks activity manager	• On-going monitoring (e.g. Quarterly am steering group meetings).	E.g. Quarterly
PL16	***Park and Land:* Fire on Parks and Reserves** – also spreading to/from neighbouring properties.	Public Health Operational	**9**	▪ Enlarge dam capacity and upgrade vehicle track to dams and for emergency use. ▪ Install alternative water supply. ▪ Public education. ▪ Neighbour liaison. ▪ Stock management/grazing regime. ▪ Enforcement of consents/permits/ bylaws. ▪ More fire danger signs.	• Regional parks Activity Manager	• On-going monitoring (e.g. Quarterly AM steering group meetings).	E.g. Quarterly
PL01	***General:* Lack of internal resources** – the ability to attract key	Organisational	**8**	▪ Continue current practice and review flexibility within individual contracts and working hours. Family/Lifestyle friendly policies.	• Regional parks	• On-going monitoring (e.g. Quarterly AM	E.g. Quarterly

Risk Reference	Risk Descriptor	Risk Type	Residual Risk	Action	Responsibility	Monitoring / Reporting	Timeframe
	staff and or retain skilled staff. High workload vs. lifestyle			▪ Review and monitor work levels of staff. ▪ Continuing Staff Development in Asset Management, including Join a parks professional body, e.g., Parks Forum to grow involvement in a parks professional network where international parks AM best practice can be obtained as a part of membership. ▪ Review and improve succession planning. ▪ Improve team approach, backup roles.	Activity Manager	steering group meetings).	

8.3 Critical assets

How do we identify critical assets, what are the existing critical assets and how are they managed?

What are the residual risks associated with these critical assets?

There are no critical assets considered to be associated with the activity. This is because the activity does not have any lifeline assets, a low number of physical assets and is comprised of many intangible assets.

8.4 Business continuity

What are the potential events and impact of these on the activity?

How does the Activity build resilience into its management and operation of the service?

Regional parks maintains a Business Continuity Plan (BCP) that is updated periodically. The latest 2020 BCP was modified for the Covid-19 pandemic response during the different levels of lockdown imposed by central government. This can be found in Objective document A3505687

BCPs encompass planning, preparedness and related activities to ensure that an organisation's critical business functions will either continue to operate despite serious incidents or disasters that might otherwise have interrupted them, or will be recovered to an operational state within a reasonably short period.

Part 9:
Financial planning

9.1 Overview

To undertake a sustainable, long-term approach to asset management, it is essential to prepare long-term financial forecasts. This allows a long-term view of how the assets will be managed, how much this will cost and when additional funding may be required to meet expected service levels. These financial forecasts are a culmination of the previously discussed aspects of the Asset Management Plan.

The above forms the basis of the long-term operations, maintenance and capital requirements. Funding requirements have also been included in the financial statements.

9.2 Financial plans

9.2.1 Summary financial forecast – all properties

The following tables contain the parks Statement of Financial Performance, which incorporates the projected income and funding sources to fund operational, renewal and capital expenditure for the next 10 years (2021-2031). This is based upon the best available information at the time of preparation and projects are available in the Improvement plan to improve data knowledge and cost management practices that will assist with more robust financial reporting in the future.

Table 7: draft regional parks financial estimates 2021-2031 (uninflated)

	2021/22 $000	2022/23 $000	2023/24 $000	2024/25 $000	2025/26 $000	2026/27 $000	2027/28 $000	2028/29 $000	2029/30 $000	2030/31 $000
Operating revenue										
General funding	786	816	821	830	856	885	911	939	959	1,046
Fees and charges	8	8	8	8	8	8	8	8	8	8
Total operating revenue	**794**	**824**	**829**	**838**	**864**	**893**	**919**	**947**	**967**	**1,054**
Operating expenditure										
Other Operating Costs	378	276	279	275	275	278	274	274	274	267
Finance costs	43	57	61	60	57	54	51	48	45	41
Depreciation and amortisation	123	202	159	111	111	111	111	110	110	110
Sub total expenditure	**545**	**535**	**498**	**447**	**444**	**443**	**437**	**432**	**428**	**418**
Corporate Costs	238	246	249	246	247	250	245	243	242	241
Total expenditure	**783**	**781**	**746**	**692**	**690**	**693**	**682**	**676**	**671**	**660**
Net deficit (surplus) to fund	**(11)**	**(44)**	**(83)**	**(146)**	**(173)**	**(200)**	**(237)**	**(272)**	**(296)**	**(394)**
Funding required										
(Increase) / decrease in reserves	(11)	(44)	(83)	(146)	(173)	(200)	(237)	(272)	(296)	(394)
Total operating funding	**(11)**	**(44)**	**(83)**	**(146)**	**(173)**	**(200)**	**(237)**	**(272)**	**(296)**	**(394)**
Capital										
Regional Parks	1,203	345	236	-	-	-	-	-	-	-
Total capital expenditure	**1,203**	**345**	**236**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Capital funding										
Grants, subsidies and insurance revenue	-	-	-	-	-	-	-	-	-	-
Increase in debt	1,203	345	236	-	-	-	-	-	-	-
Total capital funding applied	**1,203**	**345**	**236**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

9.2.2 Projects

The following table provides a summary of the works that are likely to occur in the next three-year period. These projects have also been alluded to in the parks Operational Management Plans. Council has scheduled to fund these projects in the draft Long-Term Plan.

Table 8: regional parks Long Term Plan 2021- 2031 capital projects (uninflated)

	2021/22 $000	2022/23 $000	2023/24 $000	2024/25 $000	2025/26 $000	2026/27 $000	2027/28 $000	2028/29 $000	2029/30 $000	2030/31 $000
Papamoa Hills Carpark	724	80	236	-	-	-	-	-	-	-
Onekawa Regional Park Building Removal	213	-	-	-	-	-	-	-	-	-
Lower Kaituna visitor facilities	266	266	-	-	-	-	-	-	-	-
Total capital expenditure	**1,203**	**345**	**236**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

9.2.3 Funding and expenditure

To manage the activity, funding for capital land purchases is provided from a range of sources including internal and external loans and general funds including reserves. The operating costs required to manage the parks comes from Council's general funds. Council will assess the most appropriate sources of funding when it reviews its Revenue and Financing Policy as part of a Long Term Plan or Annual Plan process.

Part 10: **Assumptions**

Key assumptions and limitations relating to the base data, metrics and inputs used to determine the forward works programme, physical works projects and financial forecasts.

10.1 Asset management assumptions

The following Asset Management assumptions have been made in reviewing the AMP for the LTP expenditure forecasts:

- Asset information presented in this AMP is dated September 2020. This followed earlier work undertaken in 2014 for Pāpāmoa Hills Regional Park and Onekawa Te Mawhai Regional Park. This is based on the book values. Valuation data and reports have previously been compiled in 2014 by two registered valuers - Boyes Campbell Ltd (effective 1 July 2008) and Property Solutions (effective 2nd September 2008). These valuations were for financial reporting purposes. Comparable information for Onekawa Te Mawhai is not available.
- All projected expenditure is stated in dollar values as at November 2020, with no allowance made for inflation.
- Operational costs are largely based on historical expenditure.
- Maintenance and operations allocations are largely based on maintaining current service levels.
- Council considers input from the regional community from formal submissions to the Long-Term Plan next in 2021 and informal feedback on this document. Council also considered public feedback on the Pāpāmoa Hills Regional Park Management Plan and the development of the Onekawa Te Mawhai Operational Management Plan.

It is assumed that regulations relating to parks assets will remain essentially the same over the planning period.

10.2 Policies

Assumptions about what we expect to happen, that will directly affect what we do and how we do it, are:

- The current intent of the Policy on regional parks remains in place,
- Cultural and natural heritage will remain a Section 6 matter under the Resource Management Act,
- Council's responsibilities under the Resource Management Act 1991 remain constant, and
- Park operations are subject to service delivery review in the medium term with reviews, if necessary, as further parks are acquired.

10.3 Risk to significant forecasting assumptions

The points below outline the risks to significant forecasting assumptions. Should these assumptions prove to be incorrect there could be a significant effect on the level of rates to be collected from the community. In this instance Council would review the works programmes accordingly.

The risks that threaten the expected future or outlook are:

- Delays in purchasing land means opportunities for the future may be lost,
- Previous land management regimes on acquired land may create increased site-specific costs, and
- A National Policy Statement or Legislation may change Council's level of responsibility significantly in an adverse way for the parks and heritage elements

10.4 Plan assumptions and limitations

As mentioned above this plan covers a 10 year timeframe to align with the LTP and has been prepared based upon the following assumptions:

- Current policy e.g. the regional parks Policy 2003.
- Currently available information and data.
- Forecasts are for a 10 year period.
- Existing levels of service, remaining unchanged.
- Limited increase in community aspirations.
- Current trends for increasing park visitation being manageable in the short term using current resources.
- Capital upgrades to key visitor facilities at Pāpāmoa Hills will address growth at the site for the foreseeable future??

Short bullet points or table outlining assumptions specific to financial forecasting. This could reference a wider Council financial document, or table of assumptions in Appendix.

What would be the effect, if any, if these changed?

Part 11:
Audit and improvement

11.1 Overview of improvement planning

The purpose of an Improvement Plan is to document the key actions that the Bay of Plenty Regional Council can undertake to maintain and improve the asset management practices that assist in optimising service provision to the Community.

Council is adopting a strategic management approach to improvement planning, continually developing Asset Management Plans, and implementing improvement processes and practices to a level which is applicable to the extent and available resources for the regional parks Programme.

The following section outlines the continual improvement process used and the current improvement actions for the regional parks Programme for the next three years.

11.2 Our approach to this

Our tactical plans for auditing and improving our services.

Reference asset maturity either here or following section with respect to this specific activity.

Our approach to this is to use the cycle of AMP monitoring, review, revision and audit every three years to formally identify any improvements. In addition, Maritime Operations identify improvements between formal reviews on an ad-hoc basis by discussing new ideas and areas for improvement on the job.

11.3 Asset management maturity index

As mentioned previously, due to the nature and small number of assets to be managed, Council has decided to set this Parks Asset Management Plan at a “Minimum-Core” level of maturity as it is ‘fit for purpose’ at the current stage.

The following table provides comment on the key elements of Asset Management for the Activity and a statement of the Maturity based upon the Maturity Index provided in the IIMM Manual 2015. The blue bars show current progress and the dark blue line shows where Council are aiming to be following implementation of the three year Improvement Plan (See Section Continuous Improvement).

Table 9: Asset management maturity index

AM Element	Minimum	Core	Intermediate	Advanced	Comments
AM Policy Development					N/A – No Policy in place but there is an expectation that the main Activities will update AMPs every three years.
Levels of Service and Performance Management					Levels of service and performance measures are in place covering a range of service attributes but these are not currently reported against annually.
Demand Forecasting					No explicit forecasting has been undertaken to determine growth and demand impacts, however vehicle and pedestrian numbers are being tracked at one of the parks. This will be monitored.
Asset Register Data					Detailed inventories have been completed. An asset register with appropriate hierarchy and condition information together with a valuation has been undertaken. This was as a result of the Improvement Plan (IP).
Asset Condition					Asset condition assessment work is in place and this programme will be maintained from 2017.
Risk Management					A risk framework is in place although critical assets have not been identified. A hazards assessment is planned and included in the IP.
Decision Making					Decision making is in alignment with the regional parks' Policy and led by the Onekawa Te Mawhai Regional Park Management Plan and is also based upon staff judgement and aligns with corporate policy.
Operational Planning					High level operational planning is documented in the park Management Plans and summarised in the LCM section. No emergency response plans are in place.

AM Element	Minimum	Core	Intermediate	Advanced	Comments
Maintenance Planning					No maintenance plan is in place and maintenance is generally undertaken on an adhoc basis or as agreed in the grazing agreements.
Capital Works Planning					Projects for the next three years are partially scoped.
Financial and Funding Strategies					Asset valuation is in place for asset management functions, financial forecasts are provided for a 10 year period and these are based upon previous information where applicable.
AM Teams					AM experience within the team is limited and staff resourcing is limited and has recently changed. An AM Steering Group has been set up and is guiding AM improvement.
AM Plans					The plan contains basic information on assets, service levels, planned works, financial forecasts and future improvements, an executive summary, description of services and a 3 year improvement programme.
Information Systems					The available Asset Management System is sophisticated and can meet all of the teams' needs, following a valuation and condition assessment information can be entered and then the system can be set up to assist the team more effectively.
Service Delivery Mechanisms					Service delivery roles are clearly defined, contracts are in place for external service provision, and competitive tendering approaches are applied where appropriate.
Resource Audit					Undertake a resource audit as part of the above item prior to the next AMP review to determine if the AMP programme can be delivered with current resources and if the need for greater parks sector

AM Element	Minimum	Core	Intermediate	Advanced	Comments
					emphasis/ focus is required.
Improvement Planning					An improvement plan is in place which identifies actions and allocates resources, timeframes, requirements etc. and is based upon assessed performance gaps. Formal monitoring and reporting of the improvements will be reported to the Steering Group for Asset Management.

11.4 Past audits

Reference to previous audits, and the level of success at delivering against those.

What items are outstanding and are they addressed in this AMP? It's okay to state that either new or outstanding items are still being worked on / implemented.

11.4.1 Previous asset management plan improvements

The previous improvement plan formed part of Council's first AMP for the regional parks assets in 2008. Achievement against that original plan has incrementally improved since 2011. Key changes that have impacted upon Council's ability to achieve the previous improvements included:

- Change in strategic direction;
- Staff changes since development of the first plan;
- Only a half full time employee is available to address the improvement requirements, asset management and the general operation of the regional parks Programme.

In 2011 Council undertook a gap analysis of its current AMP practices against industry best standards. The results of the gap analysis have been included into a revised improvement plan as set out in this Section 11.5 and reviewed against the current status of the Improvement Plan.

The following table outlines the improvement items that have been completed since the comprehensive review.

Table 10: Completed improvement items

AM Element	Current Practice and Improvement Actions (2020)		Original Score 2014	Score for 2017 review	Gap in 2017	Goal for 2020 review	Score for 2020 review	Complete?
Activity/ Business Plans	Consistency across the documents, the AMP, technically is used as a foundation document for the annual plan and the LTP. Audit New Zealand, audit during the LTP phase ensures alignment. Team ensure documents align. AMP is being used as the base document and for engagement with the community.	1. Ensure that the AMP is the first place where Levels of Service are developed and documented.	60	100	0			Yes
	Have an existing policy, have operational management plan. No strategy for overall direction of the activity but park management planning has become a strong value. Objectives set for the activity and are consistent across all documents, reported on through the Annual Plan.	1. A Review will be undertaken in 2012 regarding the on-going provision of regional parks. Resolve the future direction for the activity and supporting information/guidelines prior to the review in 2012.	20	100	0			Yes
	Have financial measures and Park Check (customer surveys) but not current high level strategic objectives. This higher level has not yet been discussed. This is likely to happen as part of the parks Policy Review in the future.	1. Develop appropriate, measurable objectives for the Activity in line with the policy review and future strategic direction of the Activity.	30	100	0			Yes
Asset Management Plan	Yes intermediate+ AMP in place.	1. Review the appropriateness of the delivery of the AMP to incorporate the legislative requirements (current format addresses these) and addresses the needs of the team for managing the activity.	60	100	0			Yes
	AMP currently utilised as a guiding document.	1. Review content and complexity of AMP, look at making it less strategic and more operational to improve usage as the base document for the activity and linkages with delivery. Incorporate the policy documents where possible.	20	100	0			Yes
Maintenance Plan	Yes, in place, reviewed on an annual basis. Very detailed, proactive activities outlined, budgets included.	1. Data and IT improvements to assist with reporting. To be included in the works and assets module of the Finance system. Need to put into an electronic process that aligns with other systems.	75	100	0			Yes
Resourcing Plan	Annually review of hours of labour and ensure that contracts reflect that. Review resources and titles/ focus of staff linked to the activity.	1. Agree the required budget and human resources required to appropriately manage the new property and agreed though the Long-Term Plan and annual planning process.	30	100	0			Yes
	Accountability is within Land Management position descriptions. This includes KPIs to deliver the management plan.	1. Review whether AM responsibilities are clearly defined in the Position Descriptions following the 2012 review and amend as required.	50	100	0			Yes
Legislative Compliance	Annual Plan and LTP are audited annually and three yearly and are judged against requirements. Very few legislative requirements.	1. Ensure that the AMP meets statutory requirements.	50	100	0			Yes
	Treaty climate is monitored. Impact of Treaty Claims etc.	1. Formalise who is responsible for monitoring legislative changes for the Activity, and keep a watching brief on the resolution of Treaty Claims.	65	100	0			Yes
Asset Hierarchy	Asset hierarchy to complete.	1. Set up an asset hierarchy and represent appropriately in the Asset Management System (Works and Assets Module). Corporate prioritisation required.	20	90	10	100	100	Yes
		1. Ensure Asset hierarchy developed down to the lowest managed maintenance item to allow for appropriate future planning.	0	90	10	100	100	Yes

AM Element	Current Practice and Improvement Actions (2020)		Original Score 2014	Score for 2017 review	Gap in 2017	Goal for 2020 review	Score for 2020 review	Complete?
		1. Ensure Asset hierarchy can be summarised at different levels within the Works and Assets Module.	0	90	10	100	100	Yes
Asset Register	Asset inventories completed.	1. Review asset hierarchy and data collection level.	0	100	0			Yes
	Set up in CIA	1. Apply unique ids to the assets in the asset register.	0	100	0			Yes
	Set up in CIA	1. Review access to data and reporting. Reliant on access to data from the Management Accountant. Review reporting needs and have set up in Tech One.	0	100	0			Yes
Asset Condition Data	Asset condition work undertaken. Surveys undertaken on the houses and buildings in Onekawa Te Mawhai. Condition assessments undertaken every three years	1. Standardise the process for assessing asset condition for property and physical assets so that condition can be uploaded into the Works and Assets module e.g. using a 1-5 scale.	15	100	0			Yes
		2. Establish a cyclical condition assessment programme and document the process.	15	100	0			Yes
Historical Data	Not at asset ID stage, only have a code for maintenance for the whole activity.	1. Review ability of the works and assets module to store maintenance histories against asset ids.		100	0			Yes
	Process to be documented under a Standard Operating Procedure.	2. Record when new Capital items are purchased and keep information in the register when it is set up.						
Criticality Data	Dams - follow the codes for dams. Ops staff check, small enough that don't need consent from the Water and Land Plan. Not reviewed by engineers or need a resource consent. To be completed.	1. Undertake a criticality assessment of the activities assets and organise an engineer's survey of key assets on a regular basis (e.g. 5 years or as appropriate for the asset, its condition and level of risk/consequence of failure).	55	100	90	100	Ongoing	No
Data Confidence	Confident that it is accurate. Confident that asset data is complete and regularly audited.	1. Provide a statement regarding data confidence levels in the AMP in addition to a description regarding how this has been assessed.	90	100	0			Yes
Other Customer Data	Customer satisfaction information used to increase confidence levels in LoS.	1. During the AMP update, incorporate any survey or LTP submission data into the levels of service or community consultation section.	0	100	0			Yes
Fully functional Assets Register	Completed.	1. Develop an Asset Register at component level in the Works and Assets Module.	15	100	0			Yes
Asset Management System	Yes, in place but not used currently.	1. Integrate asset functions (register, financial and spatial) with the works and assets module and the budgeting module to achieve a full Asset Management System.	15	100	40	100	100	Yes
Financial System	Completed or substantially complete.	1. Ensure that the categories in the finance system, Tech One, are suitable for AM reporting.	35	100	65	100	100	Yes
		2. Value all assets that are itemised in the Asset Register, for depreciation and renewal purposes.	10	100	0			Yes
		3. Record costs at asset/component level in the asset register not just at property level.	30	100	0			Yes

11.4.2 The improvement framework

In April and May of 2011, Council approved a gap analysis of asset management practices for the regional parks Programme and four other Council programmes. The key outcome of this project was to understand current performance against key AM criteria and against an appropriate level of Asset Management achievement for each programme. The AMP was reviewed in 2014 to show the extent of progress made, which has been substantial given the resources available. The gap analysis tool that was used was an asset management capability assessment framework (AMCAF). A discussion of the results specific to regional parks is included below. For more detailed description of this assessment process refer to the SAMP.

11.4.3 Asset Management Capability Assessment Framework results

11.4.3.1 Regional parks activity compared with other activities

The following figure shows how the regional parks results compared to those across the other four programmes included in the AMCAF project. The regional parks group's performance varied across the different key result areas with Corporate Strategy and Governance being an area of strength with Maintenance and operational management being an area for focussed improvement.

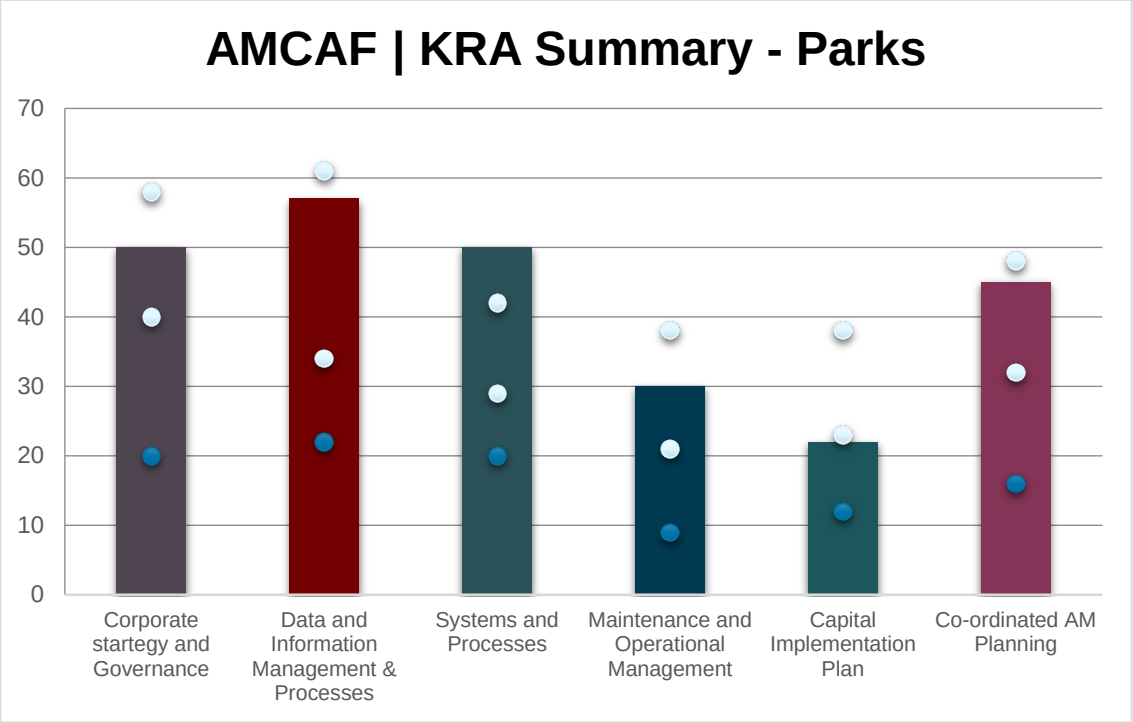


Figure 3: regional parks activity results compared with other activities when assessed in 2014

11.4.3.2 Key strengths

During this Gap Analysis the following practices have been identified as areas of strength, where the AM practices are at or above that required for appropriate asset management.

- An existing AMP is in place. This was comprehensively reviewed in 2014 and has subsequently been updated for each LTP cycle since then.
- Asset register with all assets complied within the Asset Management module with basic information such as quantities, description, value, condition, age and expected lives now completed.
- The team operate at a high level of engagement with the community and stakeholders. This is an excellent achievement and admirably reflects the goals and outcomes of the Local Government Act.
- The document management system is widely used.
- There is a high level of confidence with condition assessment and valuation data.

- Good demand data is captured for usage of the parks.
- Park management planning has been undertaken with tangata whenua, stakeholders and the community.

11.4.3.3 Key opportunities for improvement

The main areas for improvement have been identified as follows and a full list has been captured in the Asset Management Improvement Plan that follows:

- Concluding an asset hierarchy.
- Enhance maintenance programmes in the Works and Assets module.
- Continue to improve data capture and reporting out of the Works and Assets module and aligning with other systems and processes.
- Continue to work with the Asset Accountant to ensure that appropriate asset reporting is available and that the Works and Assets Module is providing for the needs of the Activity
- Undertake an assessment of resourcing requirements via a resource audit.
- Review the way in which the activity is governed, i.e. using external parties.
- Improve the use of business cases, which consider the effectiveness and efficiency of projects/ capital investment.
- Continue implementing improvement items and report back to the Steering Group as required to show progress to the Steering Group and for Audit New Zealand.

11.4.3.4 Summary results for regional parks

Provides a summary of asset management practice scores for each of the KRAs, indicating the actual score out of the total possible scores. The dark coloured bars indicate the current level of practice, the lighter bars are the level that the group is aiming to achieve by implementing the improvement items, and the grey bars indicate the gap between appropriate practice and asset management excellence. Figure 5 shows the same information at a more detailed level, i.e. at the AM Element level.

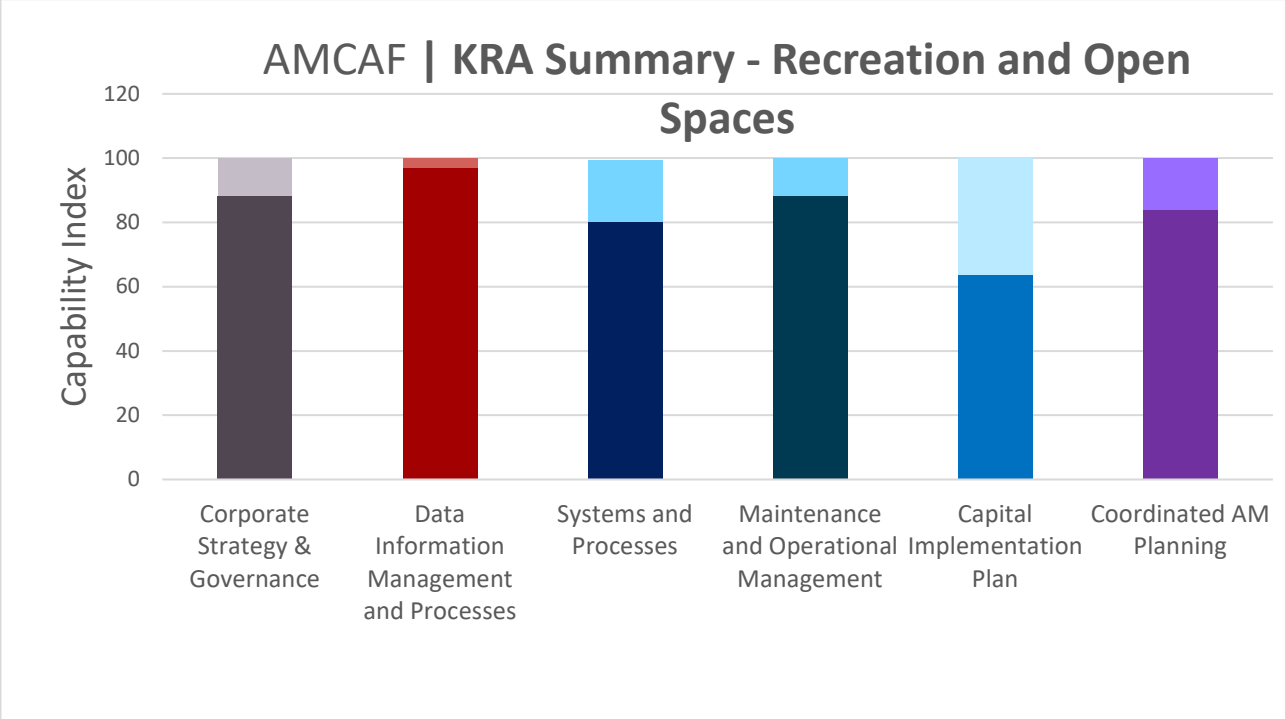


Figure 4: AMCAF results when assessed in 2018

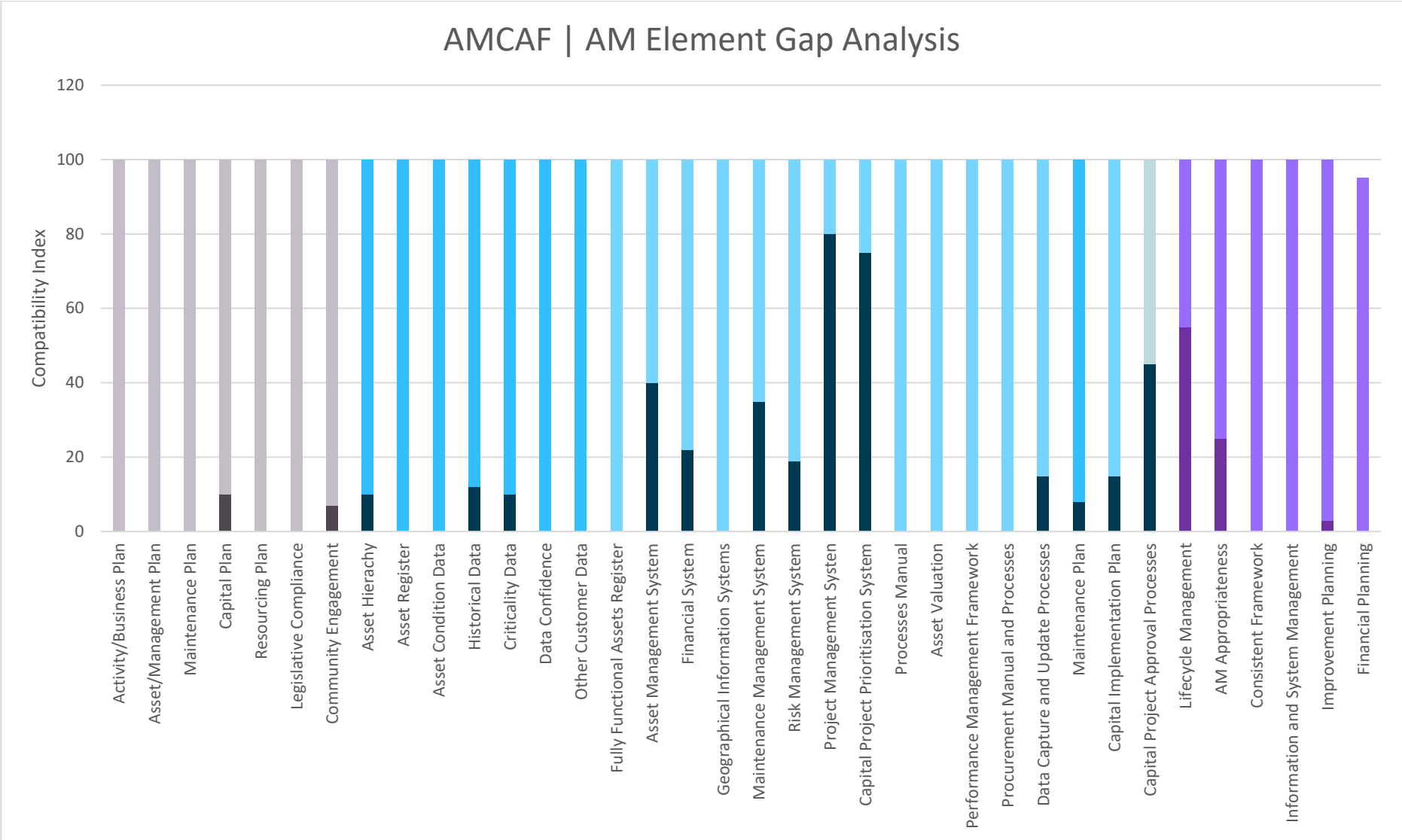


Figure 5: Assessment scores current compared with goal

11.5 Improvement plan

Register of improvement items relevant to AMP, with staff role who is accountable for it and comments on resourcing implications. State which component of asset management the improvement relates to.

