Te Rautaki Tūāhanga
Infrastructure Strategy

EXECUTIVE SUMMARY

Horizons' Infrastructure Strategy identifies the significant infrastructure issues Horizons faces over the next 30 years for its river management, flood protection and drainage infrastructure. The strategy assesses potential options for managing these issues and identifies the preferred approach. The Infrastructure Strategy links with the Financial Strategy and other aspects of the Long-term Plan to demonstrate the implications, including financial implications, of the preferred responses to River Management and Flood Protection Activity. This includes the changes to operational activity, asset management processes and the capital programme, with new performance targets and changes to budgets.

The Infrastructure Strategy focusses on Horizons' river management, flood protection and drainage scheme assets. At the end of the 2022-23 financial year in June 2023, there were 3,794 assets with a total replacement value of $990 million, an increase of 166% compared to the $372 million value about 10 years ago (Long-term Plan, 2015-25).

The River Management and Flood Protection Activity contributes significantly to the achievement of the Community Outcomes and Strategic Priorities defined in the Long-term Plan. The largest contributions to these outcomes are to building the community's resilience to climate change and natural hazards, and supporting a thriving and sustainable economy. These two community outcomes are among trade-offs the Infrastructure Strategy needs to consider, to find a balance between preparing for the impact of climate change to limit disruption to the community and economy during events and operating at an affordable level for the community.

Climate change is reducing the levels of service from the existing assets in the region. These assets are also ageing, with many of them having been established 50 to 60 years ago, in the 1960s and 1970s. Climate change is increasing the frequency of flood events, raising insurance costs, requiring additional expenditure on repairs and contributing to community requests for increased levels of protection.

The Manawatū-Whanganui Region covers approximately 8% of New Zealand's land area. In 2023 it was home to approximately 5% of New Zealand's population, producing approximately 3.8% of the nation's Gross Domestic Product (GDP). The region's population is dispersed across approximately 50 towns and settlements, with around 77% of the population living in the 17 towns with more than 1,000 people. The region's population is predicted to grow by about a third over the 30 years from 2018, with that forecast growth to be centred in the Horowhenua and Manawatū districts and Palmerston North City areas. Projected population growth in the region is expected to be led by people over 65, raising this group from approximately 18% of the population to 26% in 2048.

Household income is variable within and between the districts of the region. The majority of the households i.e. more than 70%, earn less than the average income of $116,000 for the region and 42% earn less than $50,000.

Affordability is a key issue for the Infrastructure Strategy. Demand for activity and the ability to pay for this are influenced by the small, but growing, dispersed population that is largely urban-based and has a high proportion of low income households. There are also increasing costs to deliver the activity through inflationary pressure, additional expenditure to establish improved or new levels of service and the impact of climate change reducing levels of service and contributing to more frequent and larger weather events.

The Infrastructure Strategy considers the balance between affordability and the activity within the programme. Activity in the programme includes works to maintain resilience through existing assets and works to build new resilience through both the operational and capital upgrade programmes. The Infrastructure Strategy also considers how to manage risk to the community from weather or other natural events and having the financial resilience to recover from events when they do occur. In 2023-24, the balance of expenditure compared to rates income ($15.101 million) across these three aspects is:

- Building new resilience. Approximately 20% to servicing loans[1] contributing to funding capital works, primarily work that has already been completed.
- Managing risk for damage. Approximately 15% (8% for insurance payments, 1% for asset renewals and 6% to emergency reserves); and
- Scheme operational activity 70%.

In 2023-24, schemes also have additional income of $1.736 million from other sources; primarily from leases (approximately $1.5 million). There are also significant co-funding contributions to capital upgrades from Central Government that were budgeted at $8.230 million in 2023-24.

Expenditure is increasing due to inflationary pressure. Overall, loan payments are expected to increase based on previous commitments and rising interest rate costs. Insurance costs are forecast to grow due to increased risk, higher asset values for existing assets, and to provide for the addition of new assets by the capital and operational programmes each year. Insurance costs are predicted to increase by 15-20% per year over the first 10 years of the Long-term Plan, although this assumption is considered to have high uncertainty. Scheme insurance costs are predicted to increase by 283% from $1.700 million in year 1 to $6.512 million in year 10. The 166% growth in value of assets from $372 million in the 2015 Long-term Plan to $990 million at the end of the 2023-24 financial year in June 2023 has reduced the proportion of asset value that can be claimed in a single event. The maximum claim value of $100 million (assuming 60% from the Central Government) provided cover for approximately 27% of the asset value in 2015, and this had reduced to approximately 10% in 2023.

[1] This assumes all loans are for capital upgrades

Council resolved to increase the Infrastructural Asset Insurance Policy cover sub limit to enable claims of up to $150 million through to November 2024. From November 2024, Council have resolved to return to the $100 million sub limit that was in place at the start of the 2023-24 financial year. Council has also resolved for the Schemes share of the Material Damage Insurance policy costs to be paid for by Schemes rather than the previous approach of this being a corporate cost. Combined with the predicted baseline increases for this policy in 2023-24, the increase in insurance cost in year 1 of the Long-term Plan is budgeted at $430,231 to $1.7M. Adjusting for the uncertain assumptions around insurance increases of 15% to 20% per year, this insurance cover is predicted to increase to approximately $6.512 million by year 10 of the Long-term Plan and a review of insurance cover is a recommendation of the Infrastructure Strategy.

The Infrastructure Strategy identifies seven key long-term infrastructure issues, considers options for these and outlines a preferred response. These issues, the preferred responses and impact on the Long-term Plan are overviewed in Table 1.

Table 1: Key infrastructure issues for the 2024-54 Infrastructure Strategy, preferred responses, some of the advantages and disadvantages and the impact on the Long-term Plan.

Issue	Response	Advantages	Disadvantages	Long-term Plan impact
1. Affordability of River Management and Flood Protection Activity.	Transitioning to a maintenance-based programme.	▪ A more consistent and structured approach to scheme operational activity with a focus on maintenance of existing assets. ▪ Scheme maintenance priorities to be predominately driven by risk information from asset inspections, with some aspects policy based e.g. all scheme drains to be maintained at least once every 10 years. ▪ Increased resilience to storm events due to prioritisation of maintenance activity based on risk. ▪ Efficiency gains through more work programme certainty, including larger multiyear contracts for some maintenance.	▪ Reduced ability to complete reactive work, e.g. to repair areas that are damaged in an event where there are not currently river management assets. ▪ Programme less responsive to day-to-day requests for support. ▪ Will take time to implement and require new systems and processes to administer and report on progress.	▪ An additional $250,000 toward scheme operational budgets in both year 1 and year 3. ▪ Changes to scheme budgets to provide a more structured maintenance programme (some scheme budget increases, some decreases for operational activity). ▪ New regional-level performance targets for scheme maintenance activity. ▪ New asset management team capacity required to inform programme and track and report on maintenance (see issue 5 below).

Issue	Response	Advantages	Disadvantages	Long-term Plan impact
	A review of loan terms and payments.	▪ Opportunity to review payment amounts and overall costs of existing and planned loans, to consider who pays for these, e.g. rating base and in terms of the timeframes over which the assets will provide benefits (loan terms).	▪ Will require resourcing to be completed. ▪ May increase the overall cost of loans over time, e.g. if loan terms are extended.	▪ To be managed within existing staff budgets, with support from new staff capacity for the Integrated Catchment Management Activity that is funded separately to schemes.
	Transfer projects team staff from Capital (loan) funded to operationally funded (funded from annual rates income).	▪ Lowers the long-term cost of these staff resources. ▪ Enables these staff resources to work across capital and operational delivery.	▪ Requires full funding for this staff cost in the year it is delivered, increasing rate requirements in that year.	▪ A budgeted increase of staff costs of $390,000 in year 2, $140,000 in year 3. Noting these are not new staff positions.
2. Responding to the impact of climate change and natural disasters.	Completing a regional flood vulnerability assessment.	▪ Provides a review of current and projected levels of service of existing flood protection infrastructure in the context of climate change and other new information (e.g. updated information on river flows). ▪ Provides a regional assessment of relative flood vulnerability for the communities of the region. ▪ Provides information to prioritise investment decisions. ▪ Co-funding for the study has been secured from Central Government.	▪ Requires additional investment for work. Horizons share of the budgets to be met from existing budgets. ▪ Will divert staff time from delivery of capital and operational programmes.	▪ No financial impact on the Long-term Plan due to reprioritisation of budgets. ▪ New performance target for the delivery of this report. ▪ Report likely to inform decisions about longer-term capital programmes (see issue 3 below).

Issue	Response	Advantages	Disadvantages	Long-term Plan impact
3. Delivering capital programme works to increase resilience to climate change impacts.	Consolidating the capital programme.	▪ Limits the programme to mainly focus on existing commitments through Central Government co-funded projects, flood protection projects in Palmerston North and Feilding and asset renewals. ▪ Increases the likelihood government co-funded projects will be delivered. ▪ Decreases planned expenditure on capital programmes over time. ▪ Defers decisions on future capital programme upgrades until information is available from the regional flood vulnerability study and the levels of service/funding policy review by the Integrated Catchment Management work.	▪ Some known areas with flood risk that have previously been in Horizons capital programme are no longer included, e.g. Marton, Bulls, and Pūtiki. ▪ New areas where requests for flood protection have been made are not included in the capital programme e.g. Saddle Road/ River Road near Ashhurst.	▪ Capital expenditure reducing over the first 7 years of the Long-term Plan to asset renewal costs only from year 8. ▪ All scheme debt projected to be paid by Year 28 of the Infrastructure Strategy.
	Reduce planning for future capital projects (beyond those included in the capital programme).	▪ Focusses staff effort on the operational deliverables and projects within the capital programme. ▪ Increases the likelihood the capital programme will be delivered.	▪ Defers work on projects that could inform on options and costings for capital upgrades.	▪ No Long-term Plan impact, noting this is the area that budgets have been reprioritised to for the regional flood vulnerability assessment.
4. Planning for financial implications of natural hazard events.	Continue with the current amount of insurance.	▪ Continued insurance at current amounts. ▪ Lower cost than options to increase insurance. ▪ Provides for some scheme insurance costs that were previously paid for as a corporate cost to be paid for by schemes	▪ Increased likelihood that insurance cover will be inadequate to cover a single event. ▪ There is an additional cost for the material damage insurance that impacts more on some schemes e.g. Makeura, Manawatū and Moutoa Drainage.	▪ A $430,231 increase in insurance premiums has been allowed for in the Long-term Plan, a 34% increase, raising the budget from $1.270 million to $1.7 million. ▪ This includes transferring the payment of the scheme component of the Material Damage Policy from a corporate cost to a scheme cost.