The following improvement plan builds on the AM review undertaken originally in 2011 as part of the AMCAF process. The table shows that there are 5 outstanding items to be completed. It has been noted that an extensive review of improvements for the service is required as the last review was in 2011. This has been added as a new improvement item to be undertake as part of the next AMP cycle (2023/24).

Table 11: Current practice and improvement actions

AM Element	Current Practice and Improvement Actions (2011, reviewed 2020)		Original Score 2014	Score for 2017 review	Goal for 2020 review	Gap in 2020	Goal for 2023 review
Capital Plan	Low level capital investment forecast, now included in LTP.	Would need to develop a capital plan following the outcome of the review in 2012. Action to review the need for a capital plan in light of alternate funding streams.	0	90	100	10	100
		Update capital programmes in the Budgeting Module when this is implemented, and the strategic direction is set	0	90	100	10	100
Community Engagement	Being developed within the regional parks team.	Complete development of the Engagement Policy for regional parks.	65	60	100	40	100
Asset Condition Data	Data entered. Process to be documented under a Standard Operating	Develop a process for entering condition data into Tech One.	0	100	100	100	100

AM Element	Current Practice and Improvement Actions (2011, reviewed 2020)		Original Score 2014	Score for 2017 review	Goal for 2020 review	Gap in 2020	Goal for 2023 review
	Procedure Information held in excel spreadsheet						
Historical Data	Process to be documented under a Standard Operating Procedure.	Undertake an AMP software review brief to feed into corporate goals. This needs to provide detail of work activities undertaken, including the cost of works.	10	90	100	10	100
Continuous Improvement (NEW)	The 2011 extensive review of AM for regional parks is now outdated	Undertake an AM review to inform the next AMP cycle (2023/24). This will aim to refresh the improvement items to focus on.	-	-	-	-	100

The above remaining improvement items are to be completed on a business as usual approach and are the responsibility of regional parks Activity Manager. No additional resourcing is required with the exception of the Continuous Improvement item (AM review) which may require external reviewer input or internal Asset Manager time to carry out the review.

BAY OF PLENTY
REGIONAL COUNCIL
TOI MOANA

Rotorua Te Arawa Lakes Asset Management Plan 2021-2031

Bay of Plenty Regional Council
5 Quay Street
PO Box 364
Whakatāne
New Zealand

Executive summary

The Rotorua Te Arawa Lakes Asset Management Plan (AMP) presents the details of assets associated with the restoration of water quality for the Rotorua Lakes and management of specific lake levels. There are 12 Rotorua lakes in the programme and their target water quality is specified as their Trophic Level index (TLI) targets in the Natural Resources Plan (NRP).

This AMP outlines the assets, how they are managed and funding requirements to ensure they are maintained in a reasonable operational state. It also outlines the authorisations and management plans necessary to guide their operation and maintenance.

Lake operations assets fall into two main categories:

1. In-lake and in-stream interventions which are temporary activities to improve lake water quality while more long-term sustainable land use changes are implemented and take effect, and
2. Lake level management and monitoring assets that deliver service to the local communities to ensure specific lake levels are either managed or cater for future climate change scenarios and long-term data from ground water bores can be collected from key sites.

The key purpose of this plan is to:

- Document key assets in the Rotorua Lakes Programme.
- How these assets will be managed including funding, service delivery, risk and maintenance.
- Document linkages to other documents that are vital to understanding how the assets are managed (management and operation plans, consents etc.).

The Rotorua Lakes Programme is a tripartite programme of lake management and restoration between Bay of Plenty Regional Council (BOPRC), Te Arawa Lakes Trust (TALT) and Rotorua Lakes Council (RLC). The governing group is the Rotorua Te Arawa Lake Strategy Group (RTALSG) and was established out of the Te Arawa Settlement Act 2006.

The basis for this work is outlined in the Vision and Strategy for the Rotorua lakes and described in the vision from that document:

> The lakes of the Rotorua district and their catchments are preserved and protected for the use and enjoyment of present and future generations, while recognising and providing for the traditional relationship of Te Arawa with their ancestral lakes.
>
> E tiakina ana, e manaakitia ana hoki ngā roto o te rohe o Te Arawa hei painga mō tātau me ngā whakatipuranga e ara mai nei, ā, me te aro anō ki te hononga tuku iho o Te Arawa ki ō rātau roto.

The Bay of Plenty Regional Council also manages the Bay of Plenty environment pursuant to the requirements of the Resource Management Act 1991 (RMA). This Act is the basis of the NRP for the Bay of Plenty. The plan has specific outcomes for the 12 Rotorua lakes, specifying water quality outcomes for each of these lakes and a requirement to address water quality issues by development and application of Action Plans where water quality outcomes are not being achieved. More recently the Government has announced a National Policy Standard for Freshwater Management (NPS-FM) that adds to these requirements to protect water quality. There are action plans for 10 lakes in the programme. These will be superseded as the NPS-FM is implemented.

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Appendices

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Part 1: **Introduction**

1 Purpose of the Asset Management Plan (AMP)

The Rotorua Lakes Catchment programme is a focused programme of works primarily aimed at addressing water quality issues for the 12 lakes in the programme (see Figure 1). The overall outcome of the programme is to sustainably align catchment land use with long term lake water. The water quality in each lake is a result of catchment nutrient inputs; natural and anthropogenic. Most of the long-term interventions to improve water quality include land use and land management change on private land, and sewage reticulation of lakeside communities. These interventions are not owned by Bay of Plenty Regional Council (BOPRC) and so are not included in this Asset Management Plan (AMP).

This AMP is focused on in-lake and in-stream interventions which are more temporary than the long-term restorations mentioned above. The purpose of these interventions is to improve water quality more quickly, than if catchment land use and nutrient inputs were the only focus of intervention.

This AMP also includes some structures used to manage lake level control and monitor environmental conditions that provide key data for managing the lakes (e.g. Lake Outflow structures and groundwater (GW) monitoring bores).

The key purpose of this plan is to:

- Document key assets in the Rotorua Lakes Programme,
- How these assets will be managed including funding, service delivery, risk and maintenance, and
- Document linkages to other documents that are vital to understanding how the assets are managed. (Management and operation plans, consents.)

Figure 1 Map showing lakes of the Rotorua District

1.1 Overview of services covered

1.1.1 What do we do?

The service that we provide by this AMP is best portrayed by three main groupings:

- Short to medium term in-lake and in-stream interventions to improve water quality (e.g. operation of alum dosing plants and the Ōhau Diversion Wall),
- Management of lake levels in response to environmental conditions and community aspirations, and
- Maintain specific monitoring equipment to ensure targeted monitoring data is available specifically for the lakes programme (e.g. GW monitoring bores).

The interventions to improve water quality and the water level control are of high interest to local communities and attract considerable attention if water quality declines or lakes are outside their "normal" operational range. Staff are committed to responding in two main ways: (a) where appropriate respond to issues and resolve complaints, and (b) provide science based and economic/cost explanations as to why natural environmental conditions may dominate lake conditions and a practical solution may not be appropriate. An example of this is where an algal bloom occurs in a bay of Lake Rotorua. We cannot resolve the short-term issue, but we can provide a science explanation outlining why it may have occurred. Alternatively, where heavy rainfall has pushed Lake Ōkāreka outside of its normal operational range, we can review our management plan to ensure it is still fit for purpose, to minimise out of spec events.

1.1.2 Why do we do it?

The Rotorua Lakes Programme is a tripartite programme of lake management and restoration between BOPRC, Te Arawa Lakes Trust (TALT) and Rotorua Lakes Council (RLC). The governing group is the Rotorua Te Arawa Lake Strategy Group (RTALSG) and was established out of the Te Arawa Settlement Act 2006.The basis for this work is outlined in the Vision and Strategy for the Rotorua lakes and described in the vision from that document:

> The lakes of the Rotorua district and their catchments are preserved and protected for the use and enjoyment of present and future generations, while recognising and providing for the traditional relationship of Te Arawa with their ancestral lakes.
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The Bay of Plenty Regional Council also manages the Bay of Plenty environment pursuant to the requirements of the Resource Management Act (RMA). This Act is the basis of the Natural Resources Plan (NRP) for the Bay of Plenty. The plan has specific outcomes for the 12 Rotorua lakes, specifying water quality outcomes for each of these lakes and a requirement to address water quality issues by development and application of Action Plans where water quality outcomes are not being achieved. More recently the Government has announced a National Policy Standard for Freshwater Management (NPS-FM) that adds to these requirements to protect water quality. There are action plans for 10 lakes in the programme. See Appendix 1 for a listing of action plans and the review document. These will be superseded as the NPS-FM is implemented.

Long term implementation of the Strategy and RMA plans is provided in the BOPRC Long Term Plan Community Outcomes:

- Water quality and quantity
- Environmental protection
- Resilience and safety
- Regional collaboration and leadership

While the overall expectation of undertaking the work detailed in this AMP is to improve the environment for the Rotorua lakes, there can be occasions when some community members perceive some of the activities as negative. The key activities that can attract negative feedback are alum dosing and the Ōhau Diversion Wall. While alum dosing has been credited with improving the quality of three of our lakes, some iwi are concerned about the ongoing dosing of a chemical product into our lakes. As a result, BOPRC has undertaken considerable research and continues to monitor the water quality and environmental health, to ensure any negative effects are also addressed if they should arise. A second risk with alum dosing is that some members of the community may identify it as a solution to long term land use impacts and see it as an alternative to improving land use.

The Ōhau Diversion Wall is a temporary structure designed to divert the flow of the Ōhau Channel directly down the Kaituna River. This structure was deemed necessary to prevent the nutrient rich water from Lake Rotorua reaching Lake Rotoiti and driving algal blooms in the second lake. It is expected that the wall will need to be in place for about 50 years while the land use improvements in the catchment of Lake Rotorua gradually improve the water quality of Rotorua. Although the wall has consent authorisation (35-year term), there is some resistance to the wall from some iwi groups. The main concern is the effect of interfering with natural flows between the two lakes. In addition, the presence of the wall increases the water residence time in Lake Rotoiti from about1.5 years to 5+ years. Over the time the wall has been in place (since 2008), Lake Rotoiti has not reached its target water quality. There is some concern that changing the lake water dynamics has created some negative side effects that could be preventing the lake reaching its long-term target.

With respect to lake level management in the Rotorua District, BOPRC only actively manages the level of three lakes (Rotorua, Rotoiti and Ōkāreka), and has a more passive level of management of two other lakes (Rerewhakaaitu and Rotomahana). Historic flooding issues and location of infrastructure around lakes has led to the various authorities implementing lake level management structures and regimes. Bay of Plenty Regional Council now takes responsibility for these structures and management operations. Two lake level structures not within this plan are the Ōhau Channel outlet from Lake Rotorua and the Okere control gates on Lake Rotoiti, as they manage flows on the Kaituna River and are operated under a different plan.

The two most prominent issues associated with lake level management are:

- Unrealistic public expectations as to how much influence our management can have on controlling high or low lake levels for differing outcomes, and
- The ongoing effects of climate change which are likely to have impacts on both high and low lake levels.

Public expectations are best addressed by having good linkages with the local community and engaging on management processes. Climate Change impacts are going to influence Council infrastructure decisions. For Lake Ōkāreka, we have already invested heavily in providing for lake outflows of more than double the flow available 20 years ago in 2000.

Part 2:
Assets we own

2 Overview

The below is a listing of our Lake Assets in summary including the book value as at 30 June 2020. A revaluation of the assets is scheduled for 31 March 2021.

Asset Number	Description	Description	Location	Book value
LAK102512	Bore	Rotorua Dibley	435 Oturoa Rd, Lake Rotorua Asset 10965	$94,714
LAK102514	Bore	Rotorua Jessie Martin Park No 2	79 Ngongotaha Road, Ngongotaha Boring number 10967	$54,692
LAK102515	Bore	Rotorua Gee Road	83 Gee Road, Rotokawa, Rotorua Bore number 10968	$55,195
LAK102516	Bore	Tarawera I Site 1	588 Spencer Road, Lake Tarawera Bore number 1000129	$62,383
LAK102517	Bore	Tarawera I Site 2	Te Miro, Lake Tarawera Boring number 1000131	$62,920
LAK102518	Bore	Tarawera I Site 3 Deep	Lake Tarawera Outlet - DOC Campground Bore number	$66,360
LAK102520	Bore	Tarawera II Site 4	1180 Tarawera Road, Buried Village Bore number 1001051	$63,025
LAK102521	Bore	Tarawera II Site 5 Deep	757 Ash Pit Road, Waiotapu Bore number 1001052	$60,860
LAK102522	Bore	Tarawera II Site 5 Shallow	757 Ash Pit Road, Waiotapu Bore number 1001053	$54,463
LAK102523	Bore	Tarawera II Site 6	1278 Ash Pit Road, Waiotapu Bore number 1001055	$82,790
LAK102524	Bore	Tarawera II Site 7	101 Rerewhakaaitu Road, Waiotapu Bore number 1001056	$21,108

Asset Number	Description	Description	Location	Book value
LAK102525	Bore	Tarawera III Site 8	11 Highland Loop Road, Lake Rotokakahi Bore	$90,270
LAK102526	Bore	Tarawera III Site 10	Tarawera Road, Lake Tikitapu Bore number 1001069	$85,016
LAK102527	Bore	Tarawera III Site 11	171 Millar Road, Lake Ōkāreka Bore number 1001070	$80,608
LAK102528	Ōhau Channel Diversion	Sheet pile wall	Lake Rotoiti at Ohau Channel	$5,841,596
LAK102529	Utuhina Phos Lock Pl	Dosing and alum store	Depot Street, Rotorua	$232,666
LAK102530	Puarenga Phos Lock	Dosing and alum store	Te Ngae Road, at the Rotorua STP	$149,599
LAK102531	Rotoehu Phos Locking Plant	Waitangi/Soda Springs Phosphorus Locking	Waitangi/Soda Springs Phosphorus Locking Plant	$281,289
LAK102532	Denitrification Plant	Tikitere Denitrification Plant	Tikitere Denitrification Plant	$36,364
LAK102537	Fish Pass, Hamurana	Dam type structure on Tributary of the Hamurana Stream	Hamurana Road	$22,956
LAL102541	Lake Rerewhakaaitu and Ōkāreka monitoring buoys	Monitoring buoy	Lake Rerewhakaaitu and Lake Okareka	$16,496
LAK102542	Boxes Ōkaro Wetlands	Monitoring location at stream flowing into Lake Ōkaro	Ōkaro Road	$213,388
LAK104732	Outlet Structure	Lake Ōkāreka Outlet Structure	Lake Ōkāreka Outlet Structure	$398,595

Asset Number	Description	Description	Location	Book value
	Waitangi Stream, Ōkāreka stream works	Spencer Road Lake Tarawera.	Stream protection works	New 2020/21
	Rotomahana outlet control	Culvert and head wall for placement of stoplogs	At outlet between Lakes Rotomahana and Tarawera	New 2020/21
	Rerewhakaaitu outlet control	Drain and stoplogs at Lake outlet channel	Ashpit Road, Rerewhakaaitu	New 2020/21
	Total			**$7,448,843**

2.1 Asset detailed information

The following section outlines details of each asset, including expected maintenance costs. Appendix 2 contains specific details and file location of resource consents and management plans for each asset.

2.1.1 Groundwater monitoring bores

Bay of Plenty Regional Council has 14 monitoring bores as listed. These are used to sample groundwater to test for changes in water quality in the BOPRC Natural Environment Regional Monitoring Network (NERMN) Programme. Four of these are located around Rotorua and the remainder around the greater Tarawera Lake catchments. Many are located on private property as these locations have been selected to provide the best monitoring location. While their primary purpose is to monitor groundwater, the landowner can also use the bore to supply deep groundwater for farming and home water supply. Some are located on public land. See Figure 2 below showing the bore at Lake Tikitapu. Sampling involves monthly water sampling and water depth. At that time, other issues regarding maintenance can be undertaken and followed up where necessary.

The gross replacement cost for the groundwater monitoring bores is $1,542,669. The Optimised Depreciated Rate of Cost (ODRC) is $1,031,982, reflecting that the assets are in as-new condition. The assets have been valued in total and have not been itemised down to component level.

Figure 2 Groundwater bore at Lake Tikitapu

Asset	Replacement Cost	Sum of ODRC*	Sum of AD**
Groundwater monitoring bores	$1,542,668	$1,031,982	$22,363

**ODRC: Optimised depreciated rate of cost ** AD: Annual Asset depreciation, 30 June 2018 valuation.*

Asset	Works planned description	Estimate cost (OPEX)	Planned schedule
Groundwater monitoring bores	Monitoring	$1,000	Annual

2.1.2 Ōhau Diversion Wall

The Ōhau Diversion Wall is located in Lake Rotoiti and was built in 2008. The diversion wall has been built to reduce the amount of nutrients reaching Lake Rotoiti from Lake Rotorua via the Ōhau Channel. Water from Lake Rotorua is now diverted down the Kaituna River rather than entering Lake Rotoiti, and due to the reduced nutrient loading has helped to improve the water quality in the lake.

The assets that form the diversion wall include the following:

- King piles (up to 70 m deep)
- Sheet piles (1,300 m long wall)
- Timber facing
- Timber walers
- Mesh
- Navigation equipment

Figure 3 Annual depreciation is approximately $638,000

Corrosion identified on the diversion wall in 2014 has led to the development of a Structural Management Plan to ensure the wall meets its service life of 50 years. Structural components have been installed in 2019/20 to delay major remediation by 10 years. Programmed inspections will determine the degree of corrosion and staged repairs will be programmed as necessary. The Structural Management Plan details inspection frequency as well as repair options.

Resource consent for the wall located in Lake Rotoiti was granted for 35 years pursuant to the conditions of consent RM16-0527.

Asset	Replacement cost	Sum of ODRC	Sum of AD
Ōhau Channel Diversion Wall	$12,805,000	$7,151,370	$638,000

**ODRC: Optimised depreciated rate of cost ** AD: Annual Asset depreciation, 30 June 2018 valuation.*

Asset	Scheduled works	Estimate cost(OPEX)	Estimate cost(CAPEX)	Schedule dates
Ōhau Channel Diversion Wall	• General monitoring and maintenance	$50,000		Annual
	• Structural management plan inspections	$50,000		2021/22
	• Structural management plan inspections	$50,000		2024/25

Asset	Scheduled works	Estimate cost(OPEX)	Estimate cost(CAPEX)	Schedule dates
	• Structural management plan inspections	$50,000		2027/28
	• Install polymeric screen			
	• Structural management plan inspections	$50,000		2030/31
	• Structural management plan inspections	$50,000		2033/34
	• Structural management plan inspections	$50,000		2036/37
	• Replace polymeric screen, remove sheet piles & encase King Piles		$4,330,000	2038/39
	• Structural management plan inspections			
	• Structural management plan inspections	$50,000		2039/40
	• Structural management plan inspections	$50,000		2042/43
	• Replace polymeric screen		$1,600,000	2045/46
	• Structural management plan inspections	$50,000		2047/48
	• Structural management plan inspections			2048/49
	• Structural management plan inspections	$50,000		2051/52
		$50,000		2054/55
		$50,000		

2.1.3 Phosphorus locking (P-locking) plants

There are currently three phosphorous locking (P-locking) plants in the Rotorua District that are managed by BOPRC. These are:

- Utuhina Stream - Lake Rotorua
- Puarenga Stream - Lake Rotorua
- Waitangi Soda Springs - Lake Rotoehu

P-locking plants are used to reduce available phosphorous from a water body by using a “locking” chemical such as alum. P-locking plants target point sources that are high in phosphorus with the aim of reducing the concentration of phosphorous entering water bodies, i.e. Lake Rotorua or Lake Rotoehu. Various studies have shown that these lakes have degrading water quality due to excess phosphorous. Currently, all three P-locking plants are going through a re-consent process to continue dosing alum. The previous consents remain valid until the decision on the new consents is issued. The current consents are 65321, 65559 and 65966. It is expected that any new consent will be issued for a term of 10 years.

The current operation of the Rotoehu alum dosing is to dose into the Waitangi Stream. Research has shown that at times this dosing location is not the best location. As a result, the new application adds the option of dosing in the centre of the lake and the dosing protocol will provide guidance on the appropriate dose at each location.

These plants have operations manuals, which are upgraded as necessary to take account of any changes in regulations and any change to operations, to improve factors such as safety as well as changes to dosing protocols.

Figure 4 Puarenga phosphorous locking (P-locking) plant

Plant	Replacement cost	Sum of ODRC*	Sum of AD**
Puarenga	$377,100	$200,140	$20,062
Utuhina	$557,700	$311,270	$21,672
Waitangi Soda Springs	$465,000	$337,520	$27,384
	$1,399,800	**$848,930**	**$69,118**

**ODRC: Optimised depreciated rate of cost ** AD: Annual Asset depreciation, 30 June 2018 valuation.*

Plant	Scheduled works	Estimate cost(OPEX)	Estimate cost(CAPEX)	Schedule dates
Puarenga	• General repairs and maintenance, coating	$20,000		Annual
	• Tank condition review	$5,000		2025/26
	• Coating		$44,000	2025/26
Utuhina	• General repairs and maintenance, coating	$20,000		Annual
	• Tank condition review	$5,000		2025/26
	• Coating		$30,000	2021/22
	• Computer upgrade		$20,000	2021/22
	• Diffuser replace		$30,000	2021/22
	• New tank		$50,000	2021/22
Waitangi Soda Springs	• General repairs and maintenance,	$30,000		Annual
	• Tank condition review	$5,000		2025/26
	• New diffuser (in lake)		$124,000	2021/22

2.1.4 Nitrogen Reduction Plant and Options – Lake Rotorua

The Nitrogen Reduction Plant is located at State Highway 30, Tikitere. The geothermal flows that originate from the Tikitere Hell's Gate thermal field, are high in nitrogen and discharge into Lake Rotorua via the Waiohewa Stream. After a number of years trialling several different techniques for nitrogen reduction from a small geothermal flow at this location, further analysis of the capital cost of constructing has led to the Council mothballing this option. The decision was based on high capital and operational cost. Other options may be available in time and the Council has a long-term lease on the site. The objective is to review alternative options and assess whether they become feasible at a later date.

The site requires some minor maintenance for security and weather proofing the shed.

Figure 5 Nitrogen Reduction (De-nitrification) plant.

Nitrogen reduction options are now being investigated as an alternative to the Tikitere plant. The main target for action here is the development of constructed wetlands to achieve nitrogen removal.

Asset	Replacement cost	Sum of ODRC*	Sum of AD**
Nitrogen Reduction (Tikitere Zeolite Pilot) plant	$442,400	$48,650	$16,931
Engineering options for Nitrogen removal	NA		

**ODRC: Optimised depreciated rate of cost ** AD: Annual Asset depreciation, 30 June 2018 valuation.*

Asset	Scheduled works	Estimate cost(CAPEX)	Schedule dates
Nitrogen Reduction (Tikitere Zeolite Pilot) plant	Culvert Access	$30,000	2021/22
Engineering options for Nitrogen removal	Evaluation and design	$196,000	2021/22
	Construction works	$2,099,000	2022/23
	Construction works	$2,048,000	2023/24
	Construction works	$2,000,000	2024/25

2.1.5 Koaro Fish Pass/Trout Barrier

The Koaro Fish Pass is located in the Hamurana Stream on the northern edge of Lake Rotorua. It was built in 2012. The aim of the pass/barrier is to protect local koaro fish from predation by trout. The barrier is designed to allow koaro access to the area while excluding trout. Some work is required to perfect the barrier as trout are occasionally caught in the exclusion area.

The assets that form the fish pass include 3 x base slabs and 2 x wing walls. The asset does not require substantial maintenance, but some redesign may be necessary to improve its ability to block the upstream passage of trout into the exclusion area. Resource Consent 67041 was granted in 2012 for a term of 35 years for the structure.

Figure 6 Koaro Fish Pass, Hamurana Stream

Asset	Replacement cost	Sum of ODRC	Sum of AD
Koaro Fish Pass/Trout Barrier	$28,600	$24,300	$619

**ODRC: Optimised depreciated rate of cost ** AD: Annual Asset depreciation, 30 June 2018 valuation*

Asset	Scheduled works	Estimate cost (OPEX)	Schedule dates
Koaro Fish Pass/Trout Barrier	General monitoring and adaptions	$5,000	Annual

2.1.6 Monitoring buoys

The Regional Council has developed a small network of lake monitoring buoys since 2007. These were developed in conjunction with the University of Waikato Chair in Lakes Science. Over the period of about 10 years a network of seven buoys was developed. Through the ongoing development of the buoys, a second generation design changed from fixed sensor nodes to a profiling sensor that is winched up and down through the water column to obtain water quality data at any desired location. This has resulted in an improved design that has the ability to take multi water quality measures at variable locations. These buoys enable Council to collect data for day to day management, as well as for long term detailed research such as lake modelling. The data from the network is also available online to the public.

Through the upgrade of the network to profiling buoys, it was decided that the best solution to ongoing monitoring would be to contract out the management of the monitoring network. As a result of contracting out this service, BOPRC requested an upgrade of all the buoys to the profiling mode and so all the older generation buoys owned by BOPRC have now been replaced with the

new profiling buoys and they are owned by the service provider. The service provider maintains them on BOPRC's behalf and output information is available online to the public. Bay of Plenty Regional Council now only owns two buoys located on Lake Rerewhakaaitu and Lake Okareka. All costs associated with the management and maintenance of the buoys is covered by a contract for service.

Lake	Date deployed	Depth
Rerewhakaaitu	February 2016	13.6 m
Okareka	November 2020	

Asset	Replacement cost	Sum of ODRC*	Sum of AD**
Combined assets			tbc

**ODRC: Optimised depreciated rate of cost ** AD: Annual Asset depreciation*

2.1.7 Ōkaro Wetland Structures and Storm Interception Bunds (These are new assets to be included, waiting on valuations)

Ōkaro Wetland was developed by the programme to aid in the restoration of Lake Ōkaro. This involved the construction of wetland to intercept catchment flows from the main contributing stream. The wetland is located on private farmland as well as partly on a Rotorua Lakes Council reserve. The structures include inlet control and piping, high flow overflow, flow gauging and high flow bunding at two dams 600m and 860m upstream to help mitigate high flows to minimise the activation of the high flow wetland bypass. All these structures are located on private land but BOPRC is involved in maintaining them in working order.

Asset	Replacement cost	Sum of ODRC*	Sum of AD**
Combined assets			tbc

Asset	Scheduled works	Estimate cost(OPEX)	Schedule dates
Ōkaro wetland structures and interception bunds	General monitoring	$5,000	Annual

2.1.8 Lake Ōkāreka Outlet

Lake Ōkāreka is a 340 Ha lake with no natural surface outlet. It has a small lake side community with some homes close to the lake shore. In the 1960s the water level of the lake increased to such an extent some lakeside homes were flooded and the community pushed for an outlet to be constructed. The outlet is managed by BOPRC, and it consists of about 5 outlet pipes conveying water from the lake into a constructed canal. Water from the canal then flows down a gravity pipeline and discharges into the Waitangi Stream, a tributary of Lake Tarawera.

In 2017, heavy rainfall events led to extremely high lake levels (the highest since the 1960s) and council installed a temporary pipeline and auxiliary pump to provide additional flow capacity to manage lake levels. These works and additional flows were sanctioned by section 330 of the RMA where "emergency works" is allowed where people or property are at risk.

As a result of this need to address this flood BOPRC has now obtained a 35 year consent for additional flow capacity between Lake Ōkāreka to the Waitangi Stream. The flow capacity consented is now 500L/s and is modelled to enable lake level control up to a 1:100 year rainfall event. This is designed to protect homes in the Ōkāreka community.

The following Figure 7 shows the current configuration of outlet structures and pipeline. The outlet structure, pipeline and Waitangi Stream banks have all recently been upgraded to cater for a maximum flow of 500L/s and prevent stream bank erosion as a result of higher flows. Staff have completed an operational management plan that details lake level operation control, inspection frequency, and maintenance programme. The capital budget associated with these works has been to date about $1.8M. Additional work required is to replace the lake outlet arrangement from the five pipes to a simple weir structure and to upgrade the discharge pipe outlet.

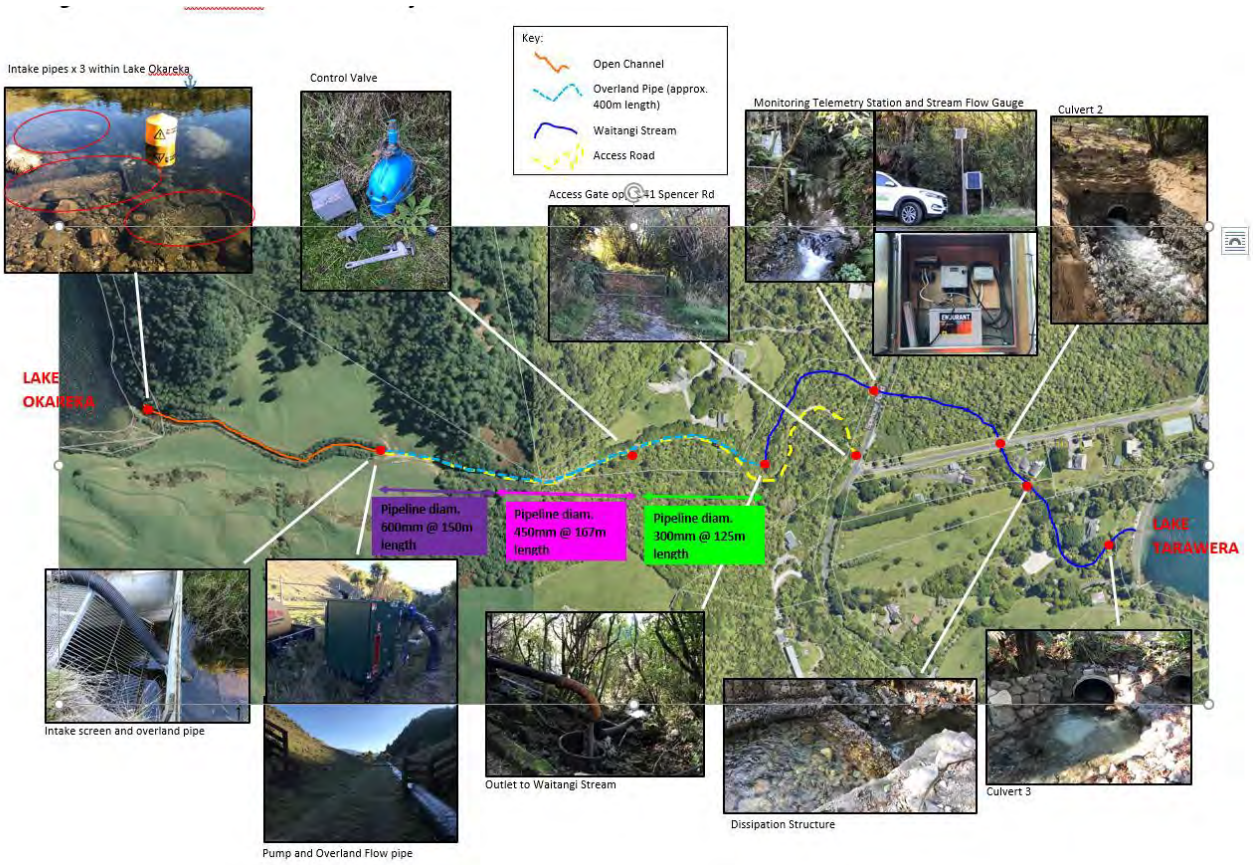

Figure 7 Ōkāreka outlet structures (To be updated)

Asset	Replacement cost	Sum of ODRC*	Sum of AD**
Outlet and canal			tbc
Pipeline			tbc
Stream protection works			tbc
Pump			tbc

Asset	Scheduled works	Estimate cost(OPEX)	Estimate CAPEX)	Schedule dates
Outlet and canal	General maintenance	$5,000		Annual
Pipeline	General maintenance	$2,000		Annual
Stream protection works	General maintenance	$5,000		Annual
Pump	Maintenance	$3,000		Annual
Lake Outlet and Pipeline Outlet	Capital		$65,000	2021/22

2.1.9 Rotomahana Lake Outlet

This is a lake overflow structure built in the 1970s in response to high lake levels. The structure comprises an earth channel leading to a concrete basin and culvert (Figure 8). The structure is important in controlling high lake levels on the Rotomahana isthmus. This is an important structure to ensure management of the lake level, to prevent unnecessary pressure bearing on the isthmus which separates Lake Rotomahana from Lake Tarawera. This is an earth fall formation that fell into place in the 1880 Mount Tarawera eruption. Bay of Plenty Regional Council has a Management Plan for the monitoring and inspection of the structure. These inspections are programmed six monthly as well as being triggered by large rainfall events, large earthquakes and high lake levels. The aim is to identify any evidence of isthmus failure and ensure civil defence is alerted in such an event. The following graph shows the level of Lake Rotomahana since 2011 and the level of the outlet structure is shown by the maximum level of RL 339.400.

Figure 8 Lake Rotomahana level 2011 to 2020

Asset	Replacement cost	Sum of ODRC*	Sum of AD**
Combined assets			tbc

Asset	Scheduled works	Estimate cost	Schedule dates
Lake Rotomahana outlet structure	General monitoring and maintenance	$2,000	Annual

Figure 9 Lake Rotomahana outlet control structure

2.1.10 Lake Rerewhakaaitu outlet

Lake Rerewhakaaitu has an outlet drain located at Ash Pit Road. In 2018 the lake level peaked and started to cause flooding of farmland surrounding the lake. Investigations revealed that an outflow control structure had been constructed in the outlet drain to the Mangaharakeke Stream, a tributary of the Rangitāiki River in the 1960s. Responsibility for management of this structure was uncertain and rather than consume additional time trying to understand the ownership of this structure, BOPRC committed to managing the outlet drain. The objective is to keep the drain clear by making regular inspections of the drain, keeping it clear of vegetation occasionally and undertaking excavation of the drain on a regular basis. The drain was cleared by long reach digger in 2019.

Bay of Plenty Regional Council has now developed an outlet management regime that details inspection and maintenance for the outlet. There is no resource consent to manage lake levels. Staff do not see a need to obtain a resource consent as the drain is a modified waterway. Council are not actively managing water levels but ensuring that high lake levels are not exacerbated by keeping the outlet clear. This minimises risks associated with more frequent high rainfall as a result of climate change.

Asset	Replacement cost	Sum of ODRC*	Sum of AD**
Combined assets			tbc

Asset	Scheduled works	Estimate cost(OPEX)	Schedule dates
Lake Rerewhakaaitu outlet structure	General monitoring Maintenance, long reach digger	$2,000 $10,000	Annual 2022/23

2.2 Overview of issues and risk

The Rotorua Lakes Programme has a unique set of issues to deal with that create community apprehensions and present some potential risk to its ongoing sustainability. The following is a summary of the author's view on many of these issues:

1. The cultural impact of some structures and activities such as alum dosing in our lakes.
2. Concerns around the Ōhau Diversion Wall and alum dosing have already been described in Section 1.2.2. The main concern here is potential and real conflict with iwi values and views. We are often seen as only engaging with iwi when resource consents are required and in between times we just get on with business. Our focus is now to try and develop ongoing relationships around managing these types of structures and operations, which will potentially lead to agreements and contracts which BOPRC will need to pay for, rather than expecting engagement on a "voluntary" basis. Specific agreements will lead to commitment to delivery on both sides.
3. General community expectations are that BOPRC will deliver improved water quality for each lake year on year. There are two issues with respect to this: (a) each lake has a specific Trophic Level Index (TLI) target, they are not all the same and so water quality for each lake will differ, depending upon what is technically feasible and (b) even where some lakes meet their target TLI (say Rotorua at a TLI of 4.2) annual TLIs will vary and algal blooms are possible. This requires some level of communication with the community to understand that lake water quality will continue to vary and that variations in water quality do not indicate programme failure.
4. Our communities now are expecting better access to Council data, especially data from live monitoring sites. Currently data from the monitoring buoys is available online. Keeping access to data provides a useful service for the public, assists in their understanding of lake processes and programme progress and also importantly provides greater trust of Council if we make data accessible. The monitoring bores have not been monitored regularly until 2020. This has led to accusations of lack of transparency and Council drawing conclusions with a lack of data. While the accusations may be incorrect, these perceptions can often only be repaired by providing more transparent monitoring. As a result, the bores are an important part of the BOPRC monitoring programme.
5. The Rotorua Lakes Programme is a high cost investment for the Lake Strategy Group Partners (BOPRC, RLC and TALT, along with MfE investment) of about $240m. As a result, the public are expecting to see a visible improvement in water quality. The programme is based on defining sustainable nutrient inputs to each lake and making these changes through improved land use. The flow on improvements are likely to take many years, even decades, due to the legacy of nutrients in the groundwater as well as nutrients that can recycle from lake sediments. The response to this delay is to invest in short term response projects such as alum dosing and the Ōhau Diversion Wall. Some other interventions while being long term in nature do provide a short response time, such as sewage reticulation of lakeside communities. This is an additional communication issue that requires ongoing attention.
6. Climate Change is an additional issue that has the potential to make reaching water quality targets more challenging, as well as create more frequent lake level issues such as flooding and erosion. The Water Quality Technical Advisory Group (WQTAG) has recently released a Statement on this for Council and public information (see Appendix 3). The potential risk or issue here is that over time nutrient reduction targets may need to be increased as a result.
7. The community and especially landowners' appetite and justification for land use change to improve water quality, is tempered by the water quality they observe in the lakes. If an in-lake intervention is making a big improvement to water quality, this may be counterproductive to our need for long term land use change. A community understanding of the science around short term interventions as well as the long term land use change is important. The success of alum dosing in Lake Rotorua could lead to this view.

Part 3:
Growth and demand

The Rotorua Lakes Programme is not providing a specific service to customers, it is more providing a wider environmental service. It does connect with the community, specifically iwi because of their special relationship with the lakes and their ownership, specific lake communities who associate with their local lake, as well as other groups with a particular interest in lake water quality and health. It is likely that with time, community expectations to providing good water quality will continue to increase, partly to do with increasing environmental understanding, as well as population growth and development that has led to a decline in environmental health in the past.

3 Overview of drivers

- Regulatory and policy. The BOPRC is responsible for implementation of the RMA to protect water quality and quantity. More recently the release of the NPS-FM has put more requirements on councils to set water quality targets and formulate action plans, to make sure waterways meet minimum standards set by the community. Bay of Plenty Regional Council has been proactive in this area as it has developed policy and set standards of water quality in the Natural Resource Plan (NRP) and has developed action plans for a number of the lakes – see Appendix 1.
- Land use changes. The Rotorua Lakes Programme has relied on policy in the NRP to address land use changes in five of the 12 lake catchments. For these lakes, not only has this stopped land use intensification but it has also led to agreements to reduce land use impacts that support the improvement of water quality for the lakes. The NPS-FM will force the Council to review current policy as well as develop more “action focused “policy for the seven remaining lakes.
- Climate Change has been discussed in Section 2.3. It will be an exacerbating effect on meeting water quality goals as well as having potential to impact lake levels and erosion effects. Climate Change is now a normal part of thinking in the Rotorua Lakes Programme when new projects are being developed, to ensure problems are anticipated and mitigated, if possible, at an early stage.
- The Lakes Programme is highly reliant on new technology and developments. We have strong relationships with University of Waikato (UoW) and fund a Lakes Chair Position. Our other ongoing contacts include a range of science advisors to provide specialist advice. Many of our in-lake interventions have been world leading and New Zealand first applications. This does bring some risk of failure but also has provided major advances such as in-lake monitoring buoys, alum dosing to improve water quality and remote sensing of water quality. It can also bring offers of “untested” interventions which require resource to review and can lead to public perceptions that a “magic bullet “solution is available.
- The programme is ultimately based on sustainable land use in the lake catchments. The in- lake interventions are generally shorter term and so they are assessed against their efficacy, and minimising environmental impacts is part of their assessment before gaining Council support. Often these interventions require resource consent and so they are required to meet the environmental bottom lines set by the RMA and Council policy.

3.1 Impact of and potential risks

The following section brings together the risk level expected as a result of the various issues and sets out the mitigation options.

Issue	Impact	Risk	Mitigation option
Negative connotations of dosing alum into our lakes, iwi and some community.	Could lead to shorter consents and possibly non-approval at consent stage.	Moderate	Continue to undertake impact studies, include taonga species, and include iwi in monitoring programme.
Alum dosing may be seen by some of the community as fixing problem.	Reduce motivation for land use change.	Low	Make sure science for lake decline is available to public and especially landowners, support landowners in BMP and reduce impacts.
Ōhau Wall is seen as negative to iwi in the local area and downstream on Kaituna.	Negativity towards the wall operation and works.	Low	Long term consent achieved, continue to undertake effects monitoring and engage with iwi on effects and possible mitigation.
Community expectations that restoration work will prevent any algal blooms and this will occur immediately.	Complaints when blooms do occur and question the lakes programme spending when blooms occur.	Medium	Continue research around the reason for lake blooms and keep the public informed via media and good one to one response, and working with interested groups.
Access to Council information and data e.g. reports and monitoring.	If information and data is not available, people will draw their own conclusions which may be unhelpful, and lack of transparency.	High	Make live monitoring data available from monitoring buoys and lake level on the Council website. Additional reports are made available on the Council and programme website.
Some restoration actions such as land use change take many years to have a positive impact due to groundwater lags.	The landowners and public may see this as a failure if positive outcomes are not realised quickly.	High	Undertake a number of interventions in parallel with the sustainable land use change that have a more rapid response time, such as alum dosing, the diversion wall and sewage reticulation.
Climate Change is predicted to make meeting lake targets more challenging and may require more work to reduce nutrients.	It may involve going back to landowners in future for additional changes, which may be seen as negative.	High	Release WQTAG statement on Climate Change to make sure community aware of issues. Where the impact has been evaluated, ensure that this is included in future decisions such as flooding at Lake Ōkāreka.
Alum may be needed for longer than initially projected.	There might be difficulty renewing consent in the next 10 years, and loss of confidence in programme.	Medium	Continue research and monitoring around the restoration progress and predictions of recovery.
Ōhau Wall may be required for longer than 50 years.	The wall has corrosion issues and this will add cost keeping it serviceable for longer.	High	Continue to undertake programmed maintenance and regular inspections to ascertain condition and need for upgrades.

Issue	Impact	Risk	Mitigation option
Increased pressure on water courses leading to lakes, e.g. Waitangi Stream due to climate change storm frequency.	More budget may be needed to maintain water courses and minimise erosion.	High	Maintain inspections and monitoring on streams where we actively control flows to ensure we are predicting maintenance needs early.
Changes in legislation and policy that lead to increased need to improve water quality.	May lead to more stringent TLI or water quality standard. More effort and money required to meet the new needs.	High	Consider options in restoration that may over reach targets if cost is marginal.

3.2 Non-asset demand management options

The Rotorua Lakes Programme has always had some investment in this area (non-asset demand). This is basically engaging with the community, with a focus on engaging the "right" local community groups and iwi. There is always opportunity for improvement and thinking about new ways of getting better engagement. For example, we are starting to work with specific iwi groups around using their monitoring to provide impact assessment of parameters that are meaningful to them.

There is also some desire for other community members or groups to undertake monitoring. The advantage of this is that these people and groups then become more engaged, more knowledgeable and can contribute their knowledge and experience to programme knowledge and decisions.

An issue that needs to be considered here is how do we make this work ongoing so that we get good long-term data sets and long-term engagement with enthusiastic people? These people generally need some form of resourcing to ensure they can afford to do the work, which may be monitoring some aspect as well as possibly passing information on to other people. Their information/data needs to be collected by Council or other body to ensure the long-term data is not lost. We have a working example of this with a member of the Lake Tarawera community, where BOPRC pays for their travel costs in monitoring while UoW collects and stores the long term data, which now forms a long term data set used in assessing water quality changes.

More traditional means of engaging with the community around the lakes programme are also prioritised. Communications are managed by various press releases and via the dedicated Rotorua Lakes Programme website. The programme is responsible for the publication of a multitude of science and monitoring reports. These reports are made available to the public via the website. In addition, BOPRC works with the UoW to hold regular science presentations from experts and students on lake research and restoration. Public attendance at these meetings is high.

Some of the challenge in keeping a high public profile with these methods is the effort required to keep the website up to date and relevant. It is important that resourcing and commitment to reviewing the website is a Council priority.

Part 4:
Levels of Service

4 Customers and stakeholders

4.1 Who are our customers and stakeholders?

For the Rotorua Lake Operations Team, our customers are more the public and specific interested groups. Sometimes individuals can be our customers, and stakeholders where lake water quality is impacting on their part of the environment, say if flooding is having a more localised impact or an area of weed growth is impacting their lake access for example.

Our level of service is therefore more general and focused on serving the community needs. Unfortunately our work outcome is heavily influenced by environmental factors that we have no influence on, so in making Levels of Service (LOS) targets we need to be mindful that the outcomes may not be achieved at times, simply due to prevailing weather conditions or ongoing Climate Change. The following table is a listing of key LOS targets that we think we can make an operational difference to and explain why we may not have met the desired LOS if there is a failure.

Asset	Customer/Stakeholders	Values/Expectations	LOS
Lake Ōkāreka level management	Ōkāreka community	Protect homes from flooding, keep lake in operational range, and avoid low levels.	Keep lake in operational range 80%, Prevent homes flooding 100%, Avoid low levels 90%.
Waitangi Stream management	Iwi and other landowners	Minimise erosion, undertake regular inspections, repair identified damage.	Undertake inspections according to LMP frequency 100%. All erosion addressed within 2 months of identifying.
Alum dosing plants	Iwi and community	Maintain plant operation to avoid algal blooms.	Maintain in-lake P levels within protocol targets 70% time.
Ōhau Diversion Wall	Iwi and community	Operation and maintenance of wall to protect Lake Rotoiti.	Undertake 100% of programmed inspections on time. Budget for any necessary repairs in annual plan or long term plan as necessary.

Part 5:
How we manage what we have?

5 Capital planning

This has been a minor part of our plan due to the nature of the programme. Our capital projects to date have been short term interventions to provide an improvement in water quality until catchment land use changes take effect. There are no capital projects in here for the foreseeable future. The main areas of investigation are the Council commitment to reducing 50 t nitrogen from

Lake Rotorua by engineering means. A key project to contribute to the 50 t nitrogen reduction was the Tikitere nitrogen removal. However, this project got shelved as it became too expensive and there was ongoing high risk using a new technology.

Further investigations are progressing into the use of wetlands for nitrogen removal and there are also other options for nitrogen removal at Tikitere. As these projects are reviewed, capital needs will be identified and then included in future Long-Term Plans (LTPs).

5.1 Renewals project planning

The Operations Projects in the Rotorua Lakes Programme are generally short-term projects where they support improvements in water quality. As a result, our initial expectations are they will not require renewal, other than ongoing maintenance until the operation ceases. This is applicable to the Ōhau Diversion Wall and the alum dosing plants. Annual maintenance is planned and budgeted in this AMP.

As outlined in the Impact and Potential Risks Section 3.2, there is a possibility that these assets may be required for longer than initially programmed. At this stage, this is not clear and will only become evident with time as we better understand the impact and timing of land use change on lake water quality.

5.2 Business continuity

The main events that can impact the lake operations projects are climate events that bring either additional rainfall or periods of dry weather. Lake operations are responsible for managing lake level on Lake Ōkāreka and also for managing the outlet levels on Rerewhakaaitu and Rotomahana.

Operational resilience has been catered for on Lake Ōkāreka by modelling potential lake levels as a result of climate change through to 2090, obtaining long term consent to enable the outlet flows to be managed and upgrading the outlet pipeline and stream erosion protection.

The outlet levels on Rerewhakaaitu and Rotomahana are managed more passively where Council undertakes regular inspections of the lake level and outlets to ensure during potential high lake levels the outflows are not obstructed and avoid any potential erosion failure.

Alum dosing plants can be affected by faults at time. For safety reasons they are programmed to shut down automatically and alarm operator who can programme inspection and fault response. These assets are not hour critical and as long as they are inspected, and any fault resolved within two or three days then the impact of a short-term shutdown will not be reflected in water quality decline.

Bulk alum is delivered by IXOM, and they have direct access to our storage data so that they can programme deliveries in advance of tanks getting to critical low points.

5.3 Emergency management

Rerewhakaaitu water level management requires Lake Operations staff to undertake regular programmed inspections of the lake outlet and channel down to Lake Tarawera. This is to ensure that there is no apparent failure of the outlet or natural channel.

Operations staff are aware of the requirement to pass any critical information on to the Regional Council Engineer if any problem is identified. A full management plan on the details of inspection and reporting process is available.

During high rainfall events operations staff will be called upon to ensure Lake Ōkāreka is managed in advance of reaching critical levels to protect property surrounding the lake. A management plan is available for guidance and outlet structures have been recently upgraded to ensure 1:100 year event is catered for.

Part 6:
Financial planning

6 Financial plans

Draft Rotorua Lakes financial estimates 2021 – 2031 (uninflated)

	2021/22 $000	2022/23 $000	2023/24 $000	2024/25 $000	2025/26 $000	2026/27 $000	2027/28 $000	2028/29 $000	2029/30 $000	2030/31 $000
Operating revenue										
Targeted rates	3,385	3,310	3,426	3,303	3,308	3,309	3,298	3,292	3,282	3,277
General funding	3,589	3,713	3,916	4,012	3,775	4,016	3,527	3,604	3,666	4,007
Operating grants and subsidies	3,402	1,873	1,850	1,850	1,850	2,205	-	-	-	-
Total operating revenue	**10,377**	**8,897**	**9,193**	**9,164**	**8,934**	**9,530**	**6,826**	**6,896**	**6,948**	**7,284**
Operating expenditure										
Other Operating Costs	9,740	7,902	7,875	8,086	7,871	8,579	4,167	4,165	4,164	4,122
Finance costs	367	380	408	433	436	446	410	376	347	318
Depreciation and amortisation	956	956	956	940	939	938	909	796	796	686
Sub total expenditure	**11,063**	**9,237**	**9,239**	**9,459**	**9,246**	**9,963**	**5,486**	**5,336**	**5,306**	**5,127**
Corporate Costs	1,021	1,016	1,029	1,011	1,011	1,028	991	986	978	971
Total expenditure	**12,084**	**10,253**	**10,268**	**10,470**	**10,256**	**10,991**	**6,477**	**6,323**	**6,284**	**6,098**
Net deficit (surplus) to fund	**1,707**	**1,357**	**1,075**	**1,306**	**1,323**	**1,460**	**(349)**	**(573)**	**(664)**	**(1,186)**
Funding required										
(Increase) / decrease in reserves	1,707	1,357	1,075	1,306	1,322	1,461	(349)	(572)	(663)	(1,186)
Total operating funding	**1,707**	**1,357**	**1,075**	**1,306**	**1,322**	**1,461**	**(349)**	**(572)**	**(663)**	**(1,186)**
Capital										
Lake Okareka Pipeline Upgrade	65	-	-	-	-	-	-	-	-	-
Lake Rotorua enhancement/protection	196	2,099	2,048	2,000	-	-	-	-	-	-
Phosphorus Locking (P Locking) Plant	254	-	-	-	44	-	-	-	-	-
Total capital expenditure	**515**	**2,099**	**2,048**	**2,000**	**44**	**-**	**-**	**-**	**-**	**-**
Capital funding										
Grants, subsidies and insurance revenue	98	1,050	1,050	1,100	-	-	-	-	-	-
Increase in debt	417	1,049	998	900	44	-	-	-	-	-
Total capital funding applied	**515**	**2,099**	**2,048**	**2,000**	**44**	**-**	**-**	**-**	**-**	**-**

Part 7: **Assumptions**

7 Overview

Statutory financial reporting requires Bay of Plenty Regional Council to revalue its fixed assets at least every five years. Bay of Plenty Regional Council undertakes to value the Rotorua Lakes Programme assets every three years. An asset valuation is to be used for asset management (calculating long-term asset renewal projections, where projects are on-going), identifying loss of service potential (depreciation), and for financial reporting purposes.

New Zealand International Financial Reporting Standard (NZIAS16) applies to all lake operations infrastructure assets considered in the scope of this valuation for the general purpose of financial reports.

All infrastructure assets valued have been done so in accordance with the methodology prescribed in the New Zealand Infrastructure Asset Valuation and Depreciation Guidelines 2006.

The last valuation was undertaken for Bay of Plenty Regional Council on 30 June 2018. The asset will be revalued before 30 June 2021 and builds on valuations undertaken previously.

7.1 Data and input assumptions

This AMP has been prepared based on the following assumptions:

- Currently available information,
- Condition assessments completed to date,
- Existing levels of service,
- Financial forecasts completed for 10 years.

7.2 Financial forecasting assumptions

The following lake operations asset management assumptions have been made in preparing the 10-year expenditure forecasts:

- Asset information is as complete as possible at 31 March 2021. This is based on the valuation data and report compiled by the Lake Operations Team.
- Only lake operations assets have been valued.
- The determination of asset replacement value, depreciated value, and renewal projections are based on the valuation and condition assessment data as at 31 March 2021.
- All projected expenditure is stated in dollar values as at 31 March 2021, with no allowance made for inflation.
- Operational costs are based on historical expenditure, asset maintenance requirements and assessed costs.
- Maintenance and operations allocations are largely based on maintaining current service levels.
- The depreciation has been calculated on a straight-line basis.
- Council staff have developed the AMP. Formal consultation will be undertaken with the LTP process.
- It is assumed that regulations relating to lake operations will remain essentially the same over the planning period (i.e. 10 years to March 2031).

Part 8:
Audit and improvement

8 Our approach to this

The Lake Operations approach is to maintain all authorisations for its core activity in one place. These are recorded in Appendix 2 of this AMP. Each authorisation is supported by operational management plans that show how statutory conditions will be achieved and monitored as well as addressing other non-statutory requirements necessary to ensure appropriate management of each asset and maintain necessary data for decision-making and operations.

8.1 Improvement plan

The focus of operational staff falls into four areas:

1. Ensure compliance with statutory consents and be able to demonstrate compliance if audited (this includes maintenance of necessary spread sheets and data bases for data collection),
2. Ensure data is collected that can be analysed and utilised to make informed decisions on operation of lake water quality interventions, such as alum dosing rates to each lake,
3. Aim to optimise operation of all assets to achieve where possible maintenance of RMA Natural Resource Plan water quality targets as TLI,
4. Ensure assets are maintained to a good standard so that breakdowns or faults are avoided.

Appendices

Appendix 1:

List of action plans completed pursuant to Natural Resource Plan

Lake Ōkāreka Catchment Management Action Plan 2004 Lake Ōkaro Action Plan 2006

Lake Rotoehu Action Plan 2007 Lake Rotomā Action Plan 2009

Draft Lake Rotorua and Rotoiti Action Plan 2009 Lake Tikitapu Action Plan 2011

Lake Ōkataina Action Plan 2013

Rerewhakaaitu Catchment Plan 2013 (Completed by Rerewhakaaitu Farmers)

Tarawera Lakes Restoration Plan 2015

Appendix 2

Management plans and resource consents associated with each structure

Each document listed in this appendix is link electronically to a BOPRC file showing the location of each document.

Ōhau wall:

Resource Consent RM16-0527

Structural Management Plan

Ohau Channel Diversion Wall Structural Maintenance Requirements

Alum dosing Plants:

Resource consent Utuhina 65321

Operations and Maintenance Manual Utuhina

Resource Consent Puarenga 65559

Operations and Maintenance Manual Puarenga

Resource Consent Rotoehu 65966

Operations and Maintenance Manual Rotoehu

Trout Barrier:

Resource Consent 67041

Monitoring Buoy:

Contract and specifications for service

***Ōkaro wetland Structures*:**

Resource Consent 62891

Management Plans (In preparation)

Rotomahana Outlet:

Resource Consent 20105

Lake Rotomahana Dam Monitoring Procedure

Rerewhakaaitu Outlet:

Lake Rerewhakaaitu Outlet Inspection and Maintenance Regime

Appendix 3

Statement on climate change, lakes and water resources, Rotorua region – May 2020

Water Quality Technical Advisory Group (Rotorua Lakes)

Statement on climate change, lakes and water resources, Rotorua region May 2020.

1. Increases in concentrations of atmospheric carbon dioxide (CO_2) attributable to human activities are almost certainly responsible for increases in temperature from global climate change. The future climate will manifest as rising air temperature and alterations in the timing and distribution of rainfall.