Issue	Response	Advantages	Disadvantages	Long-term Plan impact
	Reviewing what assets are insured and the amount of insurance for the insured assets.	▪ There is potential to reduce costs through insuring fewer types of assets, or choosing not to insure assets in more schemes.	▪ If the outcome of the review is to reduce the number and value of assets insured, there would be less financial resilience following a large event.	▪ No impact on the Long-term Plan.
	Maintaining the current reserve for the insurance deductible.	▪ Maintains the Horizons emergency insurance reserve at approximately $3.6 million above the amount of the insurance deductible of $3 million.	▪ Provides for a single large event and rebuilding this reserve up after a significant event that required the use of this reserve may be challenging.	▪ No impact on the Long-term Plan.
	Continuing current practice for provisioning scheme emergency reserves and no longer provisioning reserves for the Makirikiri Scheme.	▪ Maintains the current practice for the majority of schemes. ▪ Reduces costs for the Makirikiri Scheme.	▪ 16 of the 34 schemes provision emergency reserves and some schemes may be vulnerable to a future event due to reserve amounts being zero or low.	▪ No impact on the Long-term Plan other than existing rating for scheme emergency reserves and reduced rating for reserves for the Makirikiri Scheme.
	Review the practice on provisioning for scheme emergency reserves.	▪ Enables the review of reserve provisioning to occur alongside the levels of service and funding policy review through the Integrated Catchment Management Activity and the review of loan payments. ▪ Provides for reserve balances after Cyclone Gabrielle works and other drawdowns, to be confirmed before any changes are made.	▪ May defer increasing reserves.	▪ No impact on the Long-term Plan other than the resourcing to undertake this work which is planned through existing staff budgets and the new staff capacity as a part of the Integrated Catchment Management Work programme.
	Increasing capacity for asset management activity.	▪ Increased understanding of and reporting of asset condition and risks. Improved prioritisation of the maintenance programme to areas of greatest risk, to increase resilience and reduce risk.	▪ Additional costs of two new staff positions.	▪ Addition of two new staff positions to the asset management team with costs to be recovered via the schemes ($250K).

Ngā putanga ā-hapori **Our community outcomes**

He whakamana hapori, he hapori kori
Our region's communities are vibrant and empowered

He pūnaha hauropi ora
Our region's ecosystems are healthy

He rohe piki te ōhanga, piki te taiao
Our region's economy is thriving and environmentally sustainable

Issue	Response	Advantages	Disadvantages	Long-term Plan impact
5. Maintaining existing assets and understanding our asset condition and maintenance requirements.		▪ Improved capacity to coordinate, prioritise and report on asset management and scheme maintenance activity.		▪ New performance targets for reporting on asset condition and the maintenance programme.
	Prioritising asset inspections.	▪ Increases the focus on assets with the greatest risk.	▪ No disadvantages identified	▪ To be managed within existing staff budgets combined with the new resource above. ▪ New performance targets for asset inspections.
	Reducing the number of asset management plans to fewer, if not one, asset management plan.	▪ Increased consistency in approach, improved efficiency and ability to manage risk at programme rather than individual scheme level.	▪ Resourcing required to complete this task.	▪ Resourcing from existing staff time and the additional positions noted above.
	Improved asset renewal planning.	▪ This will identify the extent of the ageing infrastructure issue using up-to-date asset condition assessments to enable decision-making around what assets will be replaced when and what changes may be required due to new regulatory or community expectation.	▪ Resourcing required to complete this task.	▪ Resourcing from existing staff time and the additional positions noted above.
6. Achieving environmental, regulatory and other performance expectations.	Additional resourcing to achieve regulatory requirements.	▪ Increased capacity to reduce risk of non-compliance with resource consents and other permissions, and to support obtaining new consents. ▪ Increased capacity to assess and respond to new legislative requirements, e.g. Freshwater regulations.	▪ Resourcing required to complete this task.	▪ Resourcing from an existing staff position within the Freshwater Team being reprioritised. ▪ New performance target for reporting on regulatory activity.

Issue	Response	Advantages	Disadvantages	Long-term Plan impact
	Resourcing activity to meet the dam safety legislation[2].	▪ Enables the new legislative requirements to be assessed and responded to for the more than 50 dams within the programme.	▪ Resourcing required to complete this task.	▪ Loan funding for this activity has not been included in the budget until costs and timing are confirmed. These costs, when known, are proposed to be recovered via the scheme funding policies for the schemes with dams. ▪ New performance targets for dam safety work.
7. Merging the River Management and Flood Protection Activity into an integrated catchment management approach.	Undertake an Integrated Catchment Management project.	▪ Will provide greater clarity of how the River Management and Flood Protection Activity and other activities (regulatory and non-regulatory) can better align to provide for an integrated catchment management approach. ▪ This would enable levels of service and the associated funding models to be reviewed alongside reviews of funding for other activities to support the integrated approach.	▪ Resourcing required to complete this task.	▪ Resourcing to be funded via the Integrated Catchment Management project, i.e. separate to schemes. ▪ Will draw on existing river management staff resourcing (funded by River Management and Flood Protection Activity).
	Investigate Room for River Approaches for River Scheme management.	▪ Will investigate different scheme management options that are similar to those being used in the Rangitīkei Scheme. ▪ May have benefits for environmental outcomes, scheme resilience to future events and operational costs. ▪ Co-funding secured from Central Government for the first year of the Long-term Plan.	▪ Resourcing required to complete this task; potential costs of transitioning to a new way of working. ▪ Approach is likely to require changes to the way some land is used.	▪ Resourcing secured from the first year of the Long-term Plan. A budget for this work of $180,000 is proposed from year 2 of the Long-term Plan (as a part of the Freshwater and Partnerships programme).

[2] https://www.building.govt.nz/assets/Uploads/managing-buildings/building-safety/guide-to-complying-with-the-dam-safety-regulations.pdf

1. PURPOSE AND SCOPE

This strategy has been prepared as required by section 101B of the Local Government Act (2002). The purpose of the Infrastructure Strategy is to:

- Identify significant infrastructure issues Horizons faces over the next 30 years;
- Consider and assess potential options for managing these issues and identify the preferred approach;
- Outline the associated service and financial implications of managing the issues; and
- Help our communities understand the long-term investment needs associated with our flood management assets over the next 30 years.

Horizons' Infrastructure Strategy includes assets for flood protection and control works while excluding other assets such as buildings and Forestry Rights. The Infrastructure Strategy is one component of the Long-term Plan and has been developed alongside the Financial Strategy. It informed the budgeting process and establishment of performance targets.

2. STRATEGIC OVERVIEW

The Infrastructure Strategy is influenced by a range of factors (Figure 1) including:

- Horizons Strategic Priorities and Community Outcomes (Section 2);
- External factors, including population demographics and growth, climate change, statutory requirements and economic conditions (Section 3); and
- Internal factors e.g. river and drainage scheme history (Section 4), scheme funding policies (Section 5), financial position of the schemes (Section 6), current asset holdings (Section 7), asset management practices (Section 11), asset condition (Section 12) and planning assumptions (Section 13).

These combine with customer factors such as community expectations, affordability, changes in demand for services and managing different perspectives on the way the programme should be delivered.

The Infrastructure Strategy identifies key infrastructure issues (Section 9) for the period of the Strategy (2024-54). The Strategy assesses options for these issues and presents preferred options (Section 9). In assessing these options, it is acknowledged that there are trade-offs between the Horizons' Strategic Priorities and Community Outcomes that must be considered as part of determining a preferred option. Further, that the community's view on these options is an important component of deciding the direction for the schemes. For this reason, the consultation process for the Long-term Plan will provide for community input on key issues such as insurance (Section 8) and funding policies (Section 5). It is important to note the whole Infrastructure Strategy and all of the options will be able to be commented on as a part of the Long-term Plan consultation process.

The Infrastructure Strategy must outline the planned capital programme (Section 10) and the forecast capital and operational spend (Section 14).

Figure 1: The Infrastructure Strategy as a part of the Long-term Plan.

Horizons Regional Council undertakes river management, flood protection and land drainage activity to manage risks associated with natural hazards, enable economic productivity and to provide for community wellbeing. This activity contributes significantly to Council's Community Outcomes (Table 2) and Council's Strategic priorities (Table 2).

This activity contributes to economic wellbeing of the region and protection from events that would otherwise interrupt the community's activity. A challenge for this activity is that the benefits of the investment can be overlooked due to the reduction in impact and difficulty in quantifying what would have occurred without the investment.

Table 2: Infrastructure Strategy alignment with Councils Strategic Priorities and Community Outcomes.

Strategic priority	Contribution
Building resilience to the impacts of climate change.	River management, flood protection, and drainage activity plays a key role in protecting the community from the impacts of climate change, building new resilience and responding to weather events.
A holistic approach, from the mountains to the sea (integrated catchment management).	River and drainage work programmes form part of the current management approach delivery for the community and aims to operate in an integrated manner.
Strengthening partnerships with tangata whenua.	River and drainage activity is part of the main operational delivery programmes for Horizons and provides a range of opportunities to strengthen partnerships with tangata whenua.
Connecting people and places through effective public transport connections.	The river management, flood protection and drainage activities provide a range of benefits by increasing resilience of critical infrastructure, including transport links.
Community outcome	**Contribution**
Our region's communities are resilient to the impacts of natural hazards and climate change.	River management, flood protection, and drainage activity plays a key role in protecting the community from the impacts of climate change, building new resilience and responding to weather events.
Our region's economy is thriving and environmentally sustainable.	A primary purpose of the activity is to reduce the impact of weather events on the economy and to enable productive potential of land to be realised.
Our region's communities are vibrant and empowered.	This activity contributes to the economic wellbeing of the region and protection from events that would otherwise interrupt the community's activity.