2. Climate models provide the best quantitative tools to predict the extent of climate warming. Air temperature, averaged across a range of models and for seven locations across New Zealand, is projected to increase by 0.7 to 3.7°C by 2110. The variation represents model outputs from four different CO_2 emission pathways.[1]

3. Rotorua is in a region of moderate rainfall, with climate change projections indicating small increases in annual rainfall intensity based on dry regions of New Zealand becoming drier and wet regions becoming wetter. Seasonality of rainfall is expected to change, reinforcing wet seasons (winter-spring) and dry seasons (summer-autumn), and there will be increased frequency of extreme (e.g., 1-in-100 year return period) rainfall events. The frequency of large-scale climate oscillations like the El Niño-Southern Oscillation (ENSO) may be altered by climate warming.

4. Floods in the Bay of Plenty Region may be most damaging when short-term (hour-to-day) extreme rainfall events are interspersed within periods of more prolonged rainfall leading to saturated soil conditions. These events occur in a setting of different phases of the Interdecadal Pacific Oscillation (IPO) and ENSO. For example, coincidence of the La Niña phase of the ESNO, a negative phase of the IPO, and cyclones could lead to extreme storms.

5. Adaptation to climate change requires a *knowledge-to-action* approach that ensures anticipatory implementation of plans and policies that protect natural capital, infrastructure and assets, as well as human life. Government, NGOs and businesses will need to proactively engage with the community, build shared understanding of issues and the need for action, and allocate resources according to identified risks and the range of possible scenarios.

6. Increased flooding risk is one of the most important potential outcomes of climate change. It may compromise flood stopbanks, inundate built infrastructure around lakes and rivers, and cause agricultural economic losses. Washouts have the potential to destroy restoration actions related to establishment and protection of riparian areas, wetlands and detention bunds. Avoiding such occurrences requires strong alignment of preventative actions amongst property owners, businesses, and local and regional government.

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[1] Scenarios are based on the Intergovernmental Panel on Climate Change Fifth Assessment report. Future climate projections across several different models and for seven stations in New Zealand span a wide range of air temperature increases of 0.3–5.0 °C by 2110 compared with a baseline period of 1995. This variation corresponds to outputs using different representative concentration pathways of CO_2 from several different models. See: https://ccii.org.nz/.

7. Flood mitigation actions may include: optimising grass cover in pastoral systems; establishing well-designed networks of detention bunds and wetlands; provision of forest cover to mitigate rainfall whilst being vigilant with forest harvesting methods and timing; good land use and floodplain management plans including avoiding placement of infrastructure in flood-prone areas; and adoption of green infrastructure (e.g., vegetated swales and stormwater ponds) in preference to hard surfaces. Some of these actions may also be beneficial for water storage provision during drought.

8. Heavy rainfall and associated runoff increase sediment erosion and losses of particulate phosphorus. Their effect on nitrogen delivery is more variable but increased losses are also expected. Complicating factors include: how additional atmospheric CO_2 stimulates plant production and nutrient uptake; increased plant growth and microbial degradation rates from rises in temperature; and interactions of temperature with dissolved organic carbon delivery.

9. The effects of climate change on lake ecosystems may be profound due to increased water temperature and vertical stratification. Shallow polymictic lakes (Rotorua, Rotoehu and Rerewhakaaitu) are most vulnerable because a warmer climate will increase the frequency and duration of intermittent stratification events, which will increase the probability of bottom-water anoxia, nutrient releases from bottom sediments and availability of these nutrients to enhance algal growth upon re-mixing. The deeper monomictic lakes will have longer periods of seasonal stratification, which will also increase the risk of bottom-water anoxia (e.g., Lake Tarawera) or extend the duration of anoxia (e.g., Lake Rotoiti). There is a small probability that some deep lakes may not mix at all in winter, as noted in Lake Taupō in particularly warm winters.

10. Cyanobacteria (blue-green algae) have a number of physiological adaptations that provide them with a competitive advantage over other phytoplankton in a warming climate. For a given nutrient concentration it is likely that there will be increased incidence of blooms and toxin production by cyanobacteria. There are likely to be other 'winners' and 'losers' amongst the flora and fauna of aquatic systems under climate change. Several noxious alien invasive species (catfish, certain weed species, mosquito fish) are native to sub-tropical and tropical regions, and risks of their spread and growth are more likely in a warming climate. Increased surveillance, control and eradication efforts are likely to be necessary for these freshwater invaders. Conversely, habitat of trout, a 'cold-water' fish, may be diminished.

11. The Trophic Level Index (TLI) is used as the primary indicator of water quality for the Rotorua lakes and is linked to Lake Action Plans[2]. Based on model simulations for some lakes, TLI values can be expected to increase by approximately 0.2 units by 2090, more so in polymictic lakes. The Technical Advisory Group recommends a forward-looking approach to adopt emerging science and best-practice frameworks so that nutrient loads are proactively managed as an anticipatory action to ensure that TLI targets are met in the future.

[2] Bay of Plenty Regional Water and Land Plan (2014). Amended as required by National Policy Statement for Freshwater Management 2014.

BAY OF PLENTY
REGIONAL COUNCIL
TOI MOANA

Maritime Asset Management Plan 2021-2031

Bay of Plenty Regional Council
5 Quay Street
PO Box 364
Whakatāne
New Zealand

Contents

Part 1:
Executive summary

This Asset Management Plan (AMP) describes how the Bay of Plenty Regional Council (BOPRC) currently manages and maintains approximately $1.5 million worth of Maritime assets on behalf of the Bay of Plenty Region. These assets include specific navigational aids (lights, beacons, buoys, markers and signs).

The Maritime Operations Activity ensures navigation safety and Maritime oil spill response is provided 24/7 in the Bay of Plenty region as required by regulations and Council requirements.

Assets covered under this AMP

Asset type	No.	Value (ORC)
Beacons	260	$774,221
Buoys	373	$434,721
Markers	75	$83,474
Signs	130	$258,872
Total	**838**	**$1,551,288**

Part 2: Introduction

2.1 Purpose and scope of the AMP

The purpose of this AMP is to outline and summarise the Regional Council's long-term asset management approach for the delivery and maintenance of Maritime Operations Activity. The focus of this AMP is primarily the Regional Council owned aids to navigation (beacons, buoys, markers and signs) assets, with references made to the wider activity to provide context for the reader. The AMP is not written to capture how the full breadth of the Maritime Operations Activity is managed. The AMP also demonstrates compliance with respective legislation requirements and responsibilities. It aims to:

- Ensure environmental, economic and financial sustainability.
- Recognise and balance risk.
- Ensure the appropriate level of service required is provided at the lowest long-term costs.
- Improve knowledge of the Maritime assets and its service.

This AMP should be read in conjunction with the BOPRC's Strategic Asset Management Plan (SAMP) and Long Term Plan (LTP), and fulfils the requirements of Schedule 10 of the Local Government Amendment Act 2002.

This AMP provides the detail underlying the LTP, and ideally will also be completed or updated every three years.

This AMP covers a 10-year timeframe.

2.2 Overview of services covered

2.2.1 What do we do?

The navigable waters of the Bay of Plenty region includes the coastal areas to 12 nautical miles out to sea, the navigable waters of rivers, harbours, estuaries, and the Rotorua lakes. Within these waters, the Regional Council is the statutory and regulatory harbour authority, with responsibility for navigation safety, managed by the Harbourmaster and the Maritime Team. These responsibilities include:

- Maritime emergency response.
- Marine oil pollution response, mitigation and clean up at Tier II level. Management of Tier I sites.
- Support Civil Defence response.
- Regulation of commercial shipping and recreational boating safety through the Maritime Transport Act, and Bay of Plenty Regional Navigation Safety Bylaw.
- Provision and maintenance of aids to navigation.
- Pilotage, licensing and exemptions.
- Administration of the swing moorings.
- Education including boat shows and aquatic events displays, publications and brochures.

- Removal of hazards to navigation, including driftwood and logs.
- Maintaining the Tauranga Port and Harbour Safety Management System.
- Administration of all the legislation governing use and behaviour on the regional waters. These are: the local bylaws, Maritime Transport Act 1994, Resource Management Act 1991, and the Local Government Amendment Act.

The region's harbours and navigable waterways are shown in Figure 1 below.

Figure 1 Map of Bay of Plenty Region

2.2.2 Why do we do it?

The Maritime Operations Activity is an important service provided to the community, for both the recreation and economic activity that it helps promote. The Maritime Operations Activity ensures navigation safety and Maritime oil spill response is provided 24/7 in the Bay of Plenty region as required by regulations and Council requirements. This ensures that maritime related recreational and commercial activities are able to be safely undertaken.

The latest Community Outcomes were adopted for the LTP 2021-2031 and support Council's Vision and Mission. The levels of service for the Maritime Operations Activity links to the Safe and Resilient Communities Community Outcome.

To support this Community Outcome, the Maritime Operations Activity contributes in the following ways:

Table 1: How the Maritime Operations Activity supports Council's Community Outcomes

Community Outcomes	How the Activity contributes to Community Outcomes	Objectives
Kia haumaru, kia pakari te hapori Safe and Resilient Communities	Maritime users and the maritime environment are kept safe, by: • Safe navigation • Education and enforcement • 24/7 Emergency response to spills	• We provide systems and information to increase understanding of natural hazard risks and climate change impacts • We ensure our navigation aids are in good condition and maintained • We support community safety through navigation safety and safe boating practices • Ensure compliance with the Navigation Safety Bylaws through education and enforcement • We work with our partners to develop plans and policies. We lead and enable our communities to respond and recover from an emergency

Part 3:
Assets we own

3.1 Overview

Bay of Plenty Regional Council currently manages and maintains approximately $1,551,287 worth of maritime assets on behalf of the Bay of Plenty region. The figure presented is the optimised replacement cost for the assets and is sourced from the 2018 Maritime Asset Revaluation. These assets include moorings and specific aids to navigation (beacons, buoys, markers and signs). A detailed description of each of the asset types can be found in Appendix 1.

Table 2: Maritime Operations Asset Summary

Maritime Assets	Optimised Replacement Cost (ORC)	Optimised Depreciated Replacement Cost (ODRC)	Annual Financial Depreciation	No. of Assets
Kaituna River - Signs Total:	$10,028	$4,927	$850	5
Little Waihī/Maketū - Signs Total:	$10,711	$5,356	$893	6
Offshore - Beacons Total:	$12,450	$3,112	$519	2
Pāpāmoa - Markers Total:	$2,226	$556	$93	2
Pāpāmoa - Signs Total:	$3,256	$1,628	$271	2
Tauranga Harbour - Beacons Total:	$761,771	$345,176	$33,327	258
Tauranga Harbour - Buoys Total:	$116,911	$53,249	$4,892	58
Tauranga Harbour - Markers Total:	$14,469	$3,608	$603	13
Tauranga Harbour - Signs Total:	$75,764	$37,882	$6,314	39
WESTERN BOP TOTAL:	**$1,007,586**	**$455,494**	**$47,762**	**385**
Rotorua Lakes - Buoys Total:	$317,810	$94,371	$9,310	315
Rotorua Lakes - Markers Total:	$66,779	$19,994	$1,949	60
Rotorua Lakes - Signs Total:	$134,034	$96,333	$10,192	67
ROTORUA LAKES TOTAL:	**$518,622**	**$210,699**	**$21,452**	**442**
Whakatāne - Signs Total:	$25,079	$20,195	$1,835	11
EASTERN BOP TOTAL:	**$25,079**	**$20,195**	**$1,835**	**11**
BOP REGION TOTAL	**$1,551,287**	**$686,388**	**$71,048**	**838**

Source: 2018 Maritime Asset Revaluation

3.2 Additional notes on assets not listed above

Bay of Plenty Regional Council is one of the key providers of aids to navigation in the region. However, it is important to note that other providers of aids to navigation include port companies, marina operators, marine farms and other facility providers such as city and district councils.

In the Tauranga Harbour, BOPRC and Port of Tauranga (PoT) have a Memorandum of Understanding (MOU), and this clearly defines that PoT is responsible for erecting and maintaining all aids to navigation in the commercial shipping channel. Bay of Plenty Regional Council is responsible for erecting and maintaining all other aids to navigation in Tauranga Harbour.

In Whakatāne, the Whakatāne District Council is responsible for the aids to navigation within the Whakatāne Port.

Maritime New Zealand owns most of the oil spill response equipment which Council stores and maintains. The Maritime Team own a variety of spill response equipment including a bow mounted oil skimmer which the purpose built response vessel Awanui has been specifically designed to carry.

In total there are 492 moorings of which Council owns seven (primarily for emergency situations). All of the remaining moorings are privately owned, with Council issuing the mooring licences.

Maritime own and operate a range of mobile plant equipment that is not included in the fixed assets shown above. These comprise the oil skimmer, drone, bar cameras, and Body Worn Video cameras. Further information on these can be found in Appendix 1.

Maritime operate a number of vessels and jet skis which are held under the Property Plant Register.

3.3 Asset condition and performance

In late 2016 the Maritime Team started using Accela to manage infrastructure assets. Accela is a platform that streamlines the Council-wide use of application/programs, including asset management. The change to Accela involved migrating the existing BOPRC data into the new platform. The data migration process into Accela did expose minor errors which are being corrected as part of the continuous improvement process. This, combined with staff becoming more proficient with Accela, means the data robustness will continue to improve in the future.

Keeping aids to navigation operating is an important task, and Maritime Operations use best practice by following the Maritime New Zealand Aids to Navigation Guidelines. The condition of our aid to navigation assets are assessed on a six monthly rotation basis where they are given a rating of 1 to 5.

Condition Rating	Description
1	Excellent
2	Very Good
3	Good
4	Poor
5	Very Poor

The checklist below is used when assessing an aid to navigation and then an overall rating is given.

Please add all maintenance required and or completed on the feature	Status: Completed
Light	Status: Not Assessed
Spikes	Status: Not Assessed
Solar	Status: Not Assessed
Fabrication	Status: Not Assessed
Top Mark	Status: Not Assessed
Label	Status: Not Assessed
Signs	Status: Not Assessed
Stickers	Status: Not Assessed

Where a defect is identified and/or a lower condition score given, these are remedied as soon as practical and often immediately by Maritime staff. This is reflected in the bar graph below where the majority of assets are sitting in the 1 to 3 rating category.

The condition of the aid to navigation assets at the time of writing this plan, are displayed below in Figure 2.

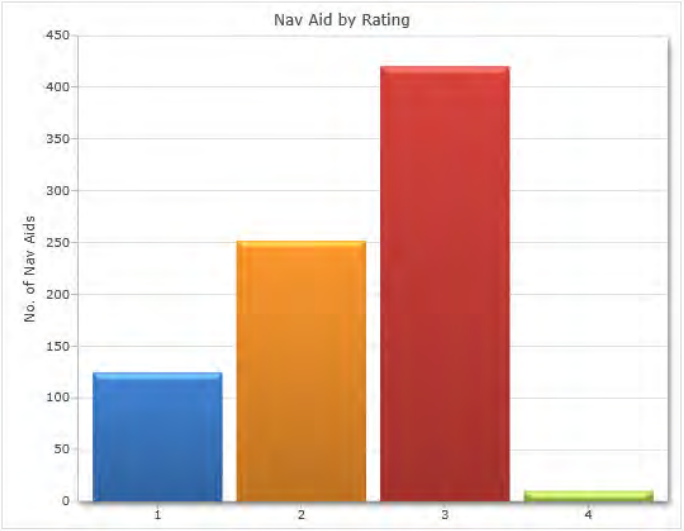

Figure 2 Navigation aid condition rating

In addition to the assessment criteria above, Maritime staff will observe environmental changes such as shifting sandbanks and ensure that any aids to navigation are correctly positioned for their intended purpose.

3.4 Overview of issues

There are currently no wider issues related to the overall condition and performance of the aid to navigation assets. It is expected that ongoing environmental changes, such as movement of channels, will continue, and Maritime staff will be able to respond as required.

Every year there are a small number of aids to navigation that are damaged as a result of either vandalism or poor boating practices. With continued population growth, and the popularity of recreational boating and other water based activities also increasing, this may impact on asset condition where accidental damage caused by users could increase. However, this potential increase is anticipated to be minor.

Part 4:
Growth and demand

4.1 Overview of drivers

4.1.1 Population changes

An increasing population leads to more people and more variety of activities on the water. There is potential for this to result in an increase in conflict between the different water activities (jet skis, skiers, wakeboarders, yachters, fishers, commercial activities – shipping, cruise ships, ferries). To ensure that water users are following the Bay of Plenty Navigation Safety Bylaw 2017, Maritime Operations maintains a 12 hour per day, 7 day a week, on water patrol presence from
mid-December to mid-February every year.

Population changes will impact the scale and breadth of education material provided by Maritime to help educate maritime users. This will impact the use of designated areas (governed by Bay of Plenty Navigation Safety Bylaw 2017) that Maritime Operations provide and maintain, and therefore impact the requirement for enforcement. As such, a general increase in population will require an appropriate increase in Maritime Operations Activity Budget over time, to respond to these impacts and maintain the level of service provided. In particular, the increased use of designated areas and navigable channels could require an increase in marker assets. Maritime Operations is currently well resourced to carry out the required patrols for bylaw enforcement and education.

4.1.2 Climate Change

Climate Change is not expected to directly impact the activity. Maritime Operations are not mandated to maintain or dredge certain channels, so therefore increased sea levels and changes to the coastal environment will not have a significant impact on the activity. Maritime is however, tasked with clearing hazards in and around coastal environments. Climate Change is likely to increase the frequency and magnitude of extreme rainfall events that lead to erosion and deposition of eventual maritime hazards to coastal environments.

An increase in extreme rainfall events will likely lead to an increase in debris, such as trees, that are washed out to the coast. This therefore, will require an increase in hazard removal tasks for the Maritime Operations activity. Currently Maritime have a contract in place for 24/7 on-water response to remove navigation hazards/debris in the southern end of the Tauranga Harbour, out to the harbour limits areas if required.

4.1.3 Technology

Customers are expecting better quality information when it comes to real time monitoring of conditions. This is in line with broader population expectations across all facets of modern life, when it comes to the availability of real time information. The cost of the technology that enables this is now also more affordable, and therefore both components drive the push for Maritime to include new assets such as bar cameras and wave buoys.

The scale to which this technology is implemented could have an impact on capital costs. However, it is expected that the implementation of this technology will be at a gradual pace.

The broader impact of the proliferation of new technology is that users are enabled to better make informed decisions regarding boat and water safety.

4.1.4 Motiti Protection Areas

On 24 April 2020, the Environment Court released its final decision which directs BOPRC to implement new rules within its Regional Coastal Environment Plan to protect three reef systems near Motiti Island, and complete scientific monitoring to inform future integrated marine management solutions.

The new rules will create three protection areas (called the Motiti Protection Areas) around Motiti Island, where the taking of all plants and animals (including fish and shellfish) would be prohibited due to their significant marine biodiversity, landscape and cultural values. Those three areas comprise of Ōtaiti (Astrolabe Reef) including Te Papa (Brewis Shoal), Te Porotiti, and O karapu Reef, Motuhaku Island (Schooner Rocks) and Motunau Island (Plate Island).

The impact of this change is that there is a potential for an increase in staff requirements to meet this additional area of patrolling and associated management activities.

4.1.5 Ōpōtiki Harbour development

The existing Ōpōtiki Harbour entrance is limited to smaller boats, which can only cross the bar in calm conditions. The Ōpōtiki Harbour Development Project will provide access for larger boats by creating an entrance that is navigable in all but the worst conditions, enabling Ōpōtiki to become a service and processing base for aquaculture and other marine related industries.

The Maritime Operations Activity is yet to determine the impact on the team and whether another vessel is required. There will be an increase in staff time required to manage the larger harbour. The current timeframe projections for this development coming online is three to five years. As such, the growth and demand impacts on the service have not been included in this AMP – the projected completion date of the project is mid to late 2023. However, as further information becomes available, Maritime will track how this may impact the activity.

4.1.6 Growth and demand summary

The operational impact of each of the demands outlined above are predominantly on non-asset related parts of the activity. Any increases in the number of navigational aids and markers is expected to be able to be handled on an ad-hoc basis.

4.2 Demand projects

There are no projects proposed to specifically respond to any of the demands outlined above.

4.3 Non-asset demand management options

4.3.1 Demand management options

Maritime maintains a patrol presence over summer which functions as a non-asset demand management tool. This option will remain a part of Maritime's management of the service.

4.3.2 Demand Management Programme

There are no new, non-asset based, demand management projects proposed.

Part 5:
Levels of service

5.1 Customers and stakeholders

5.1.1 Who are our customers and stakeholders?

The Maritime Operations' customers for aids to navigation are predominantly recreational and commercial water users, navigating the waters within the area overseen by Maritime Operations. Customers receive a direct benefit from the Maritime assets, while stakeholders share an interest in the assets and/or services they provide.

5.1.2 What do they value?

Recreational and commercial boat users value the ability to confidently navigate the waters safely. They also increasingly value having real time information available, to enable them to make safe decisions before heading out on the water.

5.1.3 Limitations on meeting expectations

We have a limited number of patrols available through our budget and an immense area to cover, there is often an expectation that we can be everywhere at once and this is not possible.

5.2 Customer Level of Service Statement and performance measures

5.2.1 How we determine performance

The Level of Service (LOS) customer measures and performance targets have been developed through historical trends of the service, and staff judgement and experience. These measures are also linked into Council's wider Community Outcomes with 'Safe and resilient communities' being the sole outcome that the Maritime Operations Activity contributes to directly. The SAMP provides further detail on how LOS is determined from a Council wide organisation level.

5.2.2 Performance measures

The table below shows the LOS statements and associated customer measures for the Maritime Operations activity. The table outlines how the service has been performing, and also the future performance targets for the next three years.

Customer values	Service attributes	LOS (Level of Service) Statement	Customer measures	Result for 2020/21	Performance targets		
					2021/22	2022/23	2023/24
Maritime users and the maritime environment are kept safe	Emergency Response	Council will respond to spill events in a timely manner	Percentage of Tauranga spills responded to within 30 minutes	100%	95%	95%	95%
			Percentage of spills (outside Tauranga) responded to within two hours	100%	95%	95%	95%
	Enforcement and Navigation	Council will maintain navigational aids to a good standard	Percentage of navigation aids rated 'good' quality or higher	100%	90%	90%	90%

A key LOS for the Maritime Operations Activity is that navigation hazards and risks in the aquatic environment are minimised. The key Performance Target for this customer measure is to have 90% of the navigation aids rated as being good quality (rating of 3) or higher. As can be seen, this target is currently being met.

The other key LOS is in relation to spill emergency response timeliness. For spills both in Tauranga and outside of Tauranga, Maritime Operations are currently meeting and exceeding the performance target. This is the key customer measure in which the activity tracks how they are keeping the maritime environment safe.

These customer measures and performance targets have been distilled into a one page Annual Service Plan for Maritime Operations (09-10-2020 Service Plan Maritime).

5.3 Issues

There are no future LOS issues identified for this AMP.

Part 6:
Capital planning

6.1 Renewals and Level of Service project planning

The Maritime Operations activity is a mature activity that has a relatively static capital spending regime associated with the navigational aid assets. A number of future projects will proceed in the next five year period to help meet LOS obligations. This regime of capital spending for both renewals and LOS projects is based on historical patterns of capital expenditure, and staff experience and knowledge of the assets. The adequacy of these historic budgets is reviewed by assessing the anticipated ability of the team to continue maintaining the asset portfolio at or above the minimum condition requirements.

These projects include:

Table 3: Proposed maritime projects 2021-2031 (uninflated)

Project	Cost	Commissioning year
Navigational assets	$111,000	2021/2022
Navigational assets	$266,000	2022/2023
Navigational assets	$110,000	2023/2024
Navigational assets	$110,000	2024/2025
Navigational assets	$265,000	2025/2026
Navigational assets	$110,000	2026/2027
Navigational assets	$110,000	2027/2028
Navigational assets	$264,000	2028/2029
Navigational assets	$110,000	2029/2030
Navigational assets	$107,000	2030/2031

The above projects are all renewals-based capital expenditure. Any LOS related capital expenditure is likely to be for assets such as new bar cameras. This is currently not an area that requires investment.

6.2 Growth project planning

Growth project planning is not applicable, as it is not a driver for implementing capital investment in the Maritime activity.

Part 7:
Operational and maintenance planning

The Maritime Operations Team undertakes regular operations and maintenance activities across the navigational aid assets. As outlined earlier in Section 3.3, a six monthly inspection regime is undertaken by the team. This ensures that each of the assets is regularly inspected for condition defects, with any required maintenance usually being undertaken on-site. Any additional maintenance over and above that which can be immediately remedied, will be carried out on an ad-hoc basis. We also respond to information provided by the boating public when aids to navigation are deficient.

Staff use experience and judgement to determine what type of maintenance is required based on the outcome of the inspection. Buoys require regular maintenance including water blasting to remove growth from the buoy and chain/rope. In addition, buoys are lifted to inspect for wear, and if required the shackles, chain, or chafed rope are replaced. The fixed beacons and signs require minimal maintenance with the main focus being keeping the signage information and top of the beacon, whether painted or solar lighting, clean and visible.

7.1 Operational and maintenance projects

There is no programme of operational and maintenance projects proposed for this activity.

Part 8:
Risk

8.1 Tactical risk register

A Risk Register of risks affecting the Maritime Operations Activity has been developed in consultation with key staff. The Port and Harbour Safety Code risks are available through Quantate, operational risks are detailed in Vault and the BOPRC Maritime Transport Operator Plan. The registers highlight the most significant residual risks faced by the Activity.

8.2 Critical assets

The criticality of aids to navigation has been assessed based on the traffic each navigable channel experiences. Based on the Maritime New Zealand Aids to Navigation Guidelines, this has resulted in a two-tiered criticality system where higher priority/higher traffic density navigation aids have a next day repair target, whereas all other assets have a two to three day repair target. Both Mayor Island and Motiti Island light beacon navigation aids also have a next day repair target, owing to the importance of these locations for commercial activity.

8.3 Business continuity

Maritime Operations maintains a Business Continuity Plan (BCP) that is updated periodically. The latest 2020 BCP was modified for the Covid-19 pandemic response during the different levels of lockdown imposed by Central Government.

Business Continuity Plans encompass planning, preparedness and related activities to ensure that an organisation's critical business functions will either continue to operate despite serious incidents or disasters that might otherwise have interrupted them, or will be recovered to an operational state within a reasonably short period.

The base BCP states the priority levels for different tasks undertaken by the Maritime Operations Team. In terms of assets, this means that maintenance and repair of navigation aids is considered a high priority with a 24 hour response timeframe at all times. This task was also considered an ‘essential service’ during the recent Covid-19 lockdown. A skeleton crew was maintained to provide this service, while approximately half of the team assisted Civil Defence during the incident response.

8.4 Emergency management

Maritime Operations provides assistance to emergency services (predominantly Police and Fire) to any maritime related emergency. The Harbourmaster has legislative responsibility to respond to port emergencies as well. As part of this service, a harbourmaster is on call 24/7 to respond as required.

Part 9:
Financial planning

9.1 Financial plans

The table below contains the Maritime Statement of Financial Performance, which incorporates the projected income and funding sources, to fund operational and capital expenditure for the next 10 years (2021–2031). This table includes both operations and maintenance funding as well as capital funding.

Table 4: draft Maritime financial estimates 2021-2031 (uninflated)

	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Operating revenue										
General funding	2,574	2,491	2,574	2,632	2,717	2,808	2,900	2,998	3,052	3,348
Operating grants and subsidies	60	60	60	60	60	60	60	60	60	60
Fees and charges	1,058	1,054	1,051	1,048	1,045	1,044	1,042	1,043	1,045	1,025
Other revenue	66	66	66	66	66	66	65	65	65	64
Total operating revenue	**3,758**	**3,671**	**3,750**	**3,806**	**3,888**	**3,977**	**4,067**	**4,167**	**4,223**	**4,497**
Operating expenditure										
Other Operating Costs	2,319	1,918	1,916	1,915	1,914	1,912	1,911	1,910	1,909	1,885
Finance costs	7	11	14	16	19	23	24	27	30	31
Depreciation and amortisation	87	91	86	88	84	91	93	97	103	107
Sub total expenditure	**2,414**	**2,020**	**2,016**	**2,019**	**2,017**	**2,026**	**2,028**	**2,034**	**2,042**	**2,023**
Corporate Costs	1,308	1,381	1,391	1,384	1,394	1,402	1,387	1,386	1,367	1,360
Total expenditure	**3,721**	**3,401**	**3,407**	**3,403**	**3,411**	**3,427**	**3,415**	**3,420**	**3,409**	**3,383**
Net deficit (surplus) to fund	**(37)**	**(270)**	**(344)**	**(404)**	**(478)**	**(550)**	**(652)**	**(747)**	**(814)**	**(1,113)**
Funding required										
(Increase) / decrease in reserves	(37)	(270)	(344)	(404)	(478)	(550)	(652)	(747)	(814)	(1,113)
Total operating funding	**(37)**	**(270)**	**(344)**	**(404)**	**(478)**	**(550)**	**(652)**	**(747)**	**(814)**	**(1,113)**
Capital										
Navigational Assets	111	266	110	110	265	110	110	264	110	107
Total capital expenditure	**111**	**266**	**110**	**110**	**265**	**110**	**110**	**264**	**110**	**107**
Capital funding										
Grants, subsidies and insurance revenue	-	-	-	-	-	-	-	-	-	-
Increase in debt	111	266	110	110	265	110	110	264	110	107
Total capital funding applied	**111**	**266**	**110**	**110**	**265**	**110**	**110**	**264**	**110**	**107**

9.2 Funding strategy

Operational funding for the Maritime Operations Activity is sourced 60% to 80% from general funds, 20% to 40% from fees and charges and 0% to 20% from operating grants. User fees for mooring charges were set at the level that fully recovered the costs of the activity, however, this is under review. Port levies are set to recover approximately 40% of the cost of the Maritime Operations Activity in Tauranga, estimated to be the percentage of the activity related to the commercial activity.

Note it is proposed to increase the percentage of cost recovery via port dues for Tauranga related activities in Y1, from 40% to 60%. Pending the outcome of the cost recovery effort, further increases for Y2 may be considered.

Capital funding is required when purchasing and maintaining maritime safety equipment to provide the services of the programme. The broader Council Financial Strategy for capital funding can be found in the SAMP.

Operational costs for Maritime Operations are estimated to be around $3,900 million per annum.

Part 10:
Assumptions

The Maritime Operations AMP does not have any specific assumptions over and above what can be found in the SAMP.

Part 11:
Audit and improvement

11.1 Our approach to this

The purpose of the improvement plan is to identify and develop improvements to the AMP processes, to ensure the AMP is fit for purpose and effective. Our approach to this is to use the cycle of AMP monitoring, review, revision and audit every three years to formally identify any improvements. In addition, Maritime Operations identify improvements between formal reviews on an ad-hoc basis, by discussing new ideas and areas for improvement on the job.

Further detail on Council's approach to audit and improvement can be found in the SAMP.

11.2 Past audits

The Maritime Operations activity undertakes informal continuous improvement audits of management processes on an ad-hoc basis. Previous improvements include bringing the majority of the aid to navigation maintenance activities
in-house, whereas historically these had been contracted out. The basis for this improvement was that the Maritime Operations Team would have (and have since gained) a better hands-on understanding of the assets they manage, and to have more control over operational expenditure.

Another notable improvement that has been implemented is the standardising of material type for replacement of navigation aids. The driver for this was to streamline maintenance activities and save costs.

These improvements have not been formally audited in the past, however, the team discusses regularly how they are tracking with implementing proposed improvements, as well as how they can continuously improve in other areas.

11.3 Improvement plan

No improvement items have been identified for this AMP.

Appendices

Appendix 1: Asset information

Aids to Navigation Asset Description

The primary purpose of an Aid to Navigation (AtoN) is to assist the safe passage of a vessel.

The waters of New Zealand and adjacent islands are marked for safe navigation using the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) System 'A' Maritime Buoyage System.

This system uses AtoNs which have a variety of colours, shapes, and light characteristics arranged in simple ways, to show the side on which a buoy or beacon should be passed when heading in a given direction.

Types of AtoN include:

- Lateral Marks
- Cardinal Marks
- Isolated Danger Marks
- Safe Water Marks
- Special Marks
- Water Ski Access Lanes and Reserved Areas

The meaning of a mark depends on its:

- Colour, Shape, Top Mark (By day)
- Colour, Rhythm of Light (By night)

Beacons

Beacons are poles set into the ocean/lake floor, are lighted or unlighted (unlighted beacons have reflective marking strips to aid visibility at night), and can have top shapes fitted. In the Bay of Plenty region, beacons are used to indicate Lateral Marks (define port and starboard side of a channel) and Cardinal Marks (indicate the safe side on which to pass a danger). The vast majority of beacons in the Bay of Plenty region are set in the Tauranga Harbour and consist of railway iron, galvanized poles, steel poles, wooden 2 pile and large I Beam.

Due to availability and cost of installation, railway iron beacons are being replaced with 100 mm galvanized round poles (standardising of material type) as they reach the end of their asset life or are damaged. Likewise, 2 pile wooden poles are being replaced with 150 mm square steel poles (standardising of material type) as they reach the end of their asset life or are damaged.

Buoys

Buoys are secured or moored to the ocean/lake floor using a concrete block and either rope or chain, or a combination of rope and chain. Buoys are lighted or unlighted and can have top shapes fitted. In the Bay of Plenty region, buoys are used to indicate all of the types of marks listed above, and range from small yellow special marks in sheltered waters used to indicate 5 knot limits, to large ocean buoys set at the Bowentown Entrance, which are exposed to large breaking seas at times.

Markers

Markers are land based and include Water Ski Access Lane Marker Poles and Reserved Area Marker Poles.

Signage

Signs range from simple single panel signs, through to large three panel signs. These are mounted in galvanised steel frames, and in Whakatāne and Rotorua, wooden pole style frames have recently been installed.

Signs are positioned at boat ramps, giving water users key Navigation Safety information, and larger signs include maps that indicate the location of designated areas under the Bay of Plenty Navigation Safety Bylaw 2017 (such as mooring areas, reserved areas, water ski access lanes, shipping channels), location of aids to navigation, and other useful information.

The Bay of Plenty Regional Navigation Safety Bylaw 2017 came into force on 1 July 2017. There were a number of changes from the old Bylaw, and hence signage required to be updated to reflect these changes. As such, the signs around the Tauranga Harbour have been updated with new stickers using the existing frames, and Rotorua/Whakatāne have had some completely new signs and frames installed at the time.

Moorings

The Maritime Operations Team manages a moorings database, and keeps seven moorings for the Harbourmaster to assist with navigational safety.

The majority of the 492 are privately owned with Council managing seven. The Group manages a database of assets and issue mooring licences.

The moorings licences require that an annual fee is paid, and that the licence holder has their mooring serviced every two years.

Vessels and plant

The Maritime Operations Team uses a number of vessels and trailers on a day to day basis.

These assets are currently managed by the property team and the assets sit under the Property portfolio.

Mobile plant

The Maritime Operations Team has a variety of mobile plant that are used as part of regular operations. The assets shown in the table below are the higher value mobile plant assets. These are not currently included in the Accela Asset Register as they are not fixed assets.

Asset	Value
Lamor Skimmer (LBC 6B 3850) and ancillaries	$65,000
Elastec (ES-400A Helical Screw) pump	$7,000
Kaituna Bar Camera and ancillaries	$11,000
D5 Body Worn Video Cameras	$18,135 (12 x cameras at $1395 each)
Drone (DJI Phantom 4 Pro)	$2,800

BAY OF PLENTY
REGIONAL COUNCIL
TOI MOANA

Property Asset Management Plan 2021-2031

Bay of Plenty Regional Council
5 Quay Street
PO Box 364
Whakatāne
New Zealand

Executive summary

This Property Asset Management Plan (AMP) outlines the management of Bay of Plenty Regional Council's land and buildings that staff use to deliver Council's core services from.

In order to fulfil the Council Outcomes, Vision, Goals and Objectives outlined in the Strategic Environment, Bay of Plenty Regional Council (BOPRC) has adopted a systematic approach to the long-term management of its assets and services by preparing this AMP.

Bay of Plenty Regional Council is committed to appropriate best practice asset management, in order to achieve the following key objectives:

- Meet the service needs of property users.
- Demonstrate Council's commitment to minimising its impact on Climate Change through facility upgrades that include environmentally sustainable design features where possible.
- Ensure capital projects and maintenance activities achieve efficient results with optimal benefits.
- Demonstrate Council's approach to managing risk and meeting growth requirements.
- Comply with all statutory requirements.

Contents

Part 1: **Introduction**

1.1 The Bay of Plenty Region

1.1.1 The place

The Bay of Plenty is located on the east coast of the North Island of New Zealand. The region incorporates the full extent of the coastline from Cape Runaway in the east, to Waihi Beach in the west, and captures the coastal townships of Tauranga and Whakatāne. On the landward side, the region is mostly bounded by the watersheds of the catchments that flow into the Bay of Plenty; this includes the lakes in the Rotorua District. On the ocean side, the region includes 18 offshore islands including the volcanically active Whakaari (White Island), and the sea extending out to the 12-nautical-mile boundary.

The area of the region is 21,740 km^2, comprising 12,231 km^2 of land and 9,509 km^2 of coastal marine area as shown in Figure 1 below.

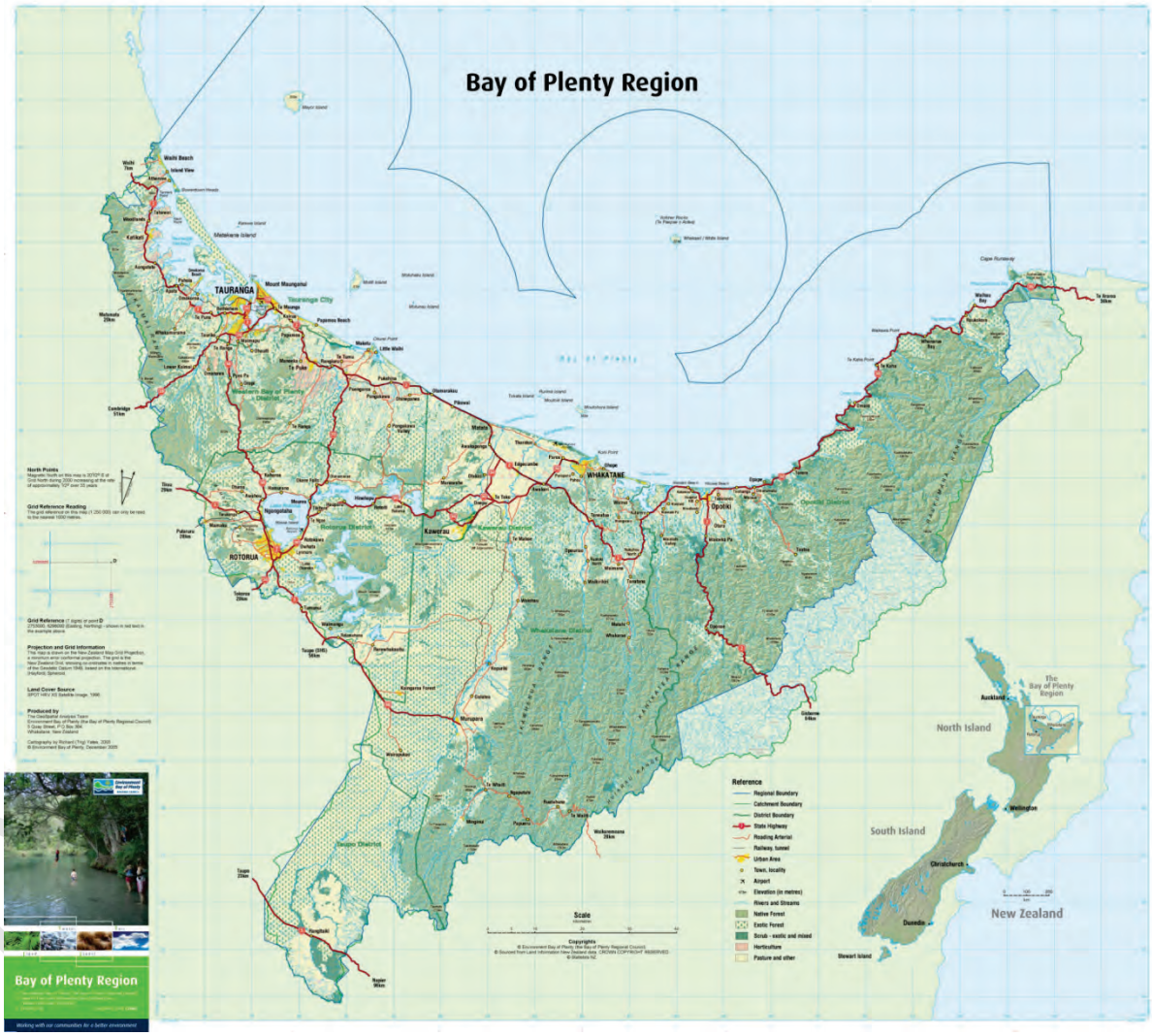

Figure 1 Map of the Bay of Plenty Region.

1.1.2 The natural environment

The Bay of Plenty Region has a number of prominent features and landmarks. The prominent features of the region include islands such as Matakana, Tuhua (Mayor) and an active volcano, Whakaari (White Island). Other distinctive landmarks in the region include the numerous lakes of the Rotorua District and the distinctive peaks of Mount Tarawera and Pūtauaki (Mount Edgecumbe), the Tauranga and Ōhiwa harbours and Mauao (Mount Maunganui).

The region is volcanically active with the Taupō Volcanic Zone crossing the area between Whakaari (White Island) and Lake Taupō. The two major features of this zone include a number of extensive geothermal areas (for example those found in Rotorua) and a number of earthquake fault lines that run parallel to each other within this zone.

Eight major rivers empty into the Bay - these are the Wairoa, Kaituna, Tarawera, Rangitāiki, Whakatāne, Waioeka, Motu and Raukokore rivers. In addition, there are five large estuaries - the Maketu, Little Waihi, Whakatāne, Waiotahi and Waioeka/Otara estuaries.

The region extends inland, generally to the ridge of the catchments that drain into the Bay of Plenty. The furthest point from the coast, is the top of the Rangitāiki River catchment which is 139 km from the sea.

1.1.3 Climate

The Bay of Plenty generally has one of the sunniest climates in New Zealand, especially in coastal areas, where dry spells have been traditionally quite common place. Because the Bay of Plenty is sheltered by high country to the west, south, and east, day to day variations of the weather are largely determined by the direction of the wind. While high country areas may receive rain with airstreams from any direction, most of the area receives a large part of its annual rainfall during periods of onshore north to northeast winds.

Airstreams from the north and northeast frequently have long trajectories over the warm ocean to the north of New Zealand and, as a result, the air flowing onto the Bay of Plenty under these conditions is very humid. As the whole region is exposed to the north, these airstreams often produce widespread and heavy rain, when the moist air is forced to ascend over the rising ground of the North Island. Such flows are normally associated with one of two types of situation. Firstly, when a cold front, oriented north-south, is approaching from the west, the northerly winds ahead of the front spread over the region, bringing widespread rain until the passage of the front, when there is usually a clearance. The second type occurs when depressions cross the northern half of the North Island. These lows often move only slowly east, and the north to northeast flows on the eastern side of the centre may bring prolonged rain to the region.

The local climate influences building design. Consideration for minimising summer heat gain needs to be made. In addition, the high winter/ low summer rainfall pattern needs to be taken into account in building design.

1.1.4 Economy and population

At the 2018 census, the region had a population of 308,499 with the largest urban area being Tauranga. A total of 67% of the population live in the urban areas of Tauranga City, Rotorua district, and Whakatāne.

Changes across regional council areas between the 2013 and 2018 censuses showed the Bay of Plenty region had an annual population growth of 2.9%. The region's population is predicted to grow by 15% by 2021 and will make the Bay of Plenty region the second fastest growing region in New Zealand. In total the region's population is expected to increase to around 314,000 by 2026.

Results from the 2018 census indicate that the unemployment rate in the Bay is approximately 4.5% for people aged 15 years and over, compared with 4% for New Zealand.

Proportionally those working in the Bay earn slightly less than the national average and there are slightly more retirees in the region also.

1.2 Purpose of the Asset Management Plan

The purpose of this plan is to formally document the management philosophy that is applied to property assets and services. This approach ensures that acceptable levels of service are provided in the most cost effective manner and contribute to the achievement of the Long Term Plan (LTP).

This long term planning approach is considered necessary given the large capital and operating expenditure, the long lives of the assets and the lead times in planning for upgrades of new assets when required. The sequencing and timing of works are developed through discussions with key stakeholders and this plan is prepared in consultation with them.

The key purpose of this plan is to:

- Provide a document to convey the long-term strategy for the management of the property assets.
- Improve understanding of service level standards, options and costs to smooth peak funding demands, while improving customer satisfaction and organisational image.
- Manage the environmental, service delivery and financial risks of asset failure.
- Identify lifecycle (long term) costs to provide agreed level of service over the long term.
- Explain how the long term works programmes have been developed and how they will be funded.
- This AMP also aims to demonstrate that the service potential of property assets is being maintained.

1.2.1 Plan timeframe

This AMP covers a 10 year timeframe. It assumes that plant and equipment have a life of between 4–10 years, while building assets have a life between 40–100 years. The plan documents the strategies for required maintaining, rehabilitating and renewing components over the next 10 years. This AMP provides the detail underlying the LTP, and is also completed every three years.

1.2.2 Key planning assumptions and limitations of this plan

This AMP has been prepared based on the following assumptions:

- Currently available information and data.
- Existing levels of service.
- Financial forecasts for 10 years.
- Changes to various standards and technologies are not significant.

1.3 Relationship with other plans and documents

Bay of Plenty Regional Council has a number of key strategic documents in place that govern many of its activities. These relate to, and will assist, in working towards the achievement of the Council Outcomes. The relationship between this AMP and other documents is shown in Figure 2 below.

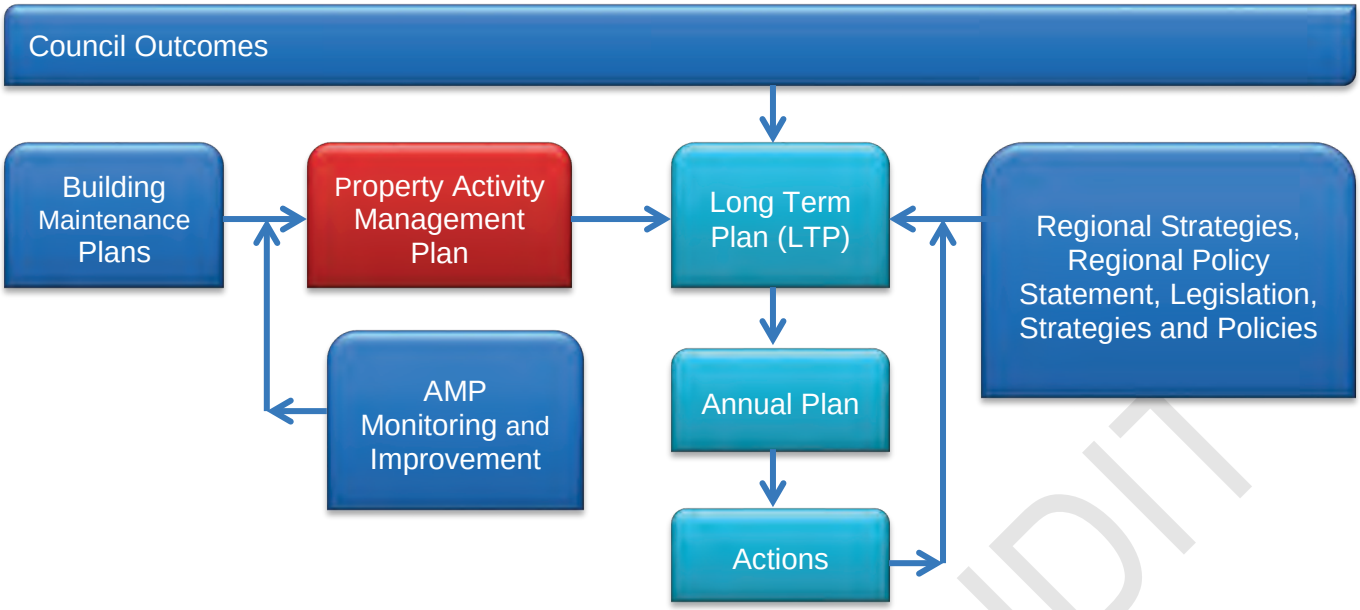

Figure 2 Integrated planning framework/linkages.

Table 1 Cyclic planning relationships with other plans, reports and documents.

Plans/documents	Description	Frequency
Long Term Plan (LTP)	The LTP sets out Council's Outcomes and service delivery programme over the next 10 years. The framework of this plan is in line with the requirements of the Local Government Act 2002 (LGA 2002).	Must be produced every three years.
Annual Plan	The works identified in the AMP are implemented as part of subsequent annual planning processes.	Must be produced in the intervening years between LTPs. The annual plan for the first year of every LTP is embedded in the LTP.
Annual Report	The Annual Report is the mechanism to report back to the community, showing Council's achievement against Annual Plan and LTP targets.	Must be produced every year to report progress.
Asset Management Plans	Levels of service, growth, risk, maintenance, renewal and development works and strategies are identified and budgeted for within this plan. The AMPs are implemented through Council's Long Term and Annual plans.	Should be reviewed and aligned every year prior to the Annual Plan process and a major update every three years prior to the LTP.
Contracts	The service levels, strategies and information requirements contained in AMPs are translated into contract specifications and reporting requirements.	Contract performance reviewed on a monthly basis.

Triennial Agreement	Sets out the agreement concerning communication and coordination with the other local authorities of the region.	Reviewed every three years with Local Authorities.
SmartGrowth Strategy	Promotes the integrated management of growth and development in the Western Bay of Plenty sub-region. Seeks to achieve long-term visions for maintaining and improving the natural and cultural environment, efficient infrastructure, enhanced lifestyles, providing for communities' social needs and a thriving economy. Implemented in collaboration with other authorities and agencies.	Produced on a 10 year cycle.

1.4 Overview of services covered

1.4.1 What we do

This Property AMP outlines the management of BOPRC's land and buildings that staff use to deliver Council's core services from.

In order to fulfil the Council Outcomes, Vision, Goals and Objectives outlined in the Strategic Environment (Section 3), BOPRC has adopted a systematic approach to the long term management of its assets and services by preparing this AMP.

Bay of Plenty Regional Council is committed to appropriate best practice asset management in order to achieve the following key objectives:

- Meet the service needs of property users.
- Ensure capital projects and maintenance activities achieve efficient results with optimal benefits.
- Demonstrate Council's approach to managing risk and meeting growth requirements.
- Demonstrating Council's commitment to minimise its impact on Climate Change through facility upgrades that include environmentally sustainable design features where possible.
- Comply with all statutory requirements.

1.4.2 Why we do it

The rationale for the existing ownership is as a result of the Local Government Act provisions whereby regional authorities are responsible for the provision and control of significant council assets. Property provides a supportive function for all of Council's activities in the LTP as a corporate overhead.

Council uses both property ownership and property leasing to achieve this function, to provide safe and comfortable offices for staff and customers. Its facilities also provide for essential equipment storage for the harbourmaster and environmental services purposes.

Property is part of the Corporate Services Group of Activities in the LTP for corporate wide assets. It is also represented in the LTP under specific activities that reflect the core nature of the equipment or plant.

Part 2: **Assets we own**

2.1 Overview

Bay of Plenty Regional Council is responsible for the management of three property portfolios.

Offices – land and buildings used for Civic meetings, offices for staff to deliver Council's services from, and a physical place for Council customers and stakeholders to visit.

Depots – land and buildings used for the storage of equipment used for Council to carry out its environmental services and harbourmaster functions. Depots also provide a base office for some field workers.

Carparks – car parking is located near the main Council offices in Whakatāne.

The management of property assets involves:

- Capital works and restoration projects as required.
- Undertaking an ongoing programme of maintenance in accordance with the AMP.
- Design and investigation projects.
- Administering property leases for Council as both a landlord and a tenant.
- Reviewing the Property AMP every three years.

Property assets include:

Table 2 Property assets.

Sub portfolio	Description
Offices	2 properties owned (4 buildings, 2 of which are on a ground lease), 1 portable building, one leased in.
Depots	3 properties owned, 4 leased in.
Carparks	2 properties owned that form one carpark.

An overview of these assets based on the July 2020 valuations is provided below. Where possible the midpoint of the valuations has been used in the asset management plans – where not possible current book values have been used.

Table 3 Property valuation summary.

	Total property value
Offices	$32,880,000
Depots	$1,730,000
Carparks	$630,000
Total	**$35,240,000**

The region map below provides an overview of the District boundaries and the location of existing properties owned by Bay of Plenty Regional Council.

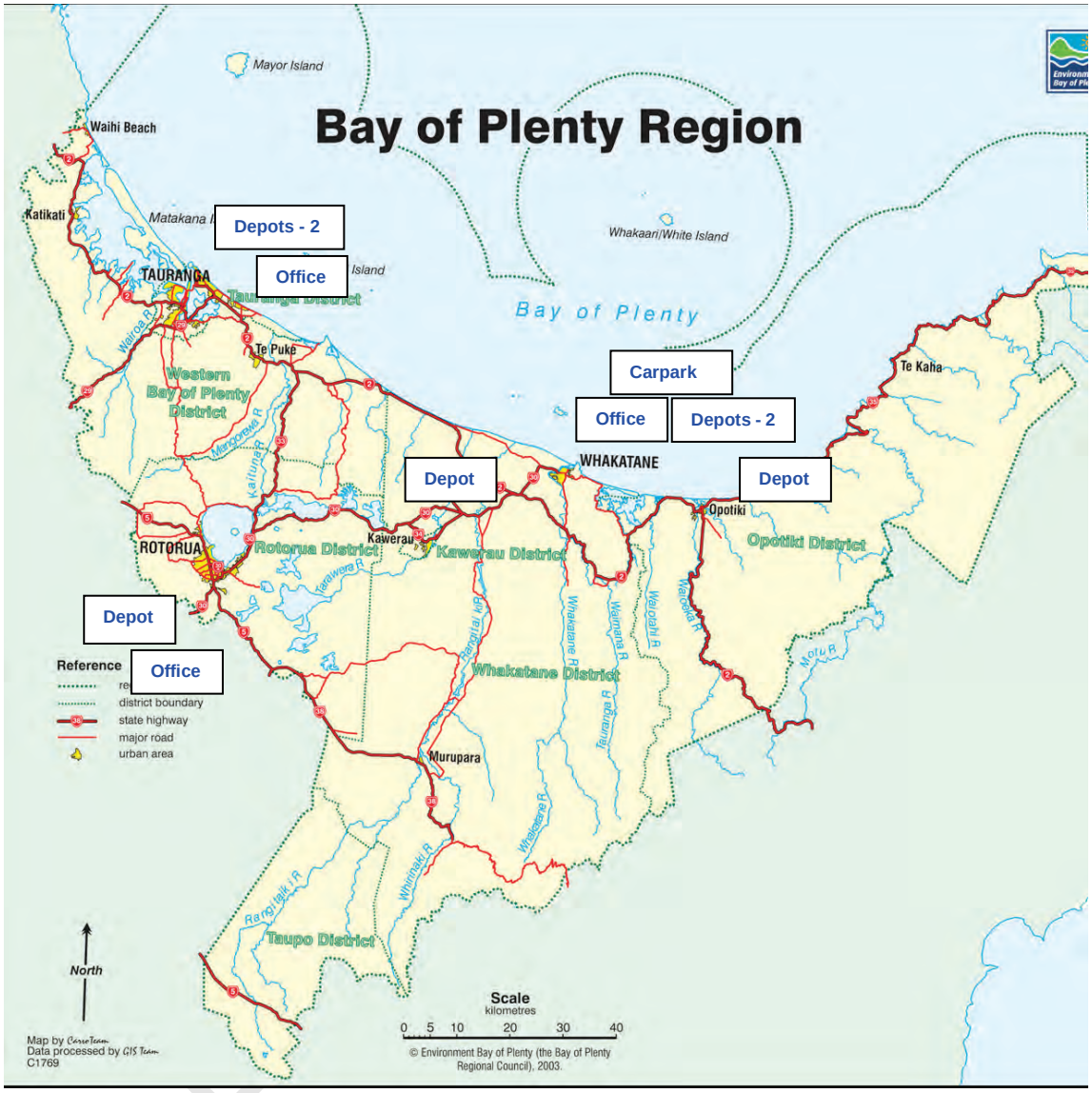

Figure 3 Overview map of property locations.

2.2 Asset Detailed Information

2.2.1 Offices

The purpose of Council's office buildings is to provide Civic meeting facilities, a physical place for Council customers and stakeholders to visit, and office accommodation for staff, who in turn, enable Council to meet its statutory requirements and deliver its services.

Building locations are influenced by proximity to a suitable labour force, key functional stakeholders, and customers.

Council has accommodation for around 500 people. The main offices are in Quay Street, Whakatāne, and Elizabeth Street in Tauranga. Staff occupy four and a half floors in Regional House with the remaining one and a half floors intended as future leased accommodation. Council also leases an office in Rotorua.

2.2.1.1. Regional House - 1 Elizabeth Street, Tauranga

Image 1 Offices – 1 Elizabeth Street, Tauranga.

Asset condition and performance

1 Elizabeth Street is located in the Tauranga CBD, and is a multi-storey office complex consisting of two buildings. Although it is commonly known as Regional House, it is actually two separate buildings, joined by a covered passageway and lift. The six storey office block (known as Regional House) was built in 1986, and it has recently been fully upgraded to provide accommodation for all of Council's Tauranga staff. The refurbishment works included improvements to our customer interfaces and the replacement of core services which had come to the end of their lifecycle.

The new office accommodation includes a number of environmentally sustainable design features, which has resulted in a significant reduction in carbon emissions. A rain water harvesting system has been installed in Regional House, with the water collected being used in bathrooms to reduce consumption of mains potable water.

Regional House Environmental Sustainability Design Features:

- Thermally efficient glazing.
- Higher than minimum levels of thermal insulation.
- Low volatile organic compound materials.
- Energy efficient lighting systems.
- Mixed mode ventilation systems.
- Photovoltaic tiles.
- Rain water harvesting.
- Electric Vehicle chargers.
- 'Real time' monitoring and display.

As a result of a GECC Risk Resilience Review completed in late 2020, Council have approved Regional House as the location for the Group Emergency Coordination Centre. This includes implementing a number of mitigations to increase the resilience of Regional House to a seismic event to ensure that Emergency Management Bay of Plenty is able to function to the fullest possible extent during and after an emergency.

This capitial works project, which includes a full refit of the vacant area on level 3, is expected to be completed by November 2021.

The older building (known as Wallingford House) is located on the Eastern side of the site, adjacent to the waterfront and is thought to have been built in the early 1950s. Tauranga City Council issued an earthquake prone building notice for Wallingford House following a seismic assessment of the building carried out in late 2020. Council now need to structurally strengthen the building to at least 67% IL2 NBS within 25 years of receiving the earthquake prone building notification.

Wallingford House is currently only being used for storage of maritime vessels and equipment, and as a car parking facility. Use of the building is only transient, and the risk to people is therefore considered low.