Ngā putanga ā-hapori **Our community outcomes**

He whakamana hapori, he hapori kori
Our region's communities are vibrant and empowered

He pūnaha hauropi ora
Our region's ecosystems are healthy

He rohe piki te ōhanga, piki te taiao
Our region's economy is thriving and environmentally sustainable

Our region's ecosystems are healthy.	Environmental outcomes are increasingly a key consideration of River Management and Flood Protection Activity.
Our region has effective transport networks.	The river management, flood protection and drainage activities provide a range of benefits by increasing resilience of critical infrastructure, including transport links.
Our region's relationships with iwi and hapū are respectful and mana-enhancing.	River management, flood protection, and drainage activity provides many opportunities for building relationships with iwi and hapū to deliver outcomes for the regional community.

3. REGIONAL CONTEXT

3.1. Our geographic context

The Region is approximately 8% of New Zealand's area covering more than 2.2 million hectares. The region covers the areas of seven territorial authorities and also has parts of three other Territorial Authorities (Figure 2).

Figure 2: Map of the Manawatū-Whanganui Region showing Territorial Authority Boundaries

3.2. Our people

The regional population was reasonably stable at approximately 230,000 from the 1990's through to 2013 (Figure 3). Since then there has been an increase to 260,900 in 2023[3], approximately 5% of New Zealand's population in 2023.

During the 30 years from 2018, the population is projected to grow to approximately 355,100, an increase of 36%[4] i.e. more than one-third. The fastest-growing age group will continue to be the 65-plus group, increasing from 18% of the population in 2018 to 26% by 2053. Manawatū and Horowhenua districts, as well as Palmerston North City, are predicted to lead the region's growth, while Tararua, Rangitīkei, Whanganui, and Ruapehu Districts are expected to continue positive but modest growth.[5]

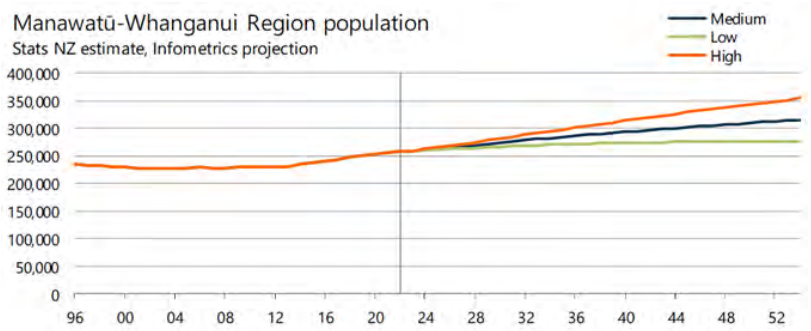

Figure 3: Projected population growth across the region to 2054. Source, Infometrics

[3] Ministry of Business Innovation and Employment, https://webrear.mbie.govt.nz/theme/population-estimates/map/timeseries/2023/manawatu-wanganui?accessedvia=manawatu-wanganui&areatype=ta&right-transform=absolute (Accessed 19 December 2023).

[4] Infometrics has provided low, medium and high growth scenarios. Horizons, along with all the Territorial Authorities in the region, are using the high growth scenario for its long-term planning. See the Long-term Plan Forecasting Assumptions.

Manawatū-Whanganui's regional population is predominately based in urban areas with approximately 77%, being located in the 17 towns with populations of more than 1,000 people (Table 3, Figure 4). There are more than 30 other towns and settlements in the region (Table 4). These face an increased challenge for infrastructure investment due to lower population numbers. With approximately 50 settlements and an overall total of approximately 116,000 ratepayers, prioritisation of investment in infrastructure is required to ensure programme affordability.

Table 3: Towns in the Manawatū-Whanganui Region with more than 1,000 people in 2023[6]

Urban area	Population	Percentage of region
Palmerston North	82,500	32%
Whanganui	42,800	16%
Levin	19,800	8%
Feilding	17,750	7%
Dannevirke	5,640	2%
Marton	5,590	2%
Taumarunui	4,800	2%
Foxton	3,380	1%
Ashhurst	3,350	1%
Pahiatua	2,840	1%
Bulls	2,210	1%
Foxton Beach	2,170	1%
Taihape	1,800	1%
Woodville	1,670	1%
Shannon	1,610	1%
Ohakune	1,510	1%
Raetihi	1,090	0%
Total population in towns with greater than 1,000 people	200,510	77%
Total population (region)	260,900	

[5] Infometrics Manawatū-Whanganui Population Projections May 2023, page 21.

[6] Source Statistics New Zealand via Wikipedia (https://en.wikipedia.org/wiki/Manawat%C5%AB-Whanganui).

Town/Settlement				
Bunnythorpe	Kai Iwi	National Park	Pohangina	Tangimoana
Eketahuna	Kimbolton	Norsewood	Pongaroa	Tokomaru
Halcombe	Koitiata	Ohakea	Rangataua	Waikawa Beach
Himatangi Beach	Longburn	Ōhau	Ratana	Waiouru
Hiwinui	Manakau	Ohura	Raurimu	Waitārere Beach
Hōkio Beach	Mangaore	Ormondville	Rongotea	
Hunterville	Mangaweka	Owhango	Sanson	

Table 4: Other towns and settlements in the Manawatū-Whanganui Region[7].

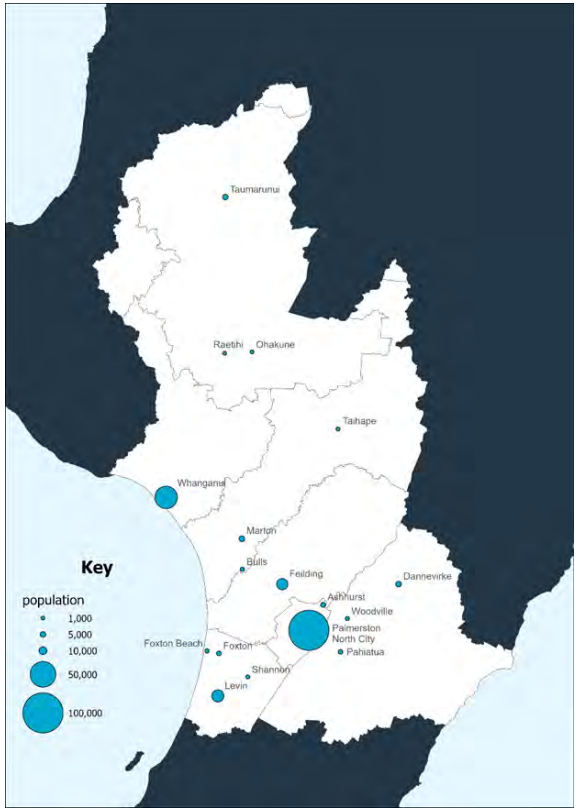

Figure 4: The Manawatū-Whanganui Region showing towns with more than 1,000 people.

[7] Source Wikipedia (https://en.wikipedia.org/wiki/Manawat%C5%AB-Whanganui).

Implications for the Infrastructure Strategy

Population numbers and growth projections provide insight into where the population is based and where it is predicted to grow. This is an important component in considering priorities for flood protection activity and investment over the life of the Infrastructure Strategy.

The data shows that the region's population of approximately 261,000 in 2023 is set to grow more than one third to approximately 355,000 people with people in the 65-plus group increasing to make up more than a quarter of the population. While all districts are predicted to have positive population growth, increases are predicted to be higher in Manawatū and Horowhenua districts and Palmerston North City. The growing population will add pressure to the levels of service required in the areas of growth. The increase in the 65-plus age group in the region is likely to increase the amount of people on fixed incomes and reduce the ability to pay for increasing costs of levels of service.

In 2023, more than three-quarters (77%) of the population was urban-based and located in towns across the region with more than 1,000 people. Predicted population growth is likely to be in the Manawatū, Horowhenua and Palmerston North areas. Within the limited resourcing available for infrastructure management and upgrades, the Infrastructure Strategy is prioritising flood protection work for urban townships to focus resources on the areas with larger populations. As a part of the Infrastructure Strategy, a regional flood vulnerability assessment will be completed to assess the relative risk in the towns within the region.

Regional Gross Domestic Product (GDP)

The region generated $14.2 billion of GDP in the year to June 2023. This is 3.8% of New Zealand's total GDP in a region that represents approximately 8% of New Zealand. The regions GDP in 2023 was up from $13.8 billion in June 2021 (+2.9%). The structure of the regional economy supported economic growth from 2020 to 2022 with our industries less sensitive to the impacts of Covid-19 than the national sector. Strong global demand and elevated prices for food grown across the region also supported the region's economic performance relative to many parts of New Zealand.

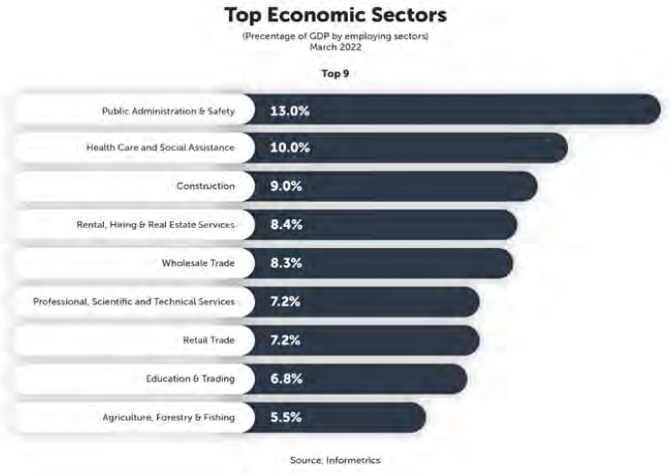

Figure 5 Top Economic Sectors in the Manawatū-Whanganui Region[8].

[8] Source: Annual Economic Snapshot as of December 2022, Central Economic Development Agency (CEDA) *https://ceda.nz/wp-content/themes/ceda/uploads//Economic-Dashboard-2022-Manawatu-draft13.png* (accessed 19 December 2023)

Ngā putanga ā-hapori **Our community outcomes**

He whakamana hapori, he hapori kori
Our region's communities are vibrant and empowered

He pūnaha hauropi ora
Our region's ecosystems are healthy

He rohe piki te ōhanga, piki te taiao
Our region's economy is thriving and environmentally sustainable

Employment

In the September quarter 2023, the regional unemployment rate was 4.1%, coming off a low of 2.9% from the June quarter 2022. The NEET (Not in Employment, Education or Training) rate was 11% in March 2023, slightly below the national rate of 11.2%. Unemployment was lower than the ten-year average unemployment rate of 5.4%.