Table 4 Regional House asset information

Asset	Fair Value
Regional House	$27,500,000

**Fair value as per 30 June 2020 valuation*

Asset	Scheduled works	Schedule dates	Estimate cost (OPEX)
Regional House	• General monitoring and maintenance • Cleaning of building façade • HVAC Servicing	Annual Quarterly Quarterly	$5,280,000

2.2.1.2. 5- 11 Quay Street, Whakatāne

Image 2 Offices – 5-11 Quay Street, Whakatāne.

Asset condition and performance

The main office building at Quay Street has two wings. The west wing is 56 years old and the east wing is 25 years old. The west wing building had a major overhaul in 2002 and the ground floor was refurbished in 2017 to remove the interior partitioning. Capital expenditure is proposed in this Long Term Plan (AMP?) to further refurbish the west wing portion including the bathroom facilities, entry link, and upgrade the HVAC system.

The main octagonal shaped building and the east wing are currently being upgraded, with both the ground level and first floor of the eastern wing now complete, along with the first and second floor of the larger central octagon, the laboratory, the deck and the main entrance canopy. The ground floor of the middle octagon is due for completion in early 2021. Prior to the building works taking place, there were a large number of historical leaks which have now been repaired.

Additional funding has been proposed in this Long Term Plan to carry out remediation works to the external parapet and roof structure of the Whakatāne building, and complete a full repaint of the exterior.

Environmentally sustainable features have also been incorporated into the Whakatāne office building upgrade. These features include:

Quay Street Environmental Sustainability Design Features:

- Thermally efficient glazing.
- Higher than minimum levels of thermal insulation.
- Low volatile organic compound materials.
- Energy efficient lighting systems.
- Mixed mode ventilation systems.
- Photovoltaic tiles.
- Windmill.
- Electric Vehicle chargers.
- 'Real time' monitoring and display.

Image 3 Photovoltaic tiles at Offices – 5-11 Quay Street, Whakatāne.

Table 5 Whakatāne office asset information.

Asset	Fair Value
5-11 Quay Street	$5,380,000

**Fair value as per 30 June 2020 valuation*

Asset	Scheduled works	Schedule dates	Estimate Cost
5-11 Quay Street	• General monitoring and maintenance • HVAC servicing • Maintenance of waterproofing membrane on deck and internal atrium roof.	Annual Quarterly Annual	$5,557,000

2.2.1.3. 7 Wilson Road North, Paengaroa

Image 4 Offices – 7 Wilson Road North, Paengaroa.

Asset condition and performance

The portable building located at 7 Wilson Road North is 12 years old, and is described as being in average condition. It was recently relocated to Paengaroa from the Toroa Depot in Whakatāne, to be used as a field office for staff working in and around the Kaituna area.

Prior to being relocated, the building was used as a temporary laboratory while the Whakatāne office was being upgraded, so the carpet flooring was removed and replaced with vinyl. Once the building has been sited, some additional works are needed as part of the fire compliance requirements. A separate septic system will also be installed and connected to the buildings bathroom and kitchen facilities. Funding is included in the Long Term Plan to complete the remaining building works, which also includes the construction of an entry ramp, rear entrance stairs and car parking.

Council also leases a single bay garage and workshop directly opposite the field office at the Wilson Road property. This is used to store plant equipment, tools, and vehicles belonging to the teams who undertake works in this part of the region.

Table 6 Paengaroa site asset information.

Asset	Fair Value
7 Wilson Road North – Portable building	Included in the 26 Toroa Road valuation

**Fair value as per 30 June 2020 valuation*

Asset	Scheduled works	Schedule dates	Estimate cost (OPEX)
7 Wilson Road North – Portable building	• General monitoring and maintenance • HVAC servicing	Annual Quarterly	$720,000

2.2.2 Depots

Depots are used for Council day to day activities such as storage, vehicle parking, staff offices, and workshops. There are three Council owned depots in current use. One of the depots that Council owns has some surplus space within it that could be leased out.

Depots have a mix of activities and buildings on any single site, ranging from environmental services equipment storage, through to staff offices, vehicle parking and harbourmaster use. Council leases in part or all of four additional sites. There are leased depot facilities for environmental or harbourmaster purposes in Opotiki, Tauranga, and Rotorua.

2.2.2.1 26 Toroa Street, Whakatāne

Image 5 Depots – 26 Toroa Street, Whakatāne.

Asset condition and performance

This facility is used to store environmental services equipment and vehicles. The buildings provide a range of predominantly storage and workshop facilities that have been well maintained. There is also a vehicle wash down area, a wet laboratory, and Council's main IT server is located on site. Access is controlled through an electronic security system through the main automated gate.

Table 7 Toroa Street asset information.

Asset	Fair Value
26 Toroa Street	$1,150,000

**Fair value as per 30 June 2020 valuation*

Asset	Scheduled works	Schedule dates	Estimate cost
26 Toroa Street	• General monitoring and maintenance • HVAC (server) maintenance • Wash down bay maintenance	Annual Quarterly Annual	$615,000

2.2.2.2. 37 Arawa Road, Whakatāne

Image 6 Depots – 37 Arawa Road, Whakatāne.

Asset condition and performance

The Arawa Road property is located toward the outer limits of the urban area, and is understood to have been first developed in 1963. A series of Skyline garages were then added at the rear of the site in 1993. These buildings are described as being in average condition, and consist of two buildings, a newer building that includes garage and workshops of 81.5 m^2, and an older building of 171 m^2, which is an old depot building built for vehicle storage, office and general storage. The depot is used to store furniture and equipment.

The exterior of the building was repainted in 2018.

There is some surplus space within this depot which could be leased to an external contractor, however it has been vacant for the last three years due to a lack of demand for this type of commercial premises in Whakatāne.

Table 8 Arawa Road asset information.

Asset	Fair Value
37 Arawa Road	$250,000

**Fair value as per 30 June 2020 valuation*

Asset	Scheduled works	Schedule dates	Estimate cost
37 Arawa Road	• General monitoring and maintenance	Annual	$123,000

2.2.2.3 2 Ngaio Place, Edgecumbe

Image 7 Depots – 2 Ngaio Place, Edgecumbe.

Asset condition and performance

Ngaio Place has staff offices, storage for vehicles, and storage for environmental services purposes. The building is 40 years old and in good condition, with the exterior being repainted in 2019. The kitchen was replaced in 2016 and bathroom hardware was replaced in 2019.

Adjacent to the office is the workshop, with two high roller doors providing access into a high stud workshop and storage space with an inspection pit.

Generally, the building has been well maintained in a sound and tidy condition consistent with age, construction, and use. The roof, spouting and barge boards require repainting and funding has been included in the future opex costs for this site.

Table 9 Edgecumbe asset information.

Asset	Fair Value
2 Ngaio Place	$330,000

**Fair value as per 30 June 2020 valuation*

Asset	Scheduled works	Schedule dates	Estimate cost
2 Ngaio Place	• General monitoring and maintenance • HVAC maintenance	Annual Quarterly	$296,000

2.2.3 Carparks

The property portfolio contains two carparks which function as one carpark for Council vehicles, and to enable Councillors and visitors to park off road when visiting the main Council building on The Strand.

2.2.2.3.1 35-37 The Strand, Whakatāne

Image 8 Carpark – The Strand, Whakatāne.

Asset condition and performance

Carparks are located at Whakatāne and include:

- 35 The Strand: 17 carparks cobblestone, paving & stormwater.
- 37 The Strand: 15 carparks cobblestone, paving & stormwater, bike shed.

The two carparks are on separate titles but form one contiguous parking area. Pohutukawa trees, landscaping, drainage and channel, road marking and signage are also included.

Improvements were completed in 1999 and 2006, and more are scheduled for 2021 to improve fencing, facilitate better access to the Toroa depot, and to replace worn carpark surfaces. The plastic “gobi block” like plastic structure, which provides for areas of grass where vehicles can park, is breaking down. Otherwise the carparks are in average order.

Table 10 Whakatāne carpark asset information.

Asset	Fair Value
35-37 The Strand	$630,000

**Fair value as per 30 June 2020 valuation*

Asset	Scheduled works	Schedule dates	Estimate cost
35-37 The Strand	• General monitoring and maintenance	Annual	$100,000

2.3 Condition assessments

It is critical that BOPRC has clear knowledge of the condition of their assets and how they are performing. Annual asset condition assessments are carried out to help form an understanding towards decisions regarding maintenance, replacement, and renewals.

2.4 Key issues and strategies

2.4.1 Accommodation Plan

In 2014, Council developed an Organisation Wide Accommodation Plan which sets out the workplace principles that can be applied to Council accommodation across the region.

The workplace principles include:

- Strong expression of brand and values in our physical environment.
- Flexibility of workspaces – multifunctional spaces, collaborative spaces, focused work areas, quiet areas.
- Parity – the same look and feel across all sites, consistent quality, best spots for shared spaces that everyone can enjoy.
- Support culture – increase connectivity between people, increase visibility of managers, reduce territorial behaviour, locate managers with their teams.

2.4.2 Property Strategy

On 10 March 2016 Council adopted its Property Strategy, which sets out the principles by which it assesses whether properties are suitable for Council's purposes.

In relation to Council accommodation, the set of principles to be applied to ensure that Council occupied facilities are suitable are as follows:

- We will continue to have three main service hubs across the region, being Whakatāne, Tauranga and Rotorua.
- Aim to consolidate staff into a single office site in each of these three locations.
- We will continue to have satellite sites (such as Ōpōtiki and Edgecumbe), in locations where it is necessary to have staff situated in order to meet the service delivery requirements of Council.
    - Aim for efficiency within a distributed organisation.
- Ensure the properties we occupy:
    - Are fit for purpose.
    - Are safe (meet earthquake standards and are constructed from safe and healthy materials).

    - Consider the impact on the environment.
- Provide flexible, multi-purpose meeting rooms at each of the main offices.
- Decide on whether we lease or buy our accommodation on a case by case basis.
- Look at the individual merits of each property Council owns on a case by case basis, and if we decide to retain the property, ensure that the business case for doing so includes the full on-going costs of retention.
- We are open to the concept of co-location with other like-minded organisations.
- We will address co-location opportunities on a case by case basis as opportunities arise.

2.4.3 Climate Change Strategy

In 2016, BOPRC declared a climate emergency and in response, Council adopted the Climate Change Action Plan (CCAP) in 2018. An important part of this action plan is demonstrating environmental leadership by reducing Council's own carbon footprint. Our office buildings and the way we work contribute to our carbon footprint so, as part of the building refurbishment project, environmental sustainability has been incorporated into the design in an effort to reduce BOPRC's impact on the environment.

The design has optimised natural daylight through glass facades with thermal efficient glazing and higher than minimum levels of thermal insulation. For the interior fit-out, low volatile organic compound materials (allergen and environmentally friendly) were used in conjunction with energy efficient lighting systems responsive to daylight and occupancy, and mixed-mode ventilation systems to promote indoor air quality and energy efficiency. To support the buildings' mechanical services; photovoltaic tiles have been installed on the rooftops to convert sunlight into solar energy, low use water fixtures restrict all water usage, and rainwater harvesting has been provided to re-use rainwater for waste water. To prompt behavioural change, communal recycling bins are provided in all staff areas and worm farms are located at each site for organic waste. We have also included infrastructure for electric vehicles as we move towards a more sustainable fleet. In 2016/2017 energy expenditure was measured as a baseline. A KPI has been set to reduce our energy to 50% of the baseline year across our Tauranga and Whakatāne sites.

Specific design features of our owned sites are listed in Section 2.2.

2.5 Overview of issues and risk

The purpose of the administration buildings is to provide Civic meeting facilities, office accommodation for staff, and an interface for our customers. In addition, to attract and retain staff in a competitive labour market, the Bay of Plenty Regional Council aims to provide a safe, comfortable work environment.

Building locations are influenced by proximity to a suitable labour force, key functional stakeholders and customers.

The Bay of Plenty Regional Council has accommodation for approximately 500 staff. Offices are owned in Whakatāne and Tauranga, with further leased accommodation in Rotorua.

Table 11 Office buildings location.

Offices	Location	Description
1	Whakatāne	The main council office, comprises two linked buildings owned by Council but on a ground lease.
1	Tauranga	A multi-storey office complex owned by Council, located in the CBD.
1	Rotorua	One leased building on the corner of Fenton and Pukaki Streets

Asset risk

Section 6 of this AMP outlines risk management relating to property assets, which provides an overview of how risk is derived and managed. This sub section looks at detailed risk on a sub portfolio basis.

The Whakatāne and Tauranga sites also function as civil defence centres. Reflecting in recognition of the criticality of the buildings, they each have a back-up generator capability to power up critical areas of the buildings and phone system. Risks specific to offices are:

Table 12 Office key risk descriptions.

Risk description	Management option
Health and Safety - Physical harm to staff and visitors	All three offices where staff are accommodated are now in either new or fully upgraded condition, and therefore meet the latest code requirements. Regular servicing of heating and ventilation plant, safety signage, building security systems and patrols. Annual condition surveys to identify any necessary repair works. The seismic assessment of Wallingford House currently being undertaken is likely to deem it as an earthquake prone building. This building is being used for storage of maritime vessels and equipment, and as a car parking facility. Use of the building is only transient, the likelihood of a major earthquake occurring in Tauranga is rare, and the risk to people is therefore considered low.
Operational – unexpected building element, plant, equipment or mechanical failure preventing access to the building(s)	Back-up generators, responsive maintenance contract 24 hours, 365 days assistance available.
Financial - Un-planned building element failure results in expensive unbudgeted repairs	All three offices are now in either new or fully upgraded condition. Annual condition surveys and asset management planning to property assets are carried out to identify any repair or maintenance issues.
Capacity – Actual growth of staff varies to growth predictions (i.e. New legislative responsibilities requiring additional staff)	Implement flexible working models, explore lease opportunities, future capacity has been built into newly refurbished offices.

2.5.1 Whakatāne offices

Background

The Whakatāne office consists of two separate buildings, joined in 2002 to form one linked space. The land is owned by Whakatāne District Council and leased to BOPRC under a perpetual right of renewal.

Image 9 Whakatāne offices.

Key Issues

- While the interior of the building has been fully upgraded, the exterior of the building is in need of repairs and maintenance to avoid leaks and damage to the new interior space.
- The land is harbour leasehold, which prevents Council from having full control over the site, and poses a financial risk at rent review time.
- The West Wing end of the building is in need of upgrading, with HVAC, plumbing and inefficient space issues.

2.5.2 Tauranga offices

Image 10 Regional House (background) and Wallingford House (foreground).

Background

Council presently owns a multi-storey building called Regional House in the Tauranga CBD.

Key issues

- Securing tenants for the surplus space on the upper floors in a post-COVID-19 recession market.
- Implementing flexible working practices within the offices when the current office space reaches maximum capacity.
- A seismic assessment of Wallingford House completed in late 2020, has deemed it as an earthquake prone building.

2.5.3 Rotorua offices

Background

The Rotorua leased office is one building located at 1187 Pukaki Street.

Key issues

- There is limited parking available on site, so additional car parking spaces have been leased within a nearby parking facility.

Image 11 Rotorua office.

2.6 Depots

Depots are used for Council day to day activities such as storage, vehicle parking, staff offices and workshops. There are three Council owned depots in current use and four leased sites. One of the depots that Council owns has some surplus space within it that could be leased out.

Depots have a mix of activities and buildings on any single site, ranging from environmental and maritime services equipment storage, through to staff offices, vehicle and vessel parking. Council leases in part or all of four additional sites.

Table 13 Depot locations.

Depots	Location	Description
2	Whakatāne	Council owned facilities are the main 26 Toroa Street depot which includes 4 buildings and another depot building at 35 Arawa Road
1	Tauranga	There is one depot leased at 19 Montgomery Road, Judea
1	Kaituna	There is a council owned facility on a leased site at 7 Wilson Road North, Paengaroa
1	Rotorua	One depot is leased in Scott Street for storage of land management maritime and environmental services equipment
1	Ōpōtiki	Council shares an office and depot site with Ōpōtiki District Council and Department of Conservation. The buildings are owned by Ōpōtiki District Council and leased by Bay of Plenty Regional Council
1	Edgecumbe	The Ngaio Street depot includes offices and general storage for vehicles equipment and chemicals. This facility is owned by Council

2.6.1 Key issues

Depots may have issues with their ongoing management:

- Noise and dust may interfere with the quiet enjoyment of neighbours, especially when close to residential areas.
- Traffic safety and access to sites may be restricted on major highways.
- Health and safety risks on site from storage of chemicals, heavy machinery and vehicles.
- Theft and vandalism.

Asset risk

Section 6 of this AMP outlines risk management relating to property assets, which provides an overview of how risk is derived and managed.

Table 14 Key risk descriptions.

Risk description	Management option
Chemical storage - the site is used to store chemicals that can be harmful if released into the environment	• Test sites to establish the level of risk • Plan to deal with the issue in the event of a chemical spill • Chemical wash facilities in place in case of a spill
Health and safety risks on site from heavy machinery and vehicles	• Signage and safety awareness, require the use of hi visibility clothing

2.6.2 Whakatāne depots

Background

The Bay of Plenty Regional Council owns two depot sites in Whakatāne. One is in active use by Council, while the other is used for storage of furniture and equipment that is not used on a day to day basis.

26 Toroa Street Depot comprises four buildings and a car parking area. The site has an electrified fence, and a Cardax Security system controls access through the electronic gate. Security is high as the site holds Council's computer server, its back-up generator, and stores chemicals. The site also has storage for environmental management equipment, a testing lab, a vehicle wash down area, and a toilet.

35 Arawa Road Depot is located at the southern extremity of the township and consists of two buildings, a newer building that includes garage and workshops of 81.5 m^2, and an older building of 171 m^2 which is an old depot building used for general storage of furniture and equipment that is not needed on a day to day basis.

Some of the buildings are vacant and could be leased out, however the market for this type of commercial tenancy in Whakatāne is limited, and attempts to lease it out to date have been unsuccessful.

Key issues

In addition to the ongoing management issues for depots in general, if the Arawa Road property was deemed surplus to Council's requirements it may have some restrictions on its saleability. Investigation should be done before such a decision is made, to check whether:

- The land may have been taken under the Public Works Act.
- The land is held for designated for reserves purposes, and designated as a depot under the District Plan.

2.6.3 Rotorua Depot

Background

Council leases a depot in Scott Street which is used for environmental management, maritime, and general storage.

Key issues

There are no other specific issues for this depot other than the ongoing management issues for depots in general.

2.6.4 Edgecumbe and Ōpōtiki Depots

Background

The Bay of Plenty Regional Council has responsibilities over a broad geographical area. To meet these needs it also has facilities in Edgecumbe and Ōpōtiki, which provide services across a largely rural community.

Key issues

There are no other specific issues for these depots other than the ongoing management issues for depots in general.

2.7 Carparks

The property portfolio contains two carparks which functions as a carpark for Council vehicles, and also enables Councillors and visitors to park off road when visiting the main Council building on The Strand, Whakatāne. A small bike shed is also provided, to provide sustainable transport options for staff.

The two carparks are on separate titles but form one contiguous parking area. Pohutukawa trees, landscaping, drainage and channel, road marking and signage are also included.

Key issues

- The plastic "gobi block" like plastic structure, which provides for areas of grass where vehicles can park, is breaking down. Otherwise the carparks are in average order.

Asset risk

Section 6 of this AMP outlines Risk management relating to property assets, which provides an overview of how risk is derived and managed.

Table 15 Key risk descriptions.

Risk description	Management option
Lack of security – resulting in costs due to theft, damage, insurance, closure, financial loss or threat to safety	• Design/ location/ landscaping • Maintenance contracts • Alarms installed in buildings
Pedestrians injured - vehicles do not see pedestrians or are travelling at speed	• Maintenance of landscaping • Clear signage

Part 3: **Strategic environment**

3.1 Strategic overview

3.1.1 Purpose

Bay of Plenty Regional Council's work guides and supports the sustainable development of the Bay of Plenty. Council wants to make sure its region grows and develops in a way that keeps its values safe for future generations.

A major focus of its work involves looking after the environment. Council manages the effects of people's use of freshwater, land, air and coastal water. However, it also has a broader responsibility with others for the economic, social and cultural wellbeing of the regional community.

3.1.2 How property contributes to Council Outcomes

The LTP outlines the Council Outcomes. The provision of property contributes to all Council Outcomes by enabling Council to carry out its functions through the provision of appropriate, safe, quality accommodation, for Council staff to better serve the community.

3.2 Key partnerships and stakeholders

As mentioned previously, Council works with its partners to promote regional wellbeing. Some of Council's partnerships include:

External stakeholders

- The community – citizens and ratepayers.
- The region's territorial authorities.
- Iwi.
- Emergency service providers (Police, Ambulance, Fire, Civil Defence).
- Utility companies – power (generation, transmission, distribution), communication, gas.
- Other Government agencies (Audit NZ).
- Maintenance and service contractors.
- Professional service providers.

Internal stakeholders

- Councillors and management.
- Staff at all levels of the organisation.

3.3 Business drivers

Levels of Service, health and safety, statutory requirements, national standards, bylaw policies and strategies define the business drivers for the current operation of the property services. These are overviewed in the following section.

3.3.1 Delivery of property services

Levels of Service (LoS) standards define the levels to which Council provides services to the community. Some standards are defined by statutory requirements, others in conjunction with the community, and some with key stakeholders. These standards (or levels of service) provide a basis for determining whether assets need to be constructed, replaced, renewed or maintained. These performance measures have been defined to enable Council's performance to be measured and reported against.

These are covered in detail in Section 5 of this AMP.

3.3.2 Health and safety

Council's health and safety policy is to "take all practicable and necessary steps to look after the safety, health, and wellbeing of yourself, your colleagues, visitors, suppliers, contractors, the public and the environment."

Every worker on a BOPRC site is required to share in the commitment to this policy:

- Every manager and supervisor is responsible for the health and safety of those workers working under their direction.
- Each worker is expected to play a vital and responsible role in maintaining a safe and healthy workplace through:
  - Ensuring their own and others safety at all times.
  - Consulting, coordinating and cooperating with other workers (including contractors) to ensure safe places of work.
  - Observing all health and safety risk controls.
  - Prompt reporting and taking action for any risk or safety event.

3.3.3 Statutory requirements

Statutory requirements impact on the way in which BOPRC operates to meet its obligations to its customers. Some of the key legislation relevant to Property is as follows:

Local Government Act 2002 (Amended 2010)

The Local Government Act 2002 (LGA) provides local authorities with a framework of powers to carry out democratic decision-making and action for, and on behalf of, its community. It also imposes accountability for prudent management and stewardship of community assets in the present and into the future. The Act requires councils to identify Council Outcomes and develop a comprehensive LTP. The LGA requires Council to identify its assets and how those assets will be managed. It is intended that this asset management plan will be a vehicle for developing and recording Council Outcomes in relation to property management, and will be a 'feeder plan' supporting LTP functions and forecasts, and asset information.

Resource Management Act (RMA) 1991 and Amendments

The RMA is New Zealand's primary legislation dealing with the management of natural and physical resources. It provides a national framework to manage land, air, water and soil resources, the coast, subdivision and the control of pollution, contaminants and hazardous substances.

The RMA has a single overarching purpose:

"To promote the sustainable management of natural and physical resources."

The RMA establishes a hierarchy of policy documents from national instruments to regional policy statements, and regional (and district) plans. This 'hierarchy' and requirement to ensure consistency between plans, is to promote sustainable management and ensure integrated management of natural and physical resources at a national, regional and local level.

Hazardous Substances and New Organisms (HSNO) Act 1996

The HSNO Act came into force in two stages. Provisions relating to new organisms took effect in July 1998. The provisions relating to hazardous substances came into force on 2 July 2001. The Act and regulations control the import, manufacture or use (including disposal) of manufactured chemicals that have hazardous properties. Refer National Standards and the use of agrichemicals. Depot buildings may store chemicals and poisons controlled under this Act.

Civil Defence Emergency Management Act (CDEM) 2002

The CDEM Act 2002 came into force on 1 December 2002. The CDEM Act 2002 ensures that New Zealand has the resources to manage disasters.

Emergency Management focuses on 'the 4Rs':

- Reduction – identifying and analysing risks to human life and property.
- Readiness – developing capabilities before an emergency occurs.
- Response – taking action immediately before, during, or directly after an emergency.
- Recovery – initiating activities after impact, and extending them until the community's capacity for self-help is restored.

The Civil Defence Emergency Management Act 2002 requires:

- The local authorities in the region to form a Civil Defence and Emergency Management Group (CDEM Group).
- The Group to develop a Civil Defence Emergency Management Plan that identifies risks from hazards and puts readiness, response, and recovery procedures in place. The Plan is developed with public input to ensure hazards and risks are dealt with to a level accepted by the community.
- The Group to determine its Civil Defence headquarters – Council's four regional offices in Tauranga, Mount Maunganui, Rotorua and Whakatāne.

Health and Safety at Work Act 2015

The main purpose of this Act is to provide for a balanced framework to secure the health and safety of workers and workplaces by:

- Protecting workers and other persons against harm to their health, safety, and welfare by eliminating or minimising risks arising from work or from prescribed high-risk plant.
- Providing for fair and effective workplace representation, consultation, co-operation, and resolution of issues in relation to work health and safety.
- Encouraging unions and employer organisations to take a constructive role in promoting improvements in work health and safety practices, and assisting PCBUs and workers to achieve a healthier and safer working environment.
- Promoting the provision of advice, information, education, and training in relation to work health and safety.
- Securing compliance with the Act through effective and appropriate compliance and enforcement measures.
- Ensuring appropriate scrutiny and review of actions taken by persons performing functions or exercising powers under the Act.
- Providing a framework for continuous improvement and progressively higher standards of work health and safety.

Rating Powers Act 1988

The Local Government (Rating) Act 2002 replaced the Rating Powers Act 1988 with updated and streamlined rating powers. The intention is to ensure that the community has the opportunity to be well informed about what its money is being spent on, and to express its views when major decisions are being made.

The three main purposes of the Act are to:

- Provide local authorities with flexible powers to set, assess and collect rates.
- Ensure that rates reflect decisions made in a transparent and consultative manner.
- Provide for processes and information to ensure that ratepayers can identify and understand their liability for rates.

Building Act 2004

In New Zealand, the building of houses and other buildings is controlled by the Building Act 2004. It applies to the construction of new buildings as well as the alteration and demolition of existing buildings.

The Building Act 2004 has repealed the Building Act 1991 and introduces a number of changes to the law governing building work.

Health Act 1956

This Act establishes the Government structure required to enact and enforce health requirements, including the activities of Local Government.

Property Law Act 2007

The new Property Law Act 2007 repeals the Property Law Act 1952, the Contracts Enforcement Act 1956 and the Distress and Replevin Act 1908. The Act is aimed at improving the law around buying and selling property, mortgaging property, and entering into commercial leases in New Zealand.

Fire Services Act 1975

Fire Services Act 1975 Section 21B (Part 2 – Fire Safety) specifies the requirement of providing and maintaining evacuation schemes for buildings.

3.3.4 Specific requirements for asset management planning

The LGA has brought about some significant changes to the way councils operate, with a focus on community consultation and participation, and the promotion of social, economic, environmental and cultural wellbeing of communities in the present and in the future.

There is a strong emphasis for asset management planning on the following:

- **Demand** – In relation to estimated additional capacity and the associated costs and funding sources, including maintenance renewal and upgrades. Section 6 of this AMP covers this in more detail.
- **Levels of Service (LoS)** – Intended LoS performance targets and other measures by which actual levels of service provision may be meaningfully assessed, and the estimated costs of achieving and maintaining identified LoS, including sources of funding. Section 4 of this AMP covers this in more detail.

3.3.5 National standards

There are numerous building and trades related standards that have implications for building management.

Building codes, plumbing, electrical, glass installation, mechanical plant and equipment all have published guidelines or standards that set out acceptable practice.

3.3.6 Bylaws

A number of bylaws, policies and strategies have been developed at a regional level and these have been detailed in the following tables.

The bylaws that impact on Council's property directly largely pertain to Council-owned property which falls under Whakatāne District Council.

Table 16 Bylaws.

Bylaw	Status
Whakatāne District Council – Trade waste	Commenced 2008
Whakatāne District Council – Solid waste	Commenced 2008
Whakatāne District Council – Wastewater drainage	Commenced 2008
Whakatāne District Council – Water supply	Commenced 2008

3.3.7 Policies and strategies

Council must be aware of the following policies, strategies and guidelines in managing its assets:

Table 17 Policies, strategies and guidelines.

Policy name	Status
Statement of Significant Accounting Policies (LTP)	Current
Funding Impact Statement (including Rating Policy)	Current
Policy of Significance	Current
Liability Management Policy	Current
Revenue and Financing Policy	Current
Regional Policy Statement	Current

Part 4: **Funding and expenditure**

4.1 Funding

Property Assets contribute to all activities of the LTP. In Regional House there is a data room in the lower ground level and telecommunications equipment on the roof that are leased to Vodafone and Spark. Council is not currently receiving any other rental income from vacant space within Regional House on Levels 3 and 4.

4.2 Expenditure

Expenditure on Property Assets represents a significant Council investment as shown in Table 18 below.

Table 18 Expenditure Land and Buildings 2021/2022.

Total operating expenditure	$3,020,000
Total capital expenditure	$11,434,100

4.3 Significant negative effects of this activity

The purpose of identifying significant negative effects is to ensure that Council activities are conducted in accordance with the principles of sustainability. Property can have a negative effect on community wellbeing. The possible negative effects are outlined in the table below.

Table 19 Significant negative effects.