From 2022 to 2030, employment in Manawatū-Whanganui is forecast to grow 1.0% per year on average, compared to 1.2% nationally. Public administration, health, manufacturing, and education are expected to lead regional employment with jobs in agriculture forecast to start softening. Construction is predicted to remain a significant industry for the region. During this period, employment growth is forecast to be strongest in Manawatū, Palmerston North, Horowhenua and Rangitīkei, all growing in excess of 1% per year

From 2030 to 2054, employment in Manawatū-Whanganui is forecast to grow 0.4% per year, just behind the national average of 0.5% and regional employment growth is expected to slow across all industries. Growth will continue to be led by health and public administration. Employment in agriculture is also forecast to ease, reflecting the predicted influence of higher carbon pricing and the adoption of technology and capital investment in the sector to reduce emissions and increase productivity. The four districts mentioned above are still expected to lead growth, albeit at slower rates of around 0.5% per annum. After 2030, weakening agriculture employment will likely impact more in rural districts such as Ruapehu, Tararua and Rangitīkei.

Income and affordability

Low unemployment in recent years has driven an increase in wages and salaries, resulting in a significant increase in household incomes across the region. In 2023, the average annual household income in the Manawatū-Whanganui Region was $116,000 compared to $88,400 in 2019, a 31.2% increase. Nationally, average income was $132,800 in 2023, up from $106,300 in 2019, representing a 25% increase.[9]

Although incomes are increasing, so is the cost of living. Sharp increases in interest rates and inflation driven by disrupted global and domestic supply are impacting many households. While the rate of inflation is reducing, the cumulative price increases alongside higher housing costs will continue to put pressure on households and businesses, both in Aotearoa, New Zealand and around the world. These factors are expected to dampen economic growth during 2024 and 2025.

While the average income at a regional level is $116,000, there is a wide range of incomes around this amount (Table 5, Figure 6). Approximately 42% of households earn less than $50,000 per annum and a further 30% of households earn less than $100,000. This means more than two thirds (over 70%) of the region's households earn less than the average income for the region.

There are also variations in the household incomes across the various districts of the region (Table 5, Figure 6). Examples of this include Manawatū and Palmerston North areas having approximately one third of households earning less than $50,000 per annum while this group is closer to half the population in Whanganui (46.8%) and Horowhenua (48.6%). This highlights the differing ability of districts to afford to respond to growth.

[9] Ministry of Business Innovation and Employment, https://webrear.mbie.govt.nz/theme/population-estimates/map/timeseries/2023/manawatu-wanganui?accessedvia=manawatu-wanganui&areatype=ta&right-transform=absolute (Accessed 19 December 2023)

Table 5: Table of household income distribution in the Manawatū-Whanganui Region in 2023[10].

	Percentage of households earning $0 - $50,000	Percentage of households earning $50,000 - $100,000	Percentage of households earning $100,000+
Horowhenua	48.6	27.7	17.5
Manawatū	33.5	31.5	29
Palmerston North	34.7	29.6	29.4
Rangitīkei	41.4	31.4	20.1
Ruapehu	41.8	29.1	17.5
Tararua	43.5	30.4	18.7
Whanganui	46.8	27.5	17.9
Regional total	41.5	29.6	21.4

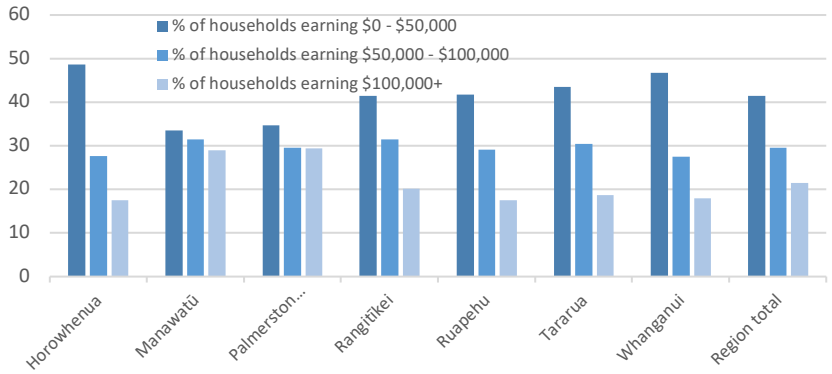

Figure 6: Graph of household income distribution across the region in 2023.

[10] Source: https://webrear.mbie.govt.nz/theme/household-income-distribution/map/barchart/2018/wanganui/30001-50000?accessedvia=manawatu-wanganui&areatype=ta&right-transform=absolute

Implications for the Infrastructure Strategy

The modest population growth predictions for rural districts and predictions of softening employment in the rural sector could raise challenges for affordability for rural activity-based schemes, which are facing increased costs over time for scheme activity. There is recognition that this growth will be variable in the mix of industries and parts of the region and this will continue to influence the ability of various schemes ability to pay given that schemes are largely funded by targeted rates.

Affordability is an ongoing challenge for the regions flood protection and drainage activity, particularly in areas of the region with fewer ratepayers and increased proportions of households have lower average income levels.

3.4. Climate change

Climate change impacts are a significant issue for river and drainage infrastructure management. The importance of building resilience to the impacts of climate change and natural hazards is reflected in its inclusion as one of Council's four strategic priorities and its six community outcomes (see section 1.4, Strategic Framework, in the Long-term Plan).

An overview of the likely impacts of climate change on the region is provided in the Climate Change section of the Long-term Plan and Horizons Regional Climate Change Risk Assessment[11]. This information is summarised below to overview the potential impacts on the Infrastructure Strategy.

[11] https://www.horizons.govt.nz/HRC/media/Data/20210902_Horizons-CCRA_Report-signed_1.pdf

Ngā putanga ā-hapori **Our community outcomes**

He whakamana hapori, he hapori kori
Our region's communities are vibrant and empowered

He pūnaha hauropi ora
Our region's ecosystems are healthy

He rohe piki te ōhanga, piki te taiao
Our region's economy is thriving and environmentally sustainable

2050		
Precipitation	Temperature	PED
Increase of 0-10% in spring and winter	Increase of ~1.1°C	**Increase 0-120 mm/year**
Decrease of 0-5% in autumn and summer (lower region)	+ 0-15 hot days	**0-4 weeks reduced grass growth**

2100		
Precipitation	Temperature	PED
Increase of 15-20% in winter (north) Decrease 0-20 in winter (east)	Increase of up to 3.5°C	**Increase 20-200 mm/year**
Increase of 0-15% in summer (east) Decrease 5% in summer (west)	+ 15-60 hot days	**1-7 weeks reduced grass growth**

Climate change driver/variable	Mid term (2050) RCP 8.5	Long term (2100) RCP 8.5
Annual rainfall	- 8-15% in summer rainfall + 10-15% winter rainfall	- 10-15% in summer rainfall + 4-8% in water rainfall
Sea level rise	+ 0.3m	+ 0.8m
Inland flooding	+ 7% rainfall depth (24hr, 100yr)	+14% rainfall depth (24hr, 100yr)
Higher temperature	+ 0.5-1.25°C + 1-1.25°C (summer)	+ 2.5-3.5°C + 3.0-3.5°C (summer)
Average change in 'hot days' from present day (20)	+0-10 days (Central Plateau) + 15-20 days (Whanganui and hill country, Taumaranui)	+5-20 days (Central Plateau) +50-60 days (Whanganui and hill country, Taumaranui)
Average change in 'cold nights' from 0-10 cold nights (coastal) present day	- 0-10 cold nights (coastal) -10-40 cold nights (inland, high elevation)	- 0-10 cold nights (coastal) - 30-90 cold nights (inland, high elevation)

Figure 7: Climate projections for the region at 2050 and 2100 (RCP 8.5) (NIWA, 2016)[12].

[12] PED is: Potential evapotranspiration deficit (PED) can be thought of as the amount of water that would need to be added, by rainfall or irrigation, to keep the pasture growing at its potential seasonal rate (NIWA, 2007).

Impacts of climate change on the region

The disruptive effects of climate change on the environment and communities are becoming increasingly obvious. Extreme weather events are now occurring at a frequency and intensity that is having significant environmental, economic and social impacts. The summary of climate change impact on the region from Horizons Climate Change Risk Assessment report in 2021, is provided in Figure 7 and sections below.

Changes in Rainfall

NIWA predicts changes in precipitation across the region – not only in terms of how much rain falls but also when and where it falls[13]. The precipitation changes have seasonality and spatial variations throughout the region, particularly when looking out to the end of the century[14].

Precipitation is projected on average to decrease on the eastern side of the Ruahine and Tararua ranges in the spring and winter months by mid-century, while there is a north-south divide present in summer precipitation changes. Northern areas of the region are projected to experience a 5% increase in summer precipitation, while southern areas are projected to have a 5% decrease. By the end of the century, winter rainfall is projected to increase by 20% in the north-west of the region, and decrease by 20% in the south-east of the region. The north/south divide is no longer present in summer months in the long-term timeframe, and spring rainfall is projected to increase by 5% across the majority of the region (NIWA, 2016).

Increases in precipitation can lead to increased frequency and intensity of inland flooding and landslide events. Due to the region's geography (e.g. vast river networks) and geology (e.g. erodible soils), increased precipitation is likely to exacerbate the impacts from these climate-induced hazard events.

Rainfall is likely to increase across most of the region west of the Ruahine and Tararua ranges in winter and spring, while decreasing in autumn and summer. Eastern areas are projected to have decreased rainfall throughout the year. This means it is likely that floods will increase in both frequency and magnitude for both the Rangitīkei and Whanganui catchments, with implications for Horizons in terms of levels of service, scheme operations and maintenance activities.

The impact on the Manawatū catchment, which falls on both sides of the ranges, is less certain. It may give rise to more frequent small to medium-scale flood events, with more limited impact of large flood events caused by catchment-wide rainfall. NIWA research for Horizons has completed a case study of climate change impacts on flows in the Manawatū River, which predicts that mean annual flows in 2040 and 2090 would be similar to recent periods. However, there are likely to be changes in how and when flows occur, including an increase in the average number of high flow events per year[15].