Significant negative effect	Cultural	Social	Economic	Environmental	Mitigation of negative effects	Addressed in
Land development and buildings can increase water runoff, and building wash or occupancy activities can lead to pollutants entering the water network	✓	✓	✓	✓	Vehicle wash bay has a “grey” water holding tank, non-chemical building wash programme, upgrades/ new buildings spec sustainable design (i.e. rainwater holding tanks, run off soakage areas)	Life Cycle Management Risk Management Project Design Procurement Specification
Health and safety risks associated with the operation, maintenance, or construction of buildings		✓	✓		Ensure compliance with legislation and Health and Safety Management Plans. Maintain an Incidents Register. Site safe passport a requirement for contractors/staff working at heights	Risk Management Project Management

Significant negative effect	Cultural	Social	Economic	Environmental	Mitigation of negative effects	Addressed in
The cost of property may exceed the community's willingness to pay.		✓	✓		Consult with the community on all costs and options for Levels of Service through the LTP process	Levels of service Project and Financial Forecasts Risk Management Asset Management Plans
Buildings maintained or constructed of non sustainable materials	✓	✓	✓	✓	Material specification includes: low volatile paints, sustainably grown timber, recycling of waste materials and low energy lighting, heating and ventilation systems	Life Cycle Management Risk Management Project Specification Procurement Specification
Buildings are operated in a wasteful and inefficient manner		✓	✓	✓	Low energy lighting specified for building upgrades, low energy heating and ventilation solutions used, suitable waste minimisation practices, consideration of environmentally sustainable design features being incorporated in building upgrades	Life Cycle Management Risk Management Design Specification Procurement Specification
Environmental Impacts related to storage of chemicals etc. at depot sites			✓	✓	Ensure correct chemical stores and bunded areas are provided where necessary	Environmental Stewardship Risk Management
Potential risks due to presence of Asbestos in older buildings	✓	✓	✓	✓	Prior to any medication/demolition works, correctly identify any asbestos products and dispose of using appropriately certified contractors	Life Cycle Management Risk Management

The significant negative effects identified above can be managed and/or mitigated by effective risk management, options assessments, asset management and operational procedures.

4.4 Relationships with key service providers

Council maintains relationships with key service providers who contribute to the efficient operation of the portfolio. The roles and responsibilities of these providers are outlined in Table 20 Roles and responsibilities below.

Table 20 Roles and responsibilities.

Tasks	Site	Relationship
General maintenance	All sites	Internal
Condition assessment	All sites	Internal
Mechanical Services (air conditioning)	Whakatāne, Tauranga, and Rotorua offices	External Contractor
Internal painting	Whakatāne, Edgecumbe and Ōpōtiki, Tauranga and Rotorua	Internal and External Contractor
External painting	All owned sites	External Contractors
Cleaning (internal and external)	All sites	External Contractor
Security (building)	All sites	Internal and External Contractor
Security (fire)	All offices	Internal and External Contractor
Electrical	All sites	External Contractor
Building works	All sites	Internal and External Contractor
Grounds maintenance	All sites	Internal and External Contractor
Plumbing	Whakatāne, Edgecumbe and Ōpōtiki, Tauranga, Rotorua	Internal and External Contractor
Lift maintenance	Whakatāne and Tauranga only	External Contractor
Valuations	All sites	External Contractor
Lease	Rotorua Office – 1187 Pukaki Street	Lessor
Lease	Rotorua Depot – Scott Street	Lessor
Lease	Tauranga Depot – Port of Tauranga	Lessor
Lease	Tauranga Depot – Montgomery Road, Judea	Lessor

Tasks	Site	Relationship
Lease	Kaituna depot and field office	Lessor
Lease	Whakatāne ground lease	Lessor
Lease	Ōpōtiki Depot	Lessor
Lease	Data room and telecommunications, Regional House, Tauranga	Lessee

Part 5: **Levels of service**

5.1 Overview

Asset management (AM) planning enables the relationship between levels of service and the cost of the service (the price/quality relationship) to be determined. This relationship is then evaluated in consultation with the community to determine the levels of service they are prepared to pay for.

Defined Levels of Service (LoS) can then be used to:

- Inform customers of the proposed LoS.
- Develop AM strategies to deliver LoS.
- Measure performance against defined LoS.
- Identify the costs and benefits of services offered.
- Enable customers to assess customer values as accessibility, quality, safety, and sustainability.

In this context LoS define the quality of delivery for a particular activity or service, against which service performance can be measured.

This section of the AMP covers the following:

Local Government Act 2002 Requirements - Details the legislation behind the process, including clause references and requirements.

Linking Levels of Service to Council Outcomes and Relationship with Asset Management Planning - Explains the links between this plan, LoS and Council Outcomes.

Property Levels of Service - Provides details of the process of establishing LoS for the Property activity.

Understanding Community Priorities - Details how the community will assist in determining LoS and indicate their willingness to pay for those services.

Property Values and Outcomes - Details customer values, activity Strategic Outcomes and how these relate to customer and technical LoS. This is presented as a table to ensure each value is addressed, outcomes identified, and relevant levels of service established for future consultation.

5.2 Local Government Act 2002/2010 requirements

5.2.1 Overview

The LGA provides for local authorities to determine its role in promoting the social, economic, environmental, and cultural wellbeing of their communities. It provides a framework and powers for local authorities to decide how they will undertake activities.

The LGA requires service levels to be developed with the community in mind, to ensure that there is a community perspective applied to the development of traditionally technical service levels.

Schedule 10 of the LGA outlines the general requirements for the development of service levels. These requirements are:

- Statement of intended LoS provision for the Activity including performance measures.
- Performance measures and targets that will enable the community to assess the LoS for major aspects of the service that have not already been set as standard measures.
- A summary of any material changes to the cost of providing the service and the associated reasons for the change.

5.2.2 Decision making and reporting

The LGA also sets out how LoS should be reported and consulted on. Schedule 10 outlines how Council needs to report on the LTP levels of service in the Annual Report. The key requirements are:

- Compares LoS achieved against targets.
- Specifies whether intended changes have been achieved.
- Provide reasons for any significant variance between actual and expected service provision.

5.3 Levels of service relationship to asset management planning

One of the basic cornerstones of sound asset management is:

To provide the levels of service that the current and future community want and are prepared to pay for.

Levels of service therefore provide the platform for all decisions relating to AM (as illustrated in Figure 4). Before developing detailed AM strategies, Council needs to agree the LoS with the community with consideration given to the following:

- Required planned outcomes.
- Minimum legislative requirements.
- Technical constraints.

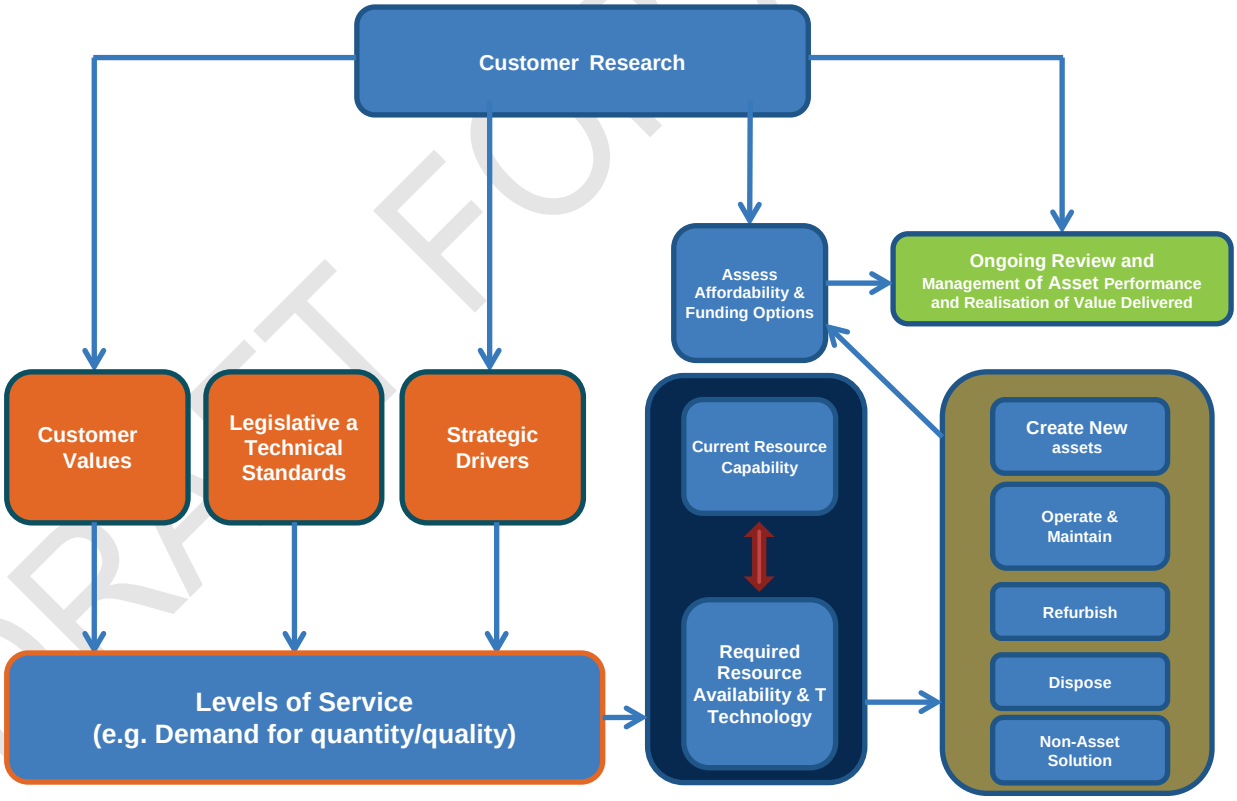

Figure 4 LoS relationship to asset management planning.

5.4 Linking levels of service to council outcomes

5.4.1 Council outcomes

As outlined in the Strategic Environment section, Council's Property activity enables Council's other activities to contribute to these four outcomes.

Figure 5 Community Outcomes

5.4.2 Levels of service delivery process

Council has key service provider relationships for Property Services:

- Contractors
- Key Users
- Various Consultants
- Lessees and Lessors

This is detailed in the Business Overview Section.

5.4.3 Levels of service development process

As part of the LTP development process, Council carried out a review of levels of service. The outcome of the review defined a set of high level LoS statements and measures that will be included in the LTP.

5.4.4 Establishing customer value

Customer values provide the cornerstone to the development of LoS from both a customer and technical point of view.

The customer values considered to be important for the Property activity are as follows:

- Accessibility
- Quality
- Affordability
- Safety
- Community Engagement
- Customer Interface (Responsiveness)

5.4.5 Activity strategic outcomes

Council Outcomes have been updated as part of the Long Term Plan 2021-2031. Further work has been undertaken to develop activity Strategic Outcomes for the Property activity. The activity Outcomes developed with the LoS represented in the AMP are described as follows, and aligned with the customer values as suggested in the National Asset Management Support (NAMS) Creating Customer Value from Community Assets Manual 2007.

Table 21 Customer values and activity strategic outcomes.

Customer value (NAMS)	Activity strategic outcomes
Accessibility	Council occupied buildings are **accessible** and support **disabled access** requirements
Affordability / Quality / Safety	Council owned and occupied buildings are **maintained** and provide a **good, safe environment** for council staff and customers to work/interact in
Community engagement	The community and key stakeholders are adequately **consulted** and informed in all **significant** decisions
Customer interface (Responsiveness)	All customers are treated in a **fair, respectful and responsive** manner Council leased buildings are properly managed with **clearly defined** lease terms and conditions

5.4.6 Identify and linking customer and technical levels of service

It is critical that from Council Outcomes right down to operational contracts, the linkages are made clear. The table below describes how this has been achieved and provides a roadmap to assist with the understanding of the LoS tables that will be developed.

The following tables are based on the NZ NAMS "Developing Levels of Service and Performance Measures" Manual. It should be noted that these tables act as a template for developing levels of service. Accordingly, these need to be developed and refined further, then presented in an appropriate way for further community consultation.

Table 22 How to read this table.

Community outcome	Activity strategic outcomes (levels of service)	Customer value	Customer performance measure			Technical performance measure					Performance measure procedure
			Measure	Current target	Proposed target	Factors of influence	Performance measure	Current target	Current performance	Proposed target	
Regional Leadership through action, coordination, support, and facilitation.	Council occupied buildings are accessible and support disabled access requirements.	Accessibility	All customers have access to council buildings.	100%	As per current	Parking	Provided in compliance with the TA District Plan and consent requirements	100% of the time	100%	100% of the time	Building consent and annual compliance certificate
						Disabled access facilities	Provided in compliance with the Building Act and consent	100% of the time	100%	100% of the time	Building consent and annual compliance certificate
Community outcomes drawn from the LTP 2021-2031.	*Activity outcomes (levels of service) defines in a clear statement, the outcomes expected to ensure the relevant customer value for.*	*Customer value details the general benefit of the service (from NAMS developing levels of service and performance measures manual).*	*Customer Performance Measure is a statement of how the customer receives the service. This is backed up by one or more technical LoS, and a practical means of measurement. Where the future target is a planned improvement from the current.*			*Technical Performance Measures states how a particular activity or service area is measured. Each technical performance measure is linked to a customer performance measure, in many cases providing a more detailed version or measure. Where the future target is a planned improvement.*					*Performance Measure Procedure details the practical means of being able to measure the Technical and Customer Performance measures.*

5.5 Property levels of service, performance measures and reporting

Table 23 Property levels of service.

Community outcome	Activity strategic outcomes (levels of service)	Customer value	Customer performance measure			Technical performance measure					Performance measure procedure
			Measure	Current target	Proposed target	Factors of influence	Performance measure	Current target	Current performance	Proposed target	
A healthy environment Freshwater for life Safe and resilient communities A vibrant region	Council occupied buildings are accessible and support disabled access requirements	Accessibility	All customers have access to Council buildings	100%	As per current	Buildings are fit for purpose and user requirements are reviewed	Adequate accommodation to enable Council to carry out its functions and activities	Adequate accommodation at appropriate locations	Adequate	Maintain adequate accommodation with growth	Annual review as part of Annual Plan process, and 3 yearly review as part of LTP process
						Disabled access	Provided in accordance with national standards including entry, toilet and other facilities.	100% of the time	100%	100% of the time	Annual building compliance certificate
						Parking	Provided in compliance with the TA District Plan and consent requirements	100% of the time	100%	100% of the time	Annual review of parking requirements Yearly condition assessment of car parks by Property Team
						Signs	In place for all Council buildings	100%	100%	100%	Annual review Job Tracker system Yearly condition assessment of signage by Property Team
	Council owned and occupied buildings are maintained and provide a good, safe environment for council staff and customers to work/interact in.	Affordability	Total cost of property management	Maintained +10% of budget as agreed in Annual Plan	As per current	As for customer measure					Part of Annual Plan process
		Quality	The council owned and occupied buildings are of a good standard	90% of staff rate the property services as good or above	As for current	Statutory compliance	All buildings are compliant with all Statutory and regulatory requirements, in addition to all Council policies, procedures and standards.	100% compliance	100%	100% of the time	Annual review building compliance certificate Annual review resource / building consent
						Assets (by replacement cost value)	In a moderate, good or very good condition	85%	80%	90%	3 yearly AMP
						Buildings – internal and external cleaning	Cleaned in compliance with relevant cleaning contracts	Undertake quality assurance checks as per frequency defined in contract	100%	100% of the time	Annual review contract records Annual review agreement records Annual review staff performance measures
						Grounds/Facilities – maintenance	Maintained in accordance with relevant maintenance agreements	Undertake quality assurance checks as per frequency defined in agreement		100% of the time	
						General repairs and specified maintenance	Actioned as per Annual Plan	Maintain +10% of budget as	Maintained +10% of budget as	As for current	Annual Plan

Community outcome	Activity strategic outcomes (levels of service)	Customer value	Customer performance measure			Technical performance measure					Performance measure procedure
			Measure	Current target	Proposed target	Factors of influence	Performance measure	Current target	Current performance	Proposed target	
								agreed in Annual Plan	agreed in Annual Plan		
	The community and key stakeholders are adequately consulted and informed in all significant decisions	Community Engagement	Community Consultation will take place as per Annual Plan and Long Term Plan process	100%	As for current	See Customer measure					Annual Plan Long Term Plan Submissions as part of Long Term Plan process
	All Customers are treated in a fair, respectful and responsive manner	Customer Interface/ Responsive-ness	Meet the terms of the lease	100%	As for current	Breaches of the lease	Number of breaches	zero	zero	zero	Annual review records, correspondence and records maintained Annual review lease agreements
		Safety	As per measure listed in Quality			Maintenance requests with Health and Safety implications	Isolation, elimination or mitigation within 24 hours	100% compliant	100%	100% of the time	Annual review Job Tracker Annual review Health and Safety records
						Health and Safety regulations compliance	Compliance with building code regulations, health and Safety guidelines, council policies, standards and procedure	100% compliant	100%	100% of the time	Annual review Building Compliance certificate Annual review Building / Resource consents Annual review Health and Safety records
						Maintain a health and safety system to record and investigate incidents	100% of reported incidents recorded and investigated	100% compliant	100%	100% of the time	Annual review Health and Safety records Report accidents to Health and Safety Committee (as per meeting frequency) Poisons and chemicals stored in accordance with the HASNO Approved Code of Practice
						Compliance with security patrol /response contracts		100% compliant	100%	100% of the time	Monthly reports from security company
	Leased buildings (commercial and community) levels of service										
	Council leased buildings properly managed with clearly defined lease terms and conditions	Customer Interface	Valid signed lease agreements in place	100%	As for current	Lease agreements	Clearly communicated to lessee	100% of the time	100%	100% of the time	Annual review records, correspondence and records maintained Annual review Lease agreements
						Inspections to assess tenants compliance with lease and rentals	Reviewed annually in accordance with lease agreement	100% compliant	100%	100% of the time	

Part 6: **Growth and demand**

6.1 Property overview

This section describes the strategy that BOPRC will adopt for growth and demand related to the property activity. Council owns and operates eight properties with 12 buildings across the four portfolio classifications. These include:

- The Quay Street building in Whakatāne
- Regional House in Tauranga
- A field office in Kaituna
- Two carparks
- Three depot sites

Council also leases one office and four depots in order to provide core services cover throughout the region. Leased premises are located in Tauranga, Rotorua, and Ōpōtiki.

The growth and demand section focuses on the assets that deliver property services to customers, stakeholders and BOPRC employees.

The key drivers that influence growth and demand are assessed in detail in the following section.

6.2 Introduction

Planning for future growth and demand is imperative to provide an economically sustained pathway to meet the needs of the region. The provision of the property activity and its management is considered an important element to enable Council to service its communities effectively.

Growth and demand planning allows for the identification and quantification of areas within the region that are likely to experience significant pressures, that may impact upon the demand for services.

6.3 Growth versus demand

Although growth and demand are considered together in this section, it is worth noting that they do have different implications regarding the on-going function and delivery of the activity.

Growth, in relation to the property activity, is mainly driven by changes to Council's services. Changes to Council's services is caused by new statutory requirements from Central Government, evolving economic climate changing the way natural resources are used, the impacts of Climate Change, and demand from the community. These changes create a demand for customer service.

Demand for facilities/services can also be influenced by changes in service needs and wants (for example health and safety through ergonomic workstations; environmental considerations such as power and water conservation).

6.4 Overview of key demand drivers

This section describes Council's strategy for growth and demand related to the property activity.

The growth and demand drivers that are discussed as part of this section include:

- Demographic considerations.
- Long term planning.
- Physical environment.
- Legislation/political considerations.

- Access to facilities by customers, key stakeholders and staff.

6.5 Demographic considerations

The following section investigates some demographics of the Bay of Plenty region, in order to gain an understanding of the potential needs of the community and where facilities may be required in future as growth occurs in different areas.

6.5.1 Demographic overview

A summary of the demographic projections for the Bay of plenty region can be found on page 18 of the draft Strategic Asset Management Plan.

6.5.2 Impact on the property activity

The key impacts on the property activity due to changes in population densities and changes in residential and commercial building across the district includes:

- Increased population will directly link to increased provision of Council services and therefore more staff and plant may need to be housed in the future.
- Cost of maintaining and operating additional sites will increase.

6.5.3 External management strategies

The main management strategies that can be used include:

- The demand for Council office space can be modified through the balancing use of externally contracted resource, or internal staff provision.
- Open planned offices, hot desking, and working from home options can also reduce the need for additional office space.

6.6 Long term planning

6.6.1 Council's property

Background

The purpose of Council's administration buildings is to enable Council to meet its community and environmental service requirements and to provide customer contact centres across the region. Council uses a mix of owned and leased building spaces across the region to achieve its services requirements. Office buildings are the highest valued property assets at $33 million.

Current requirements

Council has accommodation for around 500 people. The Whakatāne office is located at Quay Street, the Tauranga office is located on Elizabeth Street, and additional spaces are leased in Rotorua, Ōpōtiki and Edgecumbe. The main office locations are shown in the following table.

Table 24 Office buildings location.

Offices	Location	Description
1	Whakatāne	The main Council office, comprises two linked buildings owned by Council but on a ground lease.
1	Tauranga	A multi storey office complex owned by Council located in the CBD
1	Rotorua	One leased building on the corner of Fenton and Pukaki Streets

The land of the Whakatāne office is owned by Whakatāne District Council and leased to BOPRC under a perpetual right of renewal. Council owned properties are located in Tauranga, Whakatāne and Edgecumbe. Rotorua and Ōpōtiki have leased facilities.

6.6.2 Impact on the property activity

The main impacts on the property activity based around long term planning include:

- Council's offices will be located in populated areas to provide easy access for the community to Council services.
- Dependent upon future reviews, Council will need to rationalise space to meet the growth and demand for its services set out in the LTP.

6.6.3 Internal management strategies

- Have a clear understanding of space requirements.
- Ensure that office accommodation is provided in line with the Government Workplace Standards and Guidelines for Office Space.
- Ensure that office options are clearly defined and provision is made for these in the LTP.
- Determine the ongoing operations and maintenance costs for offices and account for these in the LTP.

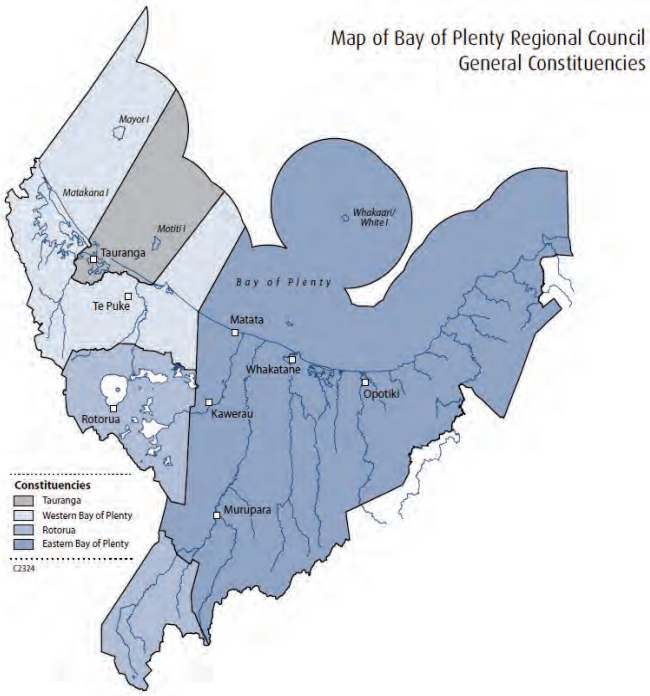

Figure 6 Map of Council's general constituency boundaries.

The general constituency map is drawn on the basis of equal representation and illustrates clearly that Tauranga constituency is geographically smaller but of much higher density than other parts of the region.

6.7 Physical environment

This demand driver is essentially generated by the staff and community that use Council's facilities. Council's Whakatāne and Tauranga offices have recently been upgraded to modernise them and make them more operationally efficient. Council has aligned its office accommodation with the Government Workplace Standards.

The community looks to Council to lead the way in environmental sustainability. The building upgrade work includes a number of environmentally sustainable design features including the use of low impact/low VOC materials, energy efficient systems, photovoltaic and wind energy generation, rain water harvesting, low use water fixtures and fittings, and high performance glazing.

Staff attraction, retention and wellbeing can also be linked to the physical environment in which they work. Therefore it is important to include considerations of the expectations and desires of staff and facility users into any new builds or renovations that are required as a result of the strategic review.

In addition, more flexible hours of working and access to systems off site are key to retaining staff.

The need for depot sites are driven by geographic location, legislative requirements, Climate Change and Council's business approach to provide services in house or through external contracts. It is also driven by the customers' expectations toward environmental events such as responsiveness to pollution, and damage from extreme weather or earthquakes.

The potential impacts and the management strategies are discussed below.

6.7.1 Impacts on Council's property activity

The main impacts can be categorised as:

- Expectations regarding environmental impact and sustainability will potentially generate higher capital costs in the short term for appropriate design and construction; however lower operational cost should be achieved in the long term.
- Building locations are influenced by proximity to a suitable labour force, key functional stakeholders and customers.
- Monitor and manage staff expectations, understand requirements through staff surveys.
- Communicate clearly with staff and involve key spokespersons in the decision making around potential options
- To attract and retain staff in a competitive labour market Council should provide a safe comfortable work environment.
- Monitoring work practices and developing a work policy/HR policy that allows for more flexible working conditions.

6.7.2 Management strategies

The following management strategies are being used to manage growth and demand on office facilities:

- Technological systems such as electronic filing to reduce storage space, and mobile devices to reduce the amount of time field staff need to spend in the office.
- The requirement for desk space can be minimised by using hot desks for mobile workers rather than allocating them an individual desk.
- Appropriate depot locations from a geographic and population perspective.

- Investigate the option of sharing work spaces with other organisations to save on costs, assist with flexible work policies and minimize the pressure on existing facilities.

6.8 Legislation/political considerations

There are a number of key regulations or legislation that impact on the activity, its management, renewal, repairs, upgrades and impacts. The key legislative Acts are discussed in more detail in the Strategic Environment section.

6.8.1 Impacts on property activity

Legislative change can significantly affect Council's ability to meet minimum levels of service that have been agreed with the community. Legislative changes may have an impact on property assets if additional services are to be delivered which require extra staffing levels, and therefore extra office accommodation.

Council needs to be able to identify growth and demand needs over a long period of time. This requires robust knowledge of the facilities, past performance, and future growth strategies and policies.

Potential changes in legislation or a political focus could have the following impacts:

- The makeup of Council's existing and planned buildings and properties are to service Council's current activities. Should the nature of this service provision change there are likely impacts around Council's space and functionality requirements. For example, if a staff capabilities and capacity needs to reflect the changes to the focus of an activity.
- A change in governance in the area.
- Jointly funded positions, for example, sharing staff with a district council.
- Changes to Civil Defence requirements, for example, increased level of service from the space currently provided.

6.8.2 Management strategies

This includes performance and governance through the implementation and continuous improvement of this AMP. Council can implement the following:

- Ensure an adequate level of understanding of the legislation is obtained by key staff, potentially nominate a key staff resource to monitor likely changes in legislation or governance and identify the potential impacts.
- Carry out reviews of policy changes to establish what the impacts may be (if any).
- Development of a Consultation Strategy around different options.
- A reasonable amount of work will be required to set up processes to record this information in a way that can be used to predict utilisation of existing facilities, to adequately address requirements of the relevant legislation.

Part 7: **Lifecycle management**

7.1 Introduction

This Lifecycle Management (LCM) section provides the broad strategies and work programmes required to achieve the goals and objectives set out in Section 3 and 4 of this plan.

This section covers the following property portfolio classifications:

- Offices
- Depots
- Carparks

7.2 Property asset overview

The Bay of Plenty Regional Council owns and operates eight properties with 14 buildings across the three portfolio classifications. Council owns administration buildings in Whakatāne and Tauranga, two carparks and three depot sites which support the day-to-day operations of Council.

Council also leases an office and four depots in order to provide core services cover throughout the region. Leased premises are located in Tauranga, Rotorua and Ōpōtiki.

The lifecycle management section focuses on the assets that deliver property services to customers and stakeholders.

7.3 Capital works plan

A significant amount of corporate expenditure was invested in property assets in the upgrade of the Whakatāne and Tauranga offices sites, and the fit out of the new Rotorua office between 2016 and 2020. Funding is proposed in this Long Term Plan to complete the upgrade of Regional House and to build a Group Emergency Coordination Centre.

The capital work plan totals over $20 million over the next 10 years.

7.4 Property income and expenditure

7.4.1 Operational, renewal, capital and disposal plans

Operations and maintenance plan

Reactive

Renewal plan

Renewal work is planned and budgeted for at Long Term Plan and Annual Plan time.

The required level of renewal (including replacement or rehabilitation) will depend on:

- The age profile
- The condition profile
- The level of on-going maintenance
- The economic lives of the materials used
- Financial and customer risks

Renewals will be reviewed annually, with any deferred work re-prioritised alongside new renewal projects and a revised programme established.

Reactive maintenance is provided by independent contractors and covers:

- Electrical maintenance
- Plumbing and drainage maintenance
- Carpentry repairs
- General maintenance
- Office fit out
- Heating and ventilation repairs

Preventative/Proactive

Contracts are in place to manage on a regular or cyclical basis:

- Building warrant of fitness checks
- Lift maintenance and inspections
- Cleaning services
- Security services
- Mowing and Landscaping services
- Exterior building wash
- Heating and ventilation servicing
- Annual engineering inspections for the canopy sail at the Whakatāne office

Part 8: **Projects and financial forecasts**

8.1 Overview

To undertake a sustainable, long-term approach to asset management, it is essential to prepare long-term financial forecasts. This allows a long term view of how the asset will be managed, how much this will cost and when additional funding may be required to meet expected service levels. These financial forecasts are a culmination of the previously discussed aspects of the AMP such as:

- Community Engagement
- Levels of Service
- Demand Management
- Lifecycle Management
- Asset Lives
- Condition Ratings
- Asset Valuation

The above forms the basis of the long-term operations, maintenance and capital requirements.