Climate change is also predicted to increase the amount of sediment entering waterways[16] which could impact on levels of flood protection. Further higher rainfall events are likely to affect operating costs for the land drainage schemes that cover the lower Manawatū floodplain.

[13] Regional Climate Change Risk Assessment 'NIWA. (2016). Climate Change and Variability—Horizons Region. National Institute of Water and Atmospheric Research.

[14] Manawatū-Whanganui Regional Climate Change Risk Assessment. https://www.horizons.govt.nz/HRC/media/Data/20210902_Horizons-CCRA_Report-signed_1.pdf

[15] https://www.horizons.govt.nz/HRC/media/Media/Publication/2019-State-of-the-Environment.pdf?ext=.pdf (page 20).

[16] https://www.horizons.govt.nz/HRC/media/Media/Publication/2019-State-of-the-Environment.pdf?ext=.pdf (page 19).

Sea level rise

Data from NZ SeaRise suggests that, under a high emissions scenario, it is likely the region will see a 0.28 m – 0.43 m rise in sea levels for the region by 2050, and a 0.87 – 1.21 m rise by 2100[17]. Increases in sea level can influence the severity of coastal flooding events and exacerbate the impact. Rising sea levels will likely raise water tables for coastal areas, which can make them more prone to flooding, and may impact the operation of drainage schemes.

Information for planning for climate change

Horizons has used the most up-to-date information available on climate change and its impacts for the Long-term Plan. Most of the information we have on regional climate projections was released in the mid-2010s. This includes Horizons commissioning NIWA to downscale global models based on 2013-14 global climate modelling to predict regional outcomes, over with different emission scenarios. NIWA is currently leading work to downscale the latest (2022) global climate projections to understand regional impacts across New Zealand. Those will not be available until mid-2024, too late to inform this Long-term Plan, however, Horizons will continue to assess the impact of climate change as new information is available.

As a part of the Long-term Plan process, Horizons has considered the emissions scenario that it will plan for and included this in the Long-term Plan Forecasting Assumptions. Council's planning is to use the high emissions scenario (RCP 8.5)[18], which is based on 2011 data provided by the Ministry for the Environment. This is the most current data available until the release of NIWA's regional data based on the IPCC6 report, expected in mid 2024.[19] Our 2027 Infrastructure Strategy will benefit from the provision of the updated data. The current RCP 8.5 high emissions scenario will be used in the design of flood protection infrastructure, providing additional protection over time, but will mean an increase in construction costs.

Implications for the Infrastructure Strategy

Climate change is a significant issue when considering long-term infrastructure management and investment in new assets. Climate is likely to reduce levels of service of existing assets over time and lead to requests for higher levels of service in areas with existing assets and in new areas.

The Infrastructure Strategy includes a project to undertake a flood vulnerability assessment that will review current and projected levels of service for existing infrastructure and complete a regional assessment of the relative risk for various towns in the region. This study will also help us better understand where we need to focus our efforts on building resilience within the region.

A further challenge, as highlighted above, is the additional response and recovery work required with more frequent high-flow events. Combined with additional repair work (Figure 8) and likely sediment impacts on levels of service (Figure 9), this will add to costs to the programme and has potential to impact on affordability.

As a part of the Long-term Plan process, Horizons has considered the emissions scenario that it will plan for as outlined in the Long-term Plan Forecasting Assumptions. Council's planning is to use the high emissions scenario (RCP 8.5)[20] in the design of flood protection infrastructure, providing additional protection over time, and this will increase construction costs. Horizons will use updated information as it becomes available.

[17] NZ SeaRise takes into account AR6 modelling and incorporates vertical land movement to produce their modelling.

[18] https://www.horizons.govt.nz/HRC/media/Data/20210902_Horizons-CCRA_Report-signed_1.pdf

[19] Once we have access to the updated data, we will incorporated this into our existing planning information.

[20] https://www.horizons.govt.nz/HRC/media/Data/20210902_Horizons-CCRA_Report-signed_1.pdf

Figure 8: Inspection of a stopbank damaged during a storm event. Climate change is likely to increase the amount of asset inspection and repair work required.

Figure 9: Ōroua River downstream of Kopane Bridge showing silt build up after Cyclone Gabrielle. The silt build up will have reduced the flood protection levels provided by the stopbanks.

Ngā putanga ā-hapori **Our community outcomes**

He whakamana hapori, he hapori kori
Our region's communities are vibrant and empowered

He pūnaha hauropi ora
Our region's ecosystems are healthy

He rohe piki te ōhanga, piki te taiao
Our region's economy is thriving and environmentally sustainable

4. RIVER AND DRAINAGE SCHEMES OVERVIEW

Horizons River Management and Flood Protection Activity provides a range of services to protect people and property from weather events and to protect and enhance the regional economy. The activity is primarily delivered through the 34 river and drainage schemes, which have developed since the 1940s. The main work types include:

1. Flood protection of city, towns, houses, infrastructure and rural land;
2. Erosion control, channel maintenance and gravel management;
3. Vegetation planting and management;
4. Drainage activity; and
5. Amenity and environmental enhancement works.

There were 3,794 assets across the schemes with a total estimated replacement value in the order of $990 million in June 2023. These assets include approximately 500 km of stopbanks, 509 floodgates, over 800 km of river channel and more than 1,100 km of drains. The operational component of the work programme is focussed on maintaining and repairing these assets while also establishing new assets, e.g. where river erosion has occurred, or is likely to occur, in a scheme area that did not previously have an asset. The capital programme primarily aims to increase levels of service, largely focussed on building resilience to storm events. It also includes asset renewals and some capital upgrades for drainage benefits.

The schemes provide a spatial framework for decision-making, including defining the purpose of work programmes, levels of service, budgets and rating mechanisms and priorities. Schemes do have variations between and within them, such as:

- Different types of activity and levels of service in different areas within schemes, e.g. some areas may only have erosion control activity, and other areas may also have flood protection works; and/or
- Different levels of service for a particular activity, e.g. flood protection within the scheme being designed for 100-year return period flood events in rural areas and for 500-year return periods in the urban area.

The 23 river management and erosion control schemes aim to provide protection for people, property and infrastructure from flooding while allowing the productive potential of a significant part of the region to be fully realised. The 11 drainage schemes aim to allow for the productive potential of large areas of low-lying land to be fully realised and, in some cases, also provide some flood protection benefits, e.g. Foxton.

The earlier schemes, developed from the 1940s to 1980s, received significant Central Government funding assistance and subsequently have been predominately locally and regionally funded. Many of the schemes were developed in the 1960s and 1970s in an operating and climate environment much different to that of today. As part of the formation of the Regional Council in 1989, these earlier schemes were inherited from the various predecessor catchment boards. This included approximately 53 detention dams, mostly near Marton and Hunterville. Schemes have continued to evolve over time, with new ones being added, schemes enlarged or merged, and levels of service changing over time through Long-term Plans and other processes.

A formative event for river management in the region occurred in February 2004 when a severe storm impacted much of the lower North Island. The event caused widespread flooding in Horizons' region (Figure 10) and led to some major shifts in Council's organisational approach to flood management and erosion control. Although an upgrade of Palmerston North flood defences had started in the 1990s, the 2004 event led to a further increase in the standard of flood protection for the city. In addition to the 2004 flood event, a 12-year capital programme, known as the rural upgrade project, was undertaken. This was to raise flood banks in the Lower Manawatū Scheme outside of Palmerston North to a standard 100-year level of service. While most of this programme has since been delivered, a final component of the work at Te Arakura Road remains incomplete. A similar, smaller scale, capital

programme for upgrades was also undertaken in the Rangitīkei Catchment after the 2004 event (Figure 9).

A further response to the 2004 event, which also caused significant hill country erosion, was the formation of Horizons' Sustainable Land Use Initiative (SLUI) to improve the resilience of hill country land to future storm events. The work also contributes to reduced sedimentation of water ways, which has benefits to some schemes. Sedimentation of rivers remains a core issue for scheme management, including investment on an annual basis to remove sediment from rivers to create flood carrying capacity, e.g. in the lower Ōroua River downstream of Feilding.

Figure 10: Flooding in Feilding in 2004.

There have been a range of further storm events and flooding since 2004 (Figure 11). These include a significant event in June 2015 that flooded Whanganui, Feilding and other areas, as well as causing significant hill country erosion and damage to roading infrastructure. This event and others have prompted further planning for increased flood defences. This work is ongoing including a project to increase Feilding's flood resilience that forms part of this Infrastructure Strategy.

In 2020, Council embarked on a significant capital upgrade programme to increase flood protection in the region with support from Central Government from the Climate Resilience Fund. This involves four projects in Foxton, Rangitīkei, Lower Manawatū and Palmerston North (Figure 12). Council has also partnered with Central Government, Iwi and others to deliver the River Training Structure component of the Te Pūwaha project at the Whanganui Port area. This project has co-funding support from the Provincial Growth Fund and Whanganui District Council. The Climate Resilience and Te Pūwaha projects are ongoing and form part of the work programme for this Infrastructure Strategy in years 1 and 2.

Cyclone Gabrielle in February 2023 caused significant damage across the Tararua, Pohangina-Ōroua, Lower Manawatū and Rangitīkei schemes. The work programme associated with recovery from the Gabrielle event has influenced this Infrastructure Strategy by drawing on scheme reserves and delaying delivery of capital programmes.

Another outcome from Cyclone Gabrielle was further Central Government co-funding for projects to increase resilience. These include two projects through the Local Government Flood Resilience Co-investment Fund. One in the Pohangina Catchment for direct physical works for flood protection, primarily at Tōtara Reserve, and a second regional project to improve flood monitoring, flood forecasting, regional flood mapping and a flood vulnerability assessment. The second project also includes upgrades to communications and power supplies for Horizons' monitoring network and pump stations. A further government co-funded project following Cyclone Gabrielle is a Nature Based Solutions project to investigate applying "Room

Ngā putanga ā-hapori **Our community outcomes**

He whakamana hapori, he hapori kori
Our region's communities are vibrant and empowered

He pūnaha hauropi ora
Our region's ecosystems are healthy

He rohe piki te ōhanga, piki te taiao
Our region's economy is thriving and environmentally sustainable

for the River" management practices to the Pohangina and Ōroua rivers as well as parts of the Manawatū River (from the Manawatū Gorge to the Ōroua Confluence). These Government co-funded projects extend into the Long-term Plan and form part of this Infrastructure Strategy.

A map of the river and drainage schemes is provided in Figure 13.

Figure 11: Two of the region's largest urban centres during the2015 storm event. Above: Palmerston North. Below: Whanganui

Figure 12: Photos in two flood protection upgrades completed as part of the Climate Resilience work programme. Above: rock armouring at Te Matai Road, Manawatū River. Below: Albert Street, Palmerston North.

Ngā putanga ā-hapori **Our community outcomes**

He whakamana hapori, he hapori kori
Our region's communities are vibrant and empowered

He pūnaha hauropi ora
Our region's ecosystems are healthy

He rohe piki te ōhanga, piki te taiao
Our region's economy is thriving and environmentally sustainable

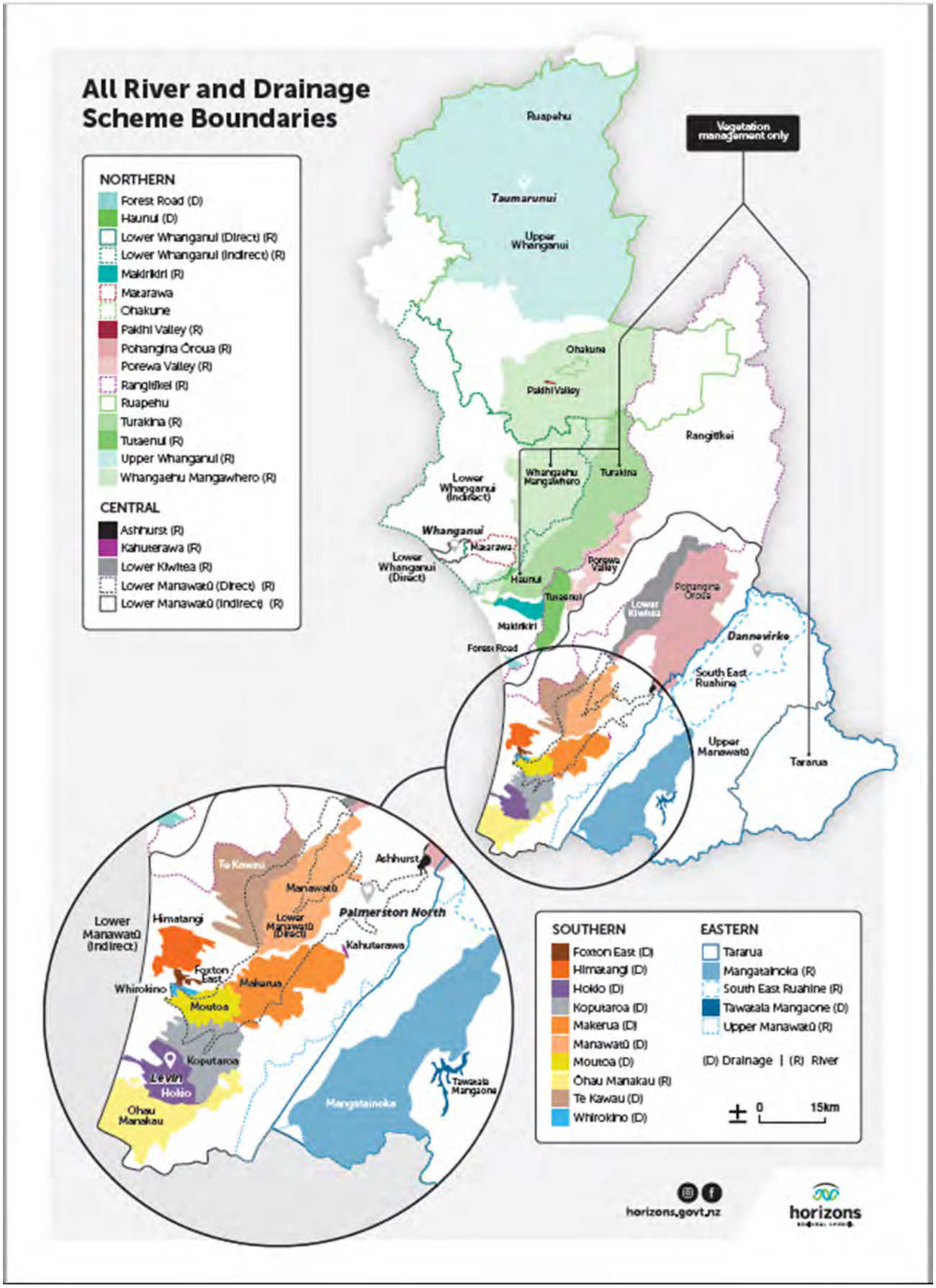

Figure 13: All River and Drainage Scheme Boundaries

5. RIVER AND DRAINAGE FUNDING POLICIES

Scheme funding policies are predominately based on an 80% targeted rate and 20% general rate contribution. The one exception is the Porewa Valley Scheme, where Council have adopted a 40% targeted rate and 60% general rate contribution[21] (Tables 6, 7 & 8). There is also a proportion of activity fully funded by general rates.

The 2023-24 year total rate take for River and Drainage Activity was budgeted at $16.123 million, with 73% from targeted rates ($11.690 million) and 27% general rate funded ($4.434 million).

Targeted rate contributions are recovered through 361 differential rates across the 34 schemes (Tables 6, 7 & 8). An example of the rating differential approach is provided for the Ōhau-Manakau Scheme in Figure 14 and Table 9. All values in this report are exclusive of GST unless specified otherwise. The values in Table 9 are GST-inclusive.

Table 6: Summary of river and drainage scheme targeted and general rate income in 2023-24.

Type of scheme	Targeted rates 2023-24 ($)	General rate contribution 2023-24 ($)	Total rates ($)	Number of rating differentials
Total river schemes	9,253,730	2,803,367	12,057,097	213
Total drainage schemes	2,435,891	608,973	3,044,864	148
Total all river and drainage schemes (excludes R&D - General)	11,689,621	3,412,340	15,101,961	361
River & drainage (R&D)- General	0	1,021,407	1,021,407	0
Total River Management & Flood Protection Activity	11,689,621	4,433,747	16,123,368	361
Percentage	73%	27%		

[21] Horizons Long-term Plan, Page 202.

One component of scheme rating is fully funded from the general rate. This supports responding to information enquiries that are non-scheme related and to support amenity and environmental types of activity. In 2023-24 this rating was budgeted at $54,593.

Table 7: River scheme rates income in 2023-24.

	River schemes	Targeted rates 2023-24 ($)	General rate contribution 2023-24 ($)	Total rates ($)	Number of rating differentials
1	Lower Manawatū (incl. special project)	4,644,554	1,520,400	6,164,954	27
2	Rangitīkei River	848,953	242,419	1,091,372	24
3	Lower Whanganui River	601,380	150,345	751,725	4
4	Mangatainoka	495,102	124,573	619,675	21
5	South East Ruahines	458,597	114,649	573,246	15
6	Pohangina - Ōroua	390,392	97,598	487,990	14
7	Ōhau Manakau	365,850	91,463	457,313	27
8	Tararua	267,443	66,861	334,304	1
9	Upper Manawatū	266,622	66,656	333,278	12
10	Porewa Valley (60:40)	71,420	48,717	120,137	8
11	Lower Kiwitea	120,066	30,017	150,083	3
12	Tutaenui	110,619	27,655	138,274	6
13	Upper Whanganui	101,149	29,773	130,922	7
14	Matarawa	136,640	38,494	175,134	9
15	Whangaehu - Mangawhero	92,726	28,599	121,325	6
16	Ruapehu DC	72,615	18,154	90,769	1
17	Ohakune	54,688	13,672	68,360	1
18	Ashhurst Stream	47,718	11,930	59,648	4

	River schemes	Targeted rates 2023-24 ($)	General rate contribution 2023-24 ($)	Total rates ($)	Number of rating differentials
19	Turakina	44,553	11,138	55,691	6
20	Mākirikiri	28,446	7,111	35,557	12
21	Pakihi Valley	10,423	2,606	13,029	1
22	Tawataia - Mangaone	9,714	2,429	12,143	3
23	Kahuterawa	14,060	3,515	17,575	1
	Miscellaneous - All scheme	0	54,593	54,593	0
	Total river schemes	9,253,730	2,803,367	12,057,097	213

Table 8: Drainage scheme targeted and general rate income in 2023-24.

Drainage schemes	Targeted rates 2023-24 ($)	General rates contribution 2023-24 ($)	Total rates ($)	Number of rating differentials
Manawatū	782,373	195,593	977,966	11
Makerua	507,932	126,983	634,915	24
Moutoa	345,689	86,422	432,111	18
Koputoroa	328,119	82,030	410,149	39
Te Kawau	230,126	57,532	287,658	15
Hōkio	92,217	23,054	115,271	10
Foxton East	60,279	15,070	75,349	6
Whirokino	41,361	10,340	51,701	12
Himatangi	21,530	5,383	26,913	6
Forest Road	13,720	3,430	17,150	6
Haunui	12,545	3,136	15,681	1
Total drainage schemes	2,435,891	608,973	3,044,864	148

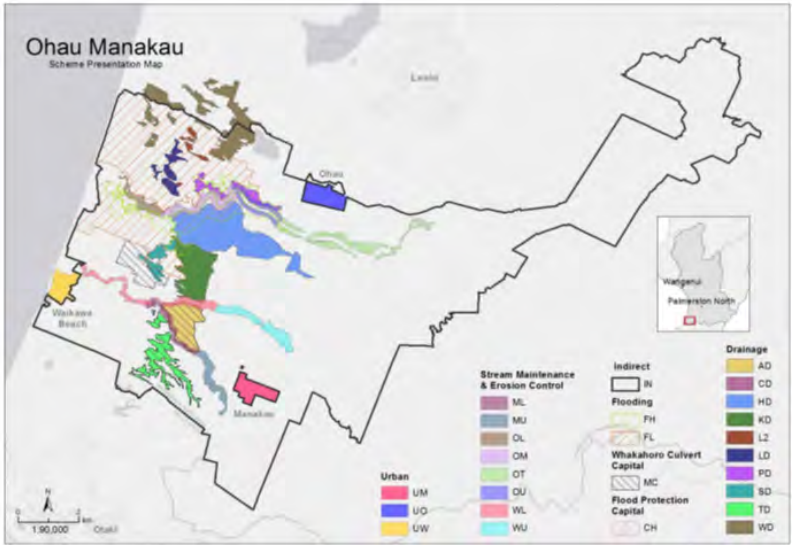

Figure 14: The Ōhau-Manakau Scheme provides an example of a scheme's rating.

Table 9: The rating differentials for the Ōhau Manakau scheme in 2023-24, showing the number of rating units and revenue sought[22] Note these values are GST inclusive. The Class/Diff categorisations relate to the areas shown in Figure 14.

Class/Diff	Rating basis	Number of rating of Units	Unit rate	Revenue sought 2023-24 ($)
AD	$ Per Hectare	137	32.7250000	4,494
CD	$ Per Hectare	5	21.1900000	111
CH	$ Per Hectare	393	33.0520000	13,004
CL	$ Per Hectare	1,373	2.4790000	3,403
FH	$ Per Hectare	394	121.7870000	47,933
FL	$ Per Hectare	1,373	9.1340000	12,538
HD	$ Per Hectare	420	17.6090000	7,388
IN	$ Per Hectare	12,035	7.7670000	93,476
KD	$ Per Hectare	189	36.9960000	6,981
L2	$ Per Hectare	23	30.8650000	702
LD	$ Per Hectare	60	61.7300000	3,696
MC	$ Per Hectare	402	5.1290000	2,062
ML	$ Per Hectare	41	117.1320000	4,811
MU	$ Per Hectare	57	280.8810000	16,044
OL	$ Per Hectare	34	70.2960000	2,385
OM	$ Per Hectare	75	215.5110000	16,143
OT	$ Per Hectare	113	819.5050000	92,624
OU	$ Per Hectare	50	386.7140000	19,197
PD	$ Per Hectare	69	31.5470000	2,184
SD	$ Per Hectare	53	10.6720000	568
TD	$ Per Hectare	134	47.7570000	6,386
UM	$ per $ of Capital Value	76,924,000	0.0000659	5,072
UO	$ per $ of Capital Value	130,943,000	0.0000512	6,703
UW	$ per $ of Capital Value	159,590,000	0.0001315	20,978
WD	$ Per Hectare	265	22.1650000	5,868
WL	$ Per Hectare	86	91.0610000	7,870
WU	$ Per Hectare	77	235.6810000	18,120
			Scheme	**420,741**

[22] 2023-24 Annual Plan, page 65

Implications for the Infrastructure Strategy

The rating mechanisms for schemes have evolved over time and have been reviewed via scheme reviews and through Long-term Plan and Annual Plan processes.

The complexity of the rating mechanisms, increasing costs and other factors have contributed to calls from the community to review scheme rating systems. Council is planning to review the scheme rating systems alongside levels of service over the first three years of the Long-term Plan as a part of the Integrated Catchment Management programme of work.

Council reviewed the funding policies as a part of the Long-term Plan process and made amendments to the scheme funding policies. This included formally recognising the policy of landowners contributing 60% of the cost of erosion control works in the Pohangina-Ōroua Scheme, with a new funding policy being added to the Long-term Plan for this.

Council consulted on changing the drainage schemes funding model of 80% targeted rate and 20% general rate funded changing to 90% targeted rate and 10% general rate funded and resolved to keep the 80% targeted rate and 20% general rate portion as part of the policy.

The Porewa Valley Scheme (Figure 15) has a funding policy of 40% targeted rate and 60% general rate contribution in the 2021 to 2031 Long-term Plan (page 202) and this is proposed to be carried forward in the 2024 to 2034 Long-term Plan. The actual rating for this scheme in 2023-24 has been based on a 60% targeted rate and 40% general rate contribution (Table 7). This is to be corrected in the Long-term Plan 2024-2034.

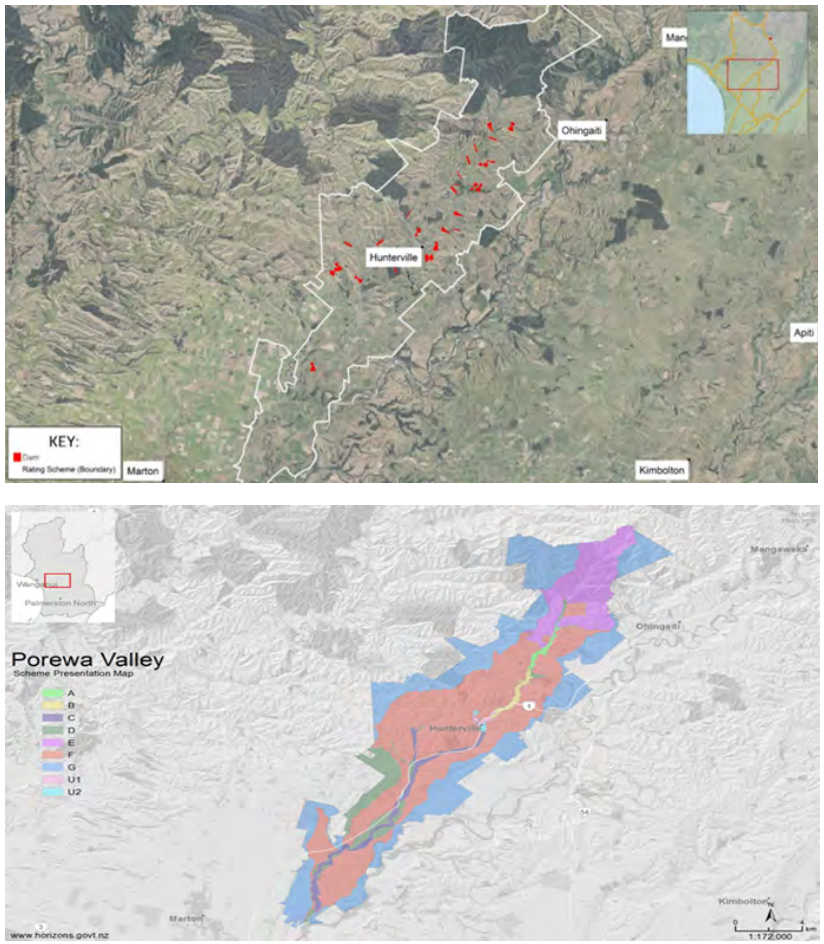

Figure 15: Porewa Scheme. Above: Location of the 27 detention dams. Below: Rating differential areas. This schemes rating policy differs to the other schemes being 60% general, 40% targeted rate.

6. RIVER AND DRAINAGE SCHEMES FINANCIAL POSITION

Schemes have evolved over time and differ in the scale of activity and financial position (Tables 10 to 12). Scheme finances include the assets and reserves, income from rates and other sources, and expenditure on loans, insurance, capital projects, and operational activity.

6.1. Income

The schemes' primary income source is rates. In 2023-24 a total of $15.1 million was rating for the "River Management Scheme" activity (targeted and general rate contributions) and an additional $1.021 million rated for the "River Management - General" activity which also contributes to some aspects of managing schemes. Total rates in 2023-24 were $16.123 million (Table 6 above).

Schemes also have additional income of $1.736 million from other sources, primarily from leases at approximately $1.5 million. Other income is received via direct landowner contributions to works, e.g. in the Pohangina-Ōroua Scheme. Government co-funding is also significant, budgeted at $8.230 million in 2023-24. However, this varies considerably from year to year and is based on specific projects.

6.2. Expenditure

Expenditure includes a range of fixed costs such as loan payments (Section 6.3), insurance payments (Section 8) and reserve contributions (Section 6.4). At an overall level, inflation is increasing costs within the programme. Loan and insurance costs are a component of this. These costs were budgeted at approximately $4.518 million in 2023-24, equating to approximately 30% of the rate income for schemes. The proportional cost is higher on average in river schemes (35%) than drainage schemes (10%). In three of the schemes, loan payments and insurance costs make up approximately 50% of the rate income or more in Lower Manawatū (55%,) Whangaehu-Mangawhero (54%) and Ashhurst schemes (49%).

More information on the components of the scheme budgets is provided in the sections below. The assets and asset valuations are discussed in Section 7. In summary, the asset valuations are based on asset replacement value and few of the approximately 3,794 assets with a combined value of more than $990 million in June 2023, can be sold to provide income for the schemes.

Table 10: Financial information for river and drainage schemes in 2023-24.

Total	Asset value (June 2023) ($)	Scheme emergency reserves (June 2023). Targeted rate component only ($)	Scheme renewal reserves (June 2023). Targeted rate component only ($)	Loan totals (June 2023) ($)	Total rates (2023-24) ($)	Budgeted emergency reserve payments (2023-24) ($)	Budgeted scheme renewal reserve payments (2023-24) ($)	Budgeted loan repayments (2023-24) ($)	Budgeted insurance payments (2023-24) ($)	Budgeted payments loans & insurance (2023-24) ($)	Budgeted loans & insurance payments as a percentage of rate income (2023-24)	Rate income minus loans & insurance (2023-24) ($)	Rate income minus loans & insurance as a percentage of rate income (2023-24)
Total River Schemes	873,984,868	10,373,118	280,632	40,713,064	12,057,097	783,935	40,057	3,050,608	1,153,699	4,204,307	35%	7,852,790	65%
Total Drainage Schemes	116,048,665	1,502,799	619,913	2,099,408	3,044,864	57,608	84,974	197,466	116,072	313,538	10%	2,731,326	90%
Total All River and Drainage Schemes (excludes general)	990,033,533	11,875,917	900,545	42,812,472	15,101,961	841,543	125,031	3,248,074	1,269,771	4,517,845	30%	10,584,116	70%

Table 11: Financial information for river schemes in 2023-24.

	River schemes	Asset value (June 2023) ($)	Scheme emergency reserves (June 2023). Targeted Rate component only ($)	Scheme renewal reserves (June 2023). Targeted Rate component only ($)	Loan totals (June 2023) ($)	Total rates (2023-24) ($)	Budgeted emergency reserve payments (2023-24) ($)	Budgeted scheme renewal reserve payments (2023-24) ($)	Budgeted loan repayments (2023-24) ($)	Budgeted insurance payments (2023-24) ($)	Budgeted payments loans & insurance (2023-24) ($)	Budgeted loans & insurance payments as a percentage of rate income (2023-24)	Rate income minus loans & insurance (2023-24) ($)	Rate income minus loans & insurance as a percentage of rate income (2023-24)
1	Lower Manawatū (incl. special project)	571,048,740	3,905,479	17,780	31,198,899	6,164,954	83,246	0	2,434,542	951,820	3,386,362	55%	2,778,592	45%
2	Rangitīkei River	142,395,839	979,156	0	3,029,441	1,091,372	78,496	0	186,707	68,191	254,898	23%	836,474	77%
3	Lower Whanganui River	9,527,822	1,059,319	-6,810	5,037,506	751,725	72,980	0	188,928	12,729	201,657	27%	550,068	73%
4	Mangatainoka	22,175,146	1,514,050	-22,922	0	619,675	102,300	0	0	23,374	23,374	4%	596,301	96%
5	South East Ruahines	36,650,118	408,177	46,332	236,044	573,246	117,228	12,814	23,893	16,347	40,240	7%	533,006	93%
6	Pohangina - Ōroua	12,391,340	85,235	-28,901	500,000	487,990	104,833	0	0	0	0	0%	487,990	100%
7	Ōhau Manakau	22,613,049	465,098	169,429	270,693	457,313	65,591	10,098	42,045	26,798	68,843	15%	388,470	85%
8	Tararua	0	44,415	0	0	334,304	1,208	0	0	0	0	0%	334,304	100%
9	Upper Manawatū Lower Mangahao	16,600,879	322,468	-289	79,547	333,278	57,993	1,000	22,802	6,834	29,636	9%	303,642	91%
10	Porewa Valley (60:40)	10,318,411	19,581	22,692	0	120,137	2,651	5,100	0	17,400	17,400	14%	102,737	86%
11	Lower Kiwitea	4,232,013	389,704	0	49,450	150,083	23,216	0	0	0	0	0%	150,083	100%
12	Tutaenui	4,805,091	19,350	6,280	22,068	138,274	1,536	350	2,238	6,395	8,633	6%	129,641	94%
13	Upper Whanganui	8,367,945	312,390	0	7,121	130,922	9,847	0	3,506	11,046	14,552	11%	116,370	89%
14	Matarawa	5,533,038	87,183	24,094	100,617	175,134	4,057	6,750	52,679	5,549	58,228	33%	116,906	67%
15	Whangaehu - Mangawhero	0	74,510	0	132,020	121,325	-1,756	0	65,005	0	65,005	54%	56,320	46%
16	Ruapehu DC	0	100,763	0	0	90,769	1,090	0	0	0	0	0%	90,769	100%

	River schemes	Asset value (June 2023) ($)	Scheme emergency reserves (June 2023). Targeted Rate component only ($)	Scheme renewal reserves (June 2023). Targeted Rate component only ($)	Loan totals (June 2023) ($)	Total rates (2023-24) ($)	Budgeted emergency reserve payments (2023-24) ($)	Budgeted scheme renewal reserve payments (2023-24) ($)	Budgeted loan repayments (2023-24) ($)	Budgeted insurance payments (2023-24) ($)	Budgeted payments loans & insurance (2023-24) ($)	Budgeted loans & insurance payments as a percentage of rate income (2023-24)	Rate income minus loans & insurance (2023-24) ($)	Rate income minus loans & insurance as a percentage of rate income (2023-24)
17	Ohakune	0	84,055	0	0	68,360	1,442	0	0	0	0	0%	68,360	100%
18	Ashhurst Stream	593,431	62,789	1,942	49,658	59,648	4,079	0	28,263	756	29,019	49%	30,629	51%
19	Turakina	0	162,621	0	0	55,691	-11,034	0	0	0	0	0%	55,691	100%
20	Mākirikiri	3,698,730	34,223	41,560	0	35,557	526	3,500	0	4,359	4,359	12%	31,198	88%
21	Pakihi Valley	2,389,344	11,149	931	0	13,029	3,047	345	0	1,691	1,691	13%	11,338	87%
22	Tawataia - Mangaone	643,934	26,055	8,514	0	12,143	1,914	100	0	410	410	3%	11,733	97%
23	Kahuterawa	0	7,582	0	0	17,575	259	0	0	0	0	0%	17,575	100%
24	Miscellaneous - All Scheme	0	197,766	0	0	54,593	59,186	0	0	0	0	0%	54,593	100%
	Total River Schemes	873,984,868	10,373,118	280,632	40,713,064	12,057,097	783,935	40,057	3,050,608	1,153,699	4,204,307	35%	7,852,790	65%

Table 12: Financial information for drainage schemes in 2023-24.

	Drainage schemes	Asset value (June 2023)	Scheme emergency reserves (June 2023). Targeted Rate component only.	Scheme renewal reserves (June 2023). Targeted Rate component only	Loan totals (June 2023)	Total rates (2023-24)	Budgeted emergency reserve payments (2023-24)	Budgeted scheme renewal reserve payments (2023-24)	Budgeted loan repayments (2023-24)	Budgeted insurance payments (2023-24)	Budgeted payments loans & insurance (2023-24)	Budgeted loans & insurance payments as a percentage of rate income (2023-24)	Rate income minus loans & insurance (2023-24)	Rate income minus loans & insurance as a percentage of rate income (2023-24)
		($)	($)	($)	($)	($)	($)	($)	($)	($)	($)		($)	
1	Manawatū	53,676,210	44,010	225,914	705,130	977,966	17,609	19,244	61,119	46,911	108,030	11%	869,936	89%
2	Makerua	17,508,252	192,253	140,515	136,013	634,915	5,035	16,971	17,857	20,135	37,992	6%	596,923	94%
3	Moutoa	9,049,216	132,863	-20,156	127,931	432,111	3,515	26,569	19,871	7,295	27,166	6%	404,945	94%
4	Koputoroa	16,932,492	229,640	128,332	576,519	410,149	5,132	25,776	63,570	22,039	85,609	21%	324,540	79%
5	Te Kawau	15,697,627	7,825	125,164	0	287,658	3,282	-7,010	0	18,260	18,260	6%	269,398	94%
6	Hōkio	657,973	77,907	2,883	314,955	115,271	993	516	19,240	87	19,327	17%	95,944	83%
7	Foxton East	122,034	775,825	3,917	222,784	75,349	19,355	630	10,603	103	10,706	14%	64,643	86%
8	Whirokino	1,095,081	15,566	6,977	16,076	51,701	862	1,589	5,206	1,242	6,448	12%	45,253	88%
9	Himitangi	442,068	4,394	2,674	0	26,913	953	489	0	0	0	0%	26,913	100%
10	Forest Road	531,496	5,491	3,693	0	17,150	806	200	0	0	0	0%	17,150	100%
11	Haunui	336,216	17,025	0	0	15,681	66	0	0	0	0	0%	15,681	100%
	Total Drainage Schemes	116,048,665	1,502,799	619,913	2,099,408	3,044,864	57,608	84,974	197,466	116,072	313,538	10%	2,731,326	90%

6.3. Loans

Approximately half of the schemes utilise loans to fund activity. At June 2023, scheme loans totalled $42.812 million over 20 schemes (Tables 10 to 12). Loan repayment timeframes vary within and between schemes. With the size of the capital programme and interest rates having increased in recent years, loan repayments are putting additional pressure on the scheme budgets. Horizons budgeted $3.248 million in 2023-24 for scheme loan repayments at an estimated average interest rate of approximately 3.5%. The $3.248 million equates to more than 22% of Scheme rating income ($15.1 million) and more than 5.5% of Horizons' total rates income in 2023-24 ($59.07 million).

The projections for scheme loans are that interest rates are forecast to decrease over the first few years of the Long-term Plan. Horizons has committed to additional loan funding for capital projects that are currently underway, e.g. the Climate Resilience and Te Pūwaha projects, and this will add to loan payments in future years.

The proposed approach to the capital programme through the Long-term Plan will see increases in loans during the first seven years of the Long-term Plan. With no planned capital upgrade projects scheduled after that, the approach will change to an interest and capital payment-only approach to reduce loan costs. A review of loans, loan terms and loan payments is planned in the first three years of the Long-term Plan.

6.4. Reserves

The river and drainage schemes have two main types of reserves – the emergency reserves and the renewal reserves. There are other river management-related reserve types, including the Horizons emergency insurance reserve and the river and drainage self-insurance reserves. These reserves are discussed further in the sections below.

Scheme emergency reserves

Emergency reserves, often referred to more simply as scheme reserves, are for the purpose of covering costs in years where the annual budget is insufficient. This could include damage and repair costs or funding for a specific piece of work.

The targeted rate component of the emergency reserves totals $11.876 million (Table 10). It is important to note these are the targeted rate components of the reserves, and when the reserves are utilised, there is an additional general rate contribution in line with the funding policy for the scheme. After adjusting for the variation in funding policy for the Porewa-Valley Scheme (using 60% general rate and 40% targeted rate funded), the emergency reserves are estimated to be in the order of $14.9 million, with the general rate contribution included. The targeted rate component of these reserves is presented here to match the values in Horizons' Annual Report for the 2022-23 year (Page 129).

More than 87% of these reserves are in river schemes. The one drainage scheme with significant reserves is Foxton East with $775,825 of emergency reserves reported in the Annual Report.

In 2023-24, all of the schemes provisioned some of their income to emergency reserves to enable repairs in years where there is damage beyond the annual budget's ability to pay. In the 2023-24 year, schemes overall budgeted a net value of $841,543 to be set aside for reserves to approximately 5.6% of the rate take for schemes. In 2023-24 across all the schemes, a total of $861,302 (approximately 5.7% of the scheme rate take) is being budgeted for emergency reserves and four schemes were budgeted to use reserves in 2023-24 totalling $19,759.

Separate to these budgeted reserve drawdowns, drawdowns for Cyclone Gabrielle repairs have been approved for eight of the schemes. The total work programme was estimated at more than $9 million and this exceeded the reserve amounts in some schemes. Council resolved to fund the additional budgets for repairs through use of general reserves and, in the case of the Pohangina also via additional loan funding[23].

Council approved overspends for additional insurance in the 2023-24 year via a resolution in November (see Section 8.3 below). This approval will likely result in drawdowns of reserves for some schemes to fund this expenditure.

Renewal reserves

Renewal reserves are for the purpose