8.2 Expenditure

Expenditure on infrastructure assets can be categorised into some key areas, which are discussed below:

Operations and maintenance

Operations and Maintenance expenditure is that required for the day-to-day operation of the assets whilst maintaining the current levels of service. Examples of these types of expenditure are:

- Overheads
- Minor replacements

Maintenance costs are generally subdivided into three groups; these are described in Table 25.

Table 25 Maintenance.

Maintenance	General meaning
Routine	Day to day maintenance which is required on an ongoing basis and is budgeted for
Planned (proactive)	Non day-to-day maintenance which is identified in advance and is incorporated into a maintenance budget for a certain time period
Reactive	Maintenance that is unexpected and necessary to attend to immediately to continue operation of the service

Replacement (renewals)

Renewal expenditure includes rehabilitation and replacement of assets to restore an asset to its original level of service, i.e. capacity or the required condition. Renewals expenditure forecasts cover the cost of asset renewal through its whole lifecycle through to disposal of the asset.

Capital works (new works)

Capital works (new works) involves the creation of new assets, or works, which upgrade or improve an existing asset beyond its current capacity or performance in response to changes in usage or customer expectations.

Disposals

Asset Disposal is the retirement or sale of assets whether surplus or superseded by new or improved systems. Assets may become surplus to requirements due to obsolescence, underutilisation, changes in policy etc.

8.3 Asset management assumptions

The following Property Asset Management assumptions have been made in preparing the 10-year expenditure forecasts:

- Asset information is as complete as possible at 1 July 2020.
- Only Council owned property assets have been valued.
- The determination of asset replacement value, depreciated value, and renewal projections are based on the valuation data as at 1 July 2020.
- All projected expenditure is stated in dollar values as at 1 July 2020. With no allowance made for inflation.
- Operational costs are largely based on historical expenditure.
- Maintenance and operations allocations are largely based on maintaining current LoS.
- Confidence in the data used to produce the 10-year forecasts for this AMP has been assessed at mid-level.
- Council staff have developed this programme. No formal consultation has been undertaken with the public.
- It is assumed that regulations relating to property assets will remain essentially the same over the planning period (i.e. 10 years to June 2031).

8.4 Summary financial forecast – all properties

The table below contains the Property financial estimates, which incorporates the projected income and funding sources to fund operational expenditure for the next 10 years (2021-2031).

Table 26 Property financial estimates 2021 – 2031 (uninflated).

Operating Statement	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031
	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
OPERATING REVENUE										
Fees and Charges	88	88	88	88	88	88	88	88	88	88
Total Operating Revenue	**88**	**88**	**88**	**88**	**88**	**88**	**88**	**88**	**88**	**88**
OPERATING EXPENDITURE										
Direct cost by property										
37 The Strand Carpark (Building)	10	10	10	10	10	10	10	10	10	10
Arawa Rd Building - 35 Arawa Rd, Whakatane	12	11	11	12	12	13	13	14	14	14
Edgecumbe Depot - 2 Ngaio Place	28	28	29	29	30	30	31	31	31	31
Opotiki Depot - 70 Bridge Street, Whakatane	27	27	27	27	27	27	27	27	27	27
Port of Tauranga Depot	23	23	23	23	23	23	23	23	23	23
Whakatāne Office 5-11 Quay Street Whakatāne	477	714	501	514	527	540	553	566	578	590
Regional House Elizabeth Street Tauranga	461	476	491	506	521	536	551	566	581	596
26 Toroa St, Whakatane	59	60	61	61	62	62	63	63	63	63
Rotorua Depot 9 Scott Street, Rotorua	93	95	98	100	103	106	109	110	112	114
Wallingford House	31	36	41	46	51	56	61	66	71	76
Depot Tauranga CBD/Judea area	80	82	84	86	88	90	92	94	96	98
Rotorua Office	233	313	313	313	333	333	333	353	353	353
Kaituna Depot	63	65	67	69	71	73	75	77	79	81
Total Direct Costs	**1,594**	**1,938**	**1,753**	**1,794**	**1,855**	**1,897**	**1,939**	**1,998**	**2,036**	**2,074**
Indirect Costs										
General Expenses	31	31	31	31	30	30	30	30	30	30
Interest	808	992	1,063	1,053	1,029	1,006	987	956	909	864
Depreciation	588	588	588	588	585	559	557	542	523	523
Total Operating Expenditure	**3,020**	**3,548**	**3,434**	**3,465**	**3,500**	**3,492**	**3,513**	**3,526**	**3,499**	**3,491**
Corporate Costs ans Transfers	(2,932)	(3,461)	(3,347)	(3,377)	(3,437)	(3,405)	(3,426)	(3,439)	(3,411)	(3,403)
Net Operating Costs	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

8.5 Maintenance planning

8.5.1 Operations and maintenance

Maintenance strategies cover the policies that will determine how the property assets will be operated and maintained on a day-to-day basis to consistently achieve the optimum use of the asset. The work categories are defined as follows:

Routine (General) maintenance

Routine maintenance is the regular ongoing day-to-day work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again. This work falls into two broad categories as follows:

Planned (Proactive)

Proactive inspection and maintenance works planned to prevent asset failure.

Reactive

Reactive action to correct asset malfunctions and failures on an as required basis.

A key element of asset management planning is determining the most cost-effective blend of planned and unplanned maintenance as illustrated in Figure 7.

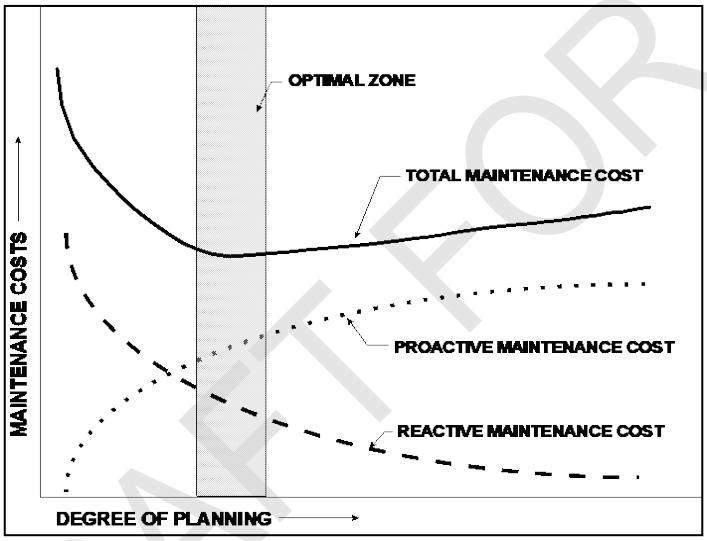

Figure 7 Balancing proactive and reactive maintenance.

The short-term maintenance strategy is intended to maintain the current levels of service standards. The long-term maintenance strategy will be modified to reflect the following factors:

- Risk of failure -The risk associated with failure of critical assets.
- Levels of service - Changes in the current or agreed level of service.
- Economic efficiency -Asset condition assessment.
- Extend the life of the asset component -Asset improvements and development programme.
- Legislative compliance – e.g. requirements of LGA 2002, DWSNZ.

8.5.2 Operations and maintenance programme

Maintenance works are undertaken by the Property Maintenance Coordinator, the Property Officer and Assistant and maintenance contractors, and managed by the Customer Contact Manager.

Maintenance work is a mix of proactive and reactive works.

Calls from customers/stakeholders generally come through to Property staff or via Property Hub, and these are dealt with as they occur. The completion of these requests for service are recorded through the Property Hub system.

With significant upgrade works now largely complete at the Tauranga and Whakatāne sites, maintenance costs are expected to reduce. as the replacement assets and systems will be more efficient and reliable.

Operations and maintenance forecasts

Anticipated work needs and costs over the next 10 years to ensure delivery of the defined levels of service, include:

- Expected operational work.
- The nature, incidence and cost of unplanned maintenance (responsive) currently undertaken.
- Planned inspections and preventative maintenance.
- Expected planned maintenance work requirements.
- Managing assets to desired levels of service.

8.6 Capital and renewal planning

8.6.1 Renewal works

Renewal expenditure is work that restores an existing asset to its original level of service, i.e. capacity or the required condition. These broadly fit into the following work categories as follows:

Rehabilitation: Involves the repair of an existing asset, or asset component. Rehabilitation doesn't provide for a planned increase in the operating capacity or design loading. It is intended to enable the assets to continue to be operated to meet levels of service.

Replacement: Doesn't provide for a planned increase to the operating capacity or design loading. Some minor increase in capacity may result from the process of replacement, but a substantial improvement is needed before asset development is considered to have occurred.

8.6.2 Renewal strategy

Renewal strategies provide for the progressive replacement or rehabilitation of individual assets that have reached the end of their useful life. This is managed at a rate that maintains the standard and value of the assets as a whole. This programme must be maintained at adequate levels to maintain current levels of service and the overall quality of assets.

Asset performance

Assets are renewed where it fails to meet the required level of service. The monitoring of asset reliability, capacity and efficiency during planned maintenance inspections and operational activity identifies non-performing assets. Indicators of non-performing assets include:

- Structural failure.
- Repeated asset failure (breaks, faults).
- Ineffective and/or uneconomic operation.

- Unsafe conditions for the public.

Economics

When it is no longer economic to continue repairing the asset (i.e. the annual cost of repairs exceeds the annualised cost of its renewal). An economic consideration is the co-ordination of renewal works with other planned works such as road reconstruction. Council actively researches the effectiveness of new technology, which may reduce the direct and social costs of repair works.

Risk

The risk of failure and associated environmental, public health, financial or social impact justifies proactive action (e.g. probable extent of flooding damage, health and safety risk). Where such assets are identified (critical assets), proactive inspection is undertaken appropriate to the risk of failure.

Life Cycle

The current lifecycle expectations for the Property assets and the annual depreciation rates 40 – 100 years for buildings and 4-10 for plant items.

Replacement (Renewal) works summary

While many of the smaller replacement (renewal) items are undertaken within maintenance, all major works are programmed as replacement items and are managed in a similar way to new capital works.

Bay of Plenty Regional Council will consider the financial and customer risks of having sufficient funds to deal with renewal demands, consideration of detailed assessments, implementing proactive renewals and recognising the increasing maintenance and operational requirements.

8.6.3 New works

New works are the creation of new assets or works, which upgrade or improve an existing asset beyond its existing capacity or performance in response to changes in usage or customer expectations. Council recognises that asset development and asset renewal can occur simultaneously.

8.6.4 Selection criteria

Council carries out a prioritisation process of all necessary renewal or development works. The priority list is used to assign funds when preparing the financial plans. It is important that the process be regularly reviewed and the cost estimates reviewed at detailed design stage and/or purchase.

8.7 Capital and renewal forecasts – all properties

The tables below contains the Property renewal and capital expenditure for the next 10 years (2021-2031):

Table 27 Property capital and renewal projects 2021-2031 (uninflated).

Capital and Renewals	2021/2022 $	2022/2023 $	2023/2024 $'	2024/2025 $	2025/2026 $	2026/2027 $	2027/2028 $	2028/2029 $	2029/2030 $	2030/2031 $
5-11 Quay Street Capital and renewals										
Upgrade facilities	2,000,000-	1,500,000	-	-	-	-	-	-	-	-
Furniture replacement	5,300	5,300	5,300	5,300	5,300	5,300	5,300Q	5,300	5,300	5,100
Land purchase	3,000,000	-	-	-	-	-	-	-	-	-
Regional House, Capital and renewals										
Upgrade facilities	805,800	5,300	5,300	5,300	5,300	5,300	5,300Q	5,300	5,300	5,100
Furniture replacement	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Elizabeth Street/ Waterfront Development	1,500,000	500,000	-	-	-	-	-	-	-	-
Group Emergency Centre	2,500,000	-	-	-	-	-	-	-	-	-
Rotorua office – Capital and renewals										
Upgrade facilities	-	-	-	-	-	-	-	-	-	-
Furniture replacement	3,000	3,000	53,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
2 Ngaio Place - Capital and renewals										
Upgrade facilities	-	200,000	-	-	-	-	-	-	-	-
Kaituna field office										
Upgrade facilities	-	-	-	-	-	-	-	-	-	-
Tauranga – Potential transport hub										
Tauriko site	-	-	2,000,000	-	-	-	-	-	-	-
Total										
Total	**11,434,100**	**6,333,600**	**2,083,600**	**33,600**	**33,600**	**33,600**	**33,600**	**33,600**	**33,600**	**33,600**

8.8 Disposals

As part of the whole life cycle management of assets, it is vital to consider the costs of asset disposal in the long-term financial forecasts for an asset. The cost of asset disposal is expected to be incorporated within the capital cost of new works, or asset renewals.

Disposal is the retirement or sale of assets whether surplus or superseded by new or improved systems. Assets may become surplus to requirements for any of the following reasons:

- Under utilisation.
- Obsolescence.
- Provision exceeds required level of service.
- Assets replaced before its predicted economic life.
- Uneconomic to upgrade or operate.
- Policy changes.
- Service provided by other means (e.g. private sector involvement).
- Potential risk of ownership (financial, environmental, legal, social).

The Bay of Plenty Regional Council is not planning to dispose any assets in the foreseeable future.

8.9 Asset valuation

8.9.1 Introduction

Statutory financial reporting requires Council to revalue its fixed assets at least every five years. An asset valuation is to be used for asset management (calculating long-term asset renewal projections), identifying loss of service potential (depreciation) and for financial reporting purposes.

8.9.2 Accounting standards

New Zealand International Financial Reporting Standard (NZIAS16) applies to all property assets considered in the scope of this valuation for the general purpose of financial reports.

8.9.3 Industry guidelines

Properties have been valued on a fair value basis by registered property valuers. Fair value is deemed to be depreciated replacement cost as explained in NZIAS 16.

Investment property is re valued on an annual basis and is not depreciated as the other Council properties are. The Long Term Plan states:

Properties leased to third parties under operating leases are classified as investment property unless the property is held to meet present or future service delivery objectives, rather than to earn rentals or for capital appreciation. Investment property is measured initially at its cost, including transaction costs. After initial recognition, BOPRC measures all investment property at fair value as determined annually by an independent valuer. Gains or losses arising from a change in the fair value of investment property are recognised in the income statement. The strategic properties meet this definition.

8.9.4 Valuation process and methodology

The last valuations were undertaken for Council as at 30 June 2020.

Asset Register

Council's Property assets are now managed in the Technology One financial system.

The information is considered as accurate and complete for the purpose of the valuation.

Asset Assumptions (Valuation Assumptions)

The assumptions that have been used in the valuation of Council's Property assets are as follows:

- Depreciation is by the straight-line method.
- Asset Base Life or Total Useful Life have been used as detailed in Table 28
- The valuations are provided in NZIV standard valuation report format.
- Asset information is as complete as possible at July 2020.

Base lives of assets used in this valuation are as follows:

Table 28 Current infrastructural asset base lives.

Item	Base lives (years)
Building	40-100
Plant and equipment	4-10
Land	Not depreciated

8.10 Policies

Council's philosophy to managing investments is to optimise returns in the long term while balancing risk and return considerations. Council recognises that as a responsible public authority any investments it makes should be made prudently and the associated risks and returns should be balanced and the risks managed.

Assumptions

- That Council maintains an ongoing positive relationship with its stakeholders and the regional community.
- That Councillors and staff continue to work together as a team to achieve Council's objectives.

Property investments

Council's overall objective is to only own property that is necessary to achieve its strategic objectives. As a general rule, Council will not maintain a property investment where it is not essential to the delivery of relevant services, and property is only retained where it relates to a primary output of Council. Council reviews property ownership through assessing the benefits of continued ownership in comparison to other arrangements which could deliver the same results. This assessment is based on the most financially viable method of achieving the delivery of Council services. Council generally follows a similar assessment criteria in relation to, new property investments. All income, including rentals and ground rent from property investments, is included in the revenue account.

The average cost of borrowing is 2% on existing debt. The cost of borrowing of 2% per annum has been applied on new borrowings for the full 10 years - i.e. no allowance has been made for movements in interest rates whenever loans are refinanced.

Depreciation rates for assets are based on their useful life.

8.11 Risk to significant forecasting assumptions

The table below outlines the risks to significant forecasting assumptions. Should these assumptions prove to be incorrect there could be a significant effect on the level of rates to be collected from the community. If this were to occur, Council would re-evaluate the works programmes to determine if the expenditure is appropriate and rates altered accordingly or whether the scope of the proposed works could be scaled down.

In managing its investments generally, Council always seeks to protect its investment and manage its risk. Accordingly, Council has determined that it is “risk averse” and will apply the “prudent person” principle for the management of risk and return on its investments. When investing cash, Council seeks to minimise its risk by investing only in institutions with a high degree of security or credit rating and by limiting maximum exposure in certain cases.

Council recognises the risks that are involved in holding investments and minimises its risk exposure by using professional fund managers for its significant investment holdings. Council’s investments give rise to a direct exposure to a change in interest rates, impacting the return and capital value of its fixed rate investments.

The Finance Department sets interest rate risk management strategy by monitoring the interest rate markets on a regular basis and after taking appropriate advice, evaluates the outlook and determines the interest rate profile to adopt for investments. Because Council generally only owns property which it utilises for its own purposes, its property interests carry low risk from an investment perspective. The risk of significant diminution in the value of property is taken into account in assessing the benefits of continued ownership in Table 29.

Table 29 Financial risks.

Risk	Risk level	Likely financial effect	Consequence/ mitigation strategy
That Central Government could require different representation obligations of Council.	Mid	Mid	Monitor
That significant changes in the make-up of Council could alter our ability to achieve our current long-term objectives.	Mid	Mid	Respond to situation

Part 9: **Business processes**

9.1 Overview

This section covers the key Business Processes in place to assist BOPRC in delivering Asset Management and services.

Specific detail is provided on the following aspects:

Bay of Plenty Regional Council Business Continuity Plan - this details Council's ability to function and respond during a disaster or other significant event to assist with ongoing operation of key functions.

Civil Defence Emergency Management (CDEM) - The CDEM Group works together to reduce the potential effects of hazard events and to promote community and council readiness (preparedness).

Lifelines - Lifelines groups are typically voluntary groups of utilities working together to improve the resilience of infrastructure to hazards, often operating under the auspices of the Regional Council.

Plan Review and Monitoring – provides guidance on the long-term sustainability of this document.

Advanced AMP and OAG Criteria – Tables are provided that indicated the requirements that need to be addressed to achieve Advanced AMP status. This can be used as a guide for future asset management improvement in combination with the improvement plan.

9.2 Bay of Plenty Regional Council Business Continuity Plan

In the interests of sound business continuance planning, BOPRC has a Business Continuity Plan to effectively react and respond to any crisis in a manner that ensures that its activities, provision of services and staff wellbeing are not unduly affected.

This Plan has been prepared to ensure the viability of BOPRC's essential services in the event of an emergency or other event that significantly affects Council's ability to deliver effective services to stakeholders. In line with the plan, areas within the Whakatāne office have been allocated which have separate power generation and telephone links to ensure that minimum ongoing operations and communication can be maintained.

The building upgrade work in Tauranga included backup generator capability.

The key areas covered by the continuity plan include:

- Information Services Section Emergency Management Response.
- Databases, Internet and Emergency Management Response.
- GIS and Emergency Management Response.
- Human Resources Section Emergency Management Response.
- Property Section Emergency Management Response.
- Customer Services and Records Section Emergency Management Response.
- Governance Services Section Emergency Management Response.
- IT Operations Section Emergency Management Response.

9.3 Civil Defence Emergency Management

9.3.1 Why is a plan needed?

The Bay of Plenty has a wide range of hazards, including flooding, earthquakes, volcanic eruption, fire and a range of technological hazards. These hazards can cause disruption and death in communities and we need to be ready to meet the challenges that hazard events create.

It has been recognised for some years that emergency management needs to improve its ability to manage these hazards, respond to and recover from disasters, and to better coordinate limited emergency management resources. There is also an unrealistic level of expectation of what can be done for communities in a time of disaster. Communities need to be aware of the hazards and the potential consequences of these so that they are able to appropriately prepare for, respond to, and recover from a hazard event.

The Civil Defence Emergency Management Group Plan provides the basis for civil defence and emergency management (CDEM) in the Bay of Plenty. It has been prepared by the CDEM Group. This Group is made up of the following Bay of Plenty local authorities:

- Bay of Plenty Regional Council
- Kawerau District Council
- Ōpōtiki District Council
- Rotorua District Council
- Tauranga City Council
- Western Bay of Plenty District Council
- Tauranga City Council

The Plan is a requirement of the Civil Defence Emergency Management Act (CDEM Act) 2002. The Act requires that each CDEM Group has a plan to ensure that hazard management within the region occurs in an integrated and coordinated way. The plan must be consistent with the provisions of the CDEM ACT 2002.

The Bay of Plenty CDEM Group will, by implementing the principles of emergency management, endeavour to develop a safe and sustainable environment where the public and infrastructure are best able to coexist with natural and technological hazards.

The purpose of this Plan

The purpose of this Plan is to provide a framework for civil defence and emergency management decisions to be made across the Bay of Plenty. The Plan also creates a commitment to the implementation of tasks and actions. It is expected that local authority long-term council community plans and the funding programmes of other agencies and groups will include financial or resource provision to enable the implementation of this Plan Development and Review

The CDEM Plan was developed by drawing from a number of information sources. Guidelines on producing group plans published by the Ministry of Civil Defence and Emergency Management (MCDEM) were used as the basis for developing this Plan. These guidelines ensure a degree of consistency on a national basis.

Hazard management will continue to be refined through the development of Standard Operating Procedures (SOPs) and detailed response to individual hazards. The Group Plan will be regularly evaluated to ensure that it remains relevant and up-to-date. Minor changes will be made to the Plan as required. More significant changes will require consultation or will be aligned with the process of reviewing the Plan. Group plans must be reviewed at least every five years (2010).

This Plan remains current for five years from the date of approval by the CDEM Group (CDEM Act 2002, Section 53). However, annual reporting on the performance of the Group against the stated actions and targets within the Plan will allow for an ongoing review process to occur. On the basis of this ongoing review specific amendments may be made prior to the Plan's expiry.

Two years after the adoption of the Plan, a formal review will be undertaken to assess its implementation. This review may recommend changes to the Plan.

The CDEM Act sets out a public process by which amendments can be made to the plan (CDEM Act 2002 Sections 56 and 57). Other than those amendments deemed to be minor, any amendments to the Plan are required to be publicly notified. This is to allow any party who is affected to lodge submissions setting out their concerns and have these considered by the CDEM Group.

Profile of the Bay of Plenty CDEM group area

Jurisdictional Boundary

Local authority boundaries are used to define the areas that CDEM Group plan cover. For the Bay of Plenty the following local authorities are part of the Plan:

- Bay of Plenty Regional Council
- Ōpōtiki District Council
- Rotorua District Council
- Kawerau District Council
- Western Bay of Plenty District Council
- Whakatāne District Council
- Tauranga City Council

Bay of Plenty Regional Council has a number of systems in place in case of a civil defence emergency or other emergency/failure. Some of these are as follows:

The main Whakatāne building and Regional House, Tauranga can both be utilised as a civil defence headquarters.

The capital work planned in Tauranga includes Wallingford House being upgraded to an Importance Level 4 Category building to accommodate Council's Group Emergency Coordination Centre. The IL4 rating means that this facility will be able to operate independently of mains services and systems (power, communication, waste water and potable water).

Back-up generators are in place in the Tauranga and Whakatāne building to provide minimum services such as phone lines to assist in emergency situations and also to maintain contact during a general power outage.

The main IT server for the Council (held in 26 Toroa Street) has a back-up generator and has security measures such as alarms and specialist fire protection to minimise risks to the server.

Depots house specialist clean up equipment for marine and land chemical spills etc.

Depots are strategically located in Whakatāne, Tauranga and Rotorua.

9.3.2 Lifelines

Bay of Plenty Regional Council participates in a regional lifelines group. While there is no Property representative in the group, staff are kept advised by members of that group.

Lifelines are the essential 'utility' services, which support the life of the community. These services include water, wastewater, stormwater, power, gas, telecommunications and transportation networks. Lifelines groups are typically voluntary groups of utilities working together to improve the resilience of infrastructure to hazards, often operating under the auspices of the Regional Council. There is a Council representative from the Civil Defence Management Group who also sits within the lifelines group.

Figure 8 Bay of Plenty CDEM Group area.

9.4 Asset Management Plan review and monitoring

This plan is a living document, which is relevant and integral to daily activity. To ensure the plan remains useful and relevant the following on-going process of AMP monitoring and review activity will be undertaken:

- Formal adoption of the AMP by the Committee/Council.
- Review and formally adopt LoS to comply with community outcomes (options vs costs).
- Revise AMP annually to incorporate and document changes to works programmes, outcome of service level reviews and new knowledge resulting from the AMP improvement programme.
- Quality assurance audits of Asset Management information to ensure the integrity and cost effectiveness of data collected.
- Peer review and external audits will be undertaken to assess the effectiveness with which this plan meets corporate objectives. Periodic internal audits will be undertaken to assess the adequacy of Asset Management processes, systems and data and external audits will be undertaken to measure Asset Management performance against ‘best practice’.

Part 10: **Acronyms**

Acronym	Term
AM	Asset Management
AMIP	Asset Management Improvement Programme
AMIS	Asset Management Information System
AMP	Asset Management Plan
AS/NZ	Australia and New Zealand Standards
BRE	Business Risk Exposure
CDEM	Civil Defence Emergency Management
CEO	Chief Executive Officer
DRC	Depreciated Replacement Cost
CDEM	Civil Defence Emergency Management
GIS	Geographic Information System
GRC	Gross Replacement Cost
H&S	Health and Safety
IIMM	International Infrastructure Management Manual
IT	Information Technology
KPI	Key Performance Indicator
LCM	Life Cycle Management
LGA 2002	Local Government Act 2002
LoS	Levels of Service
LTCCP	Long Term Council Community Plan
MCA	Multiple Criteria Analysis
NAMS	National Asset Management Steering (Group)
NPV	Net Present Value
NRB	National Research Bureau
NZIAS16	New Zealand International Accounting Standard 16
NZIV	New Zealand Institute of Valuers
OAG	Office of the Auditor General
ODM	Optimised Decision Making
ORDM	Optimised Renewal Decision Making
O&M	Operations and Maintenance
OSH	Occupational Safety and Health
QA	Quality Assurance
QBL	Quadruple Bottom Line (reporting)
RMA	Resource Management Act 1991
SNZ HB	Standards New Zealand Handbook (Risk)
TYP	Ten Year Plan

Part 11: **Glossary**

Term	Definition
Annual Plan	The Annual Plan provides a statement of the direction of Council and ensures consistency and coordination in both making policies and decisions concerning the use of Council resources. It is a reference document for monitoring and measuring performance for the community as well as the Council itself.
Asset Management (AM)	The combination of management, financial, economic, engineering and other practices applied to physical assets with the objective of providing the required level of service in the most cost effective manner.
Asset Management System (AMS)	A system (usually computerised) for collecting, analysing and reporting data on the utilisation, performance, lifecycle management and funding of existing assets.
Asset Register	A record of asset information considered worthy of separate identification including inventory, historical, financial, condition, construction, technical and financial information about each.
Asset Renewal	Major work, which restores an existing asset to its original capacity or the required condition (stopbank top-up etc.)
Auditor General	The Auditor General of the New Zealand Audit Office.
Capital Expenditure (CAPEX)	Expenditure used to create new assets or to increase the capacity of existing assets beyond their original design capacity or service potential. CAPEX increases the value of an asset.
Community Outcomes	Outcomes developed with the community, which outline the community's vision.
Components	Specific parts of an asset having independent physical or functional identity and having specific attributes such as different life expectancy, maintenance regimes, risk or criticality.
Condition Monitoring	Continuous or periodic inspection, assessment, measurement and interpretation of resulting data, to indicate the condition of a specific component so as to determine the need for some preventative or remedial action.
Condition Rating Survey	Survey carried out to assess the condition of assets.
Critical Assets	Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. Critical assets have a lower threshold for action than non-critical assets.
Current Replacement Cost	The cost of replacing the service potential of an existing asset, by reference to some measure of capacity, with an appropriate modern equivalent asset.
Deferred Maintenance	The shortfall in rehabilitation work required to maintain the service potential of an asset.
Depreciated Replacement Cost	The replacement cost of an asset spread over the expected lifetime of the asset.
Depreciation	The wearing out, consumption or other loss of value of an asset whether arising from use, passing of time or obsolescence through technological and market changes. It is accounted for the by historical cost (or re-valued amount) of the asset less its residual value over its useful life.
Disposal	Activities necessary to dispose of decommissioned assets.
Emergency Work	The restoration work required to restore an asset damaged by a sudden and unexpected event.
Finance 1	Financial management and information system.
Geographic Information System (GIS)	Software which provides a means of spatially viewing, searching, manipulating, and analysing an electronic database.

Term	Definition
Life Cycle Management	A process of managing an asset from initial construction through to disposal.
Optimised Renewal Decision Making	An optimisation process for considering and prioritising all options to rectify performance failures of assets. The process encompasses NPV analysis and risk assessment.
Remaining Useful Life (RUL)	Remaining Useful Life of an asset or asset component. (Generally Useful or Effective life less age).
Stakeholder	A person or organisation who has a legitimate interest in an activity e.g. community, Iwi, etc.
Sustainability	The process of meeting the needs of the present community without compromising the ability of future generations to meet their own needs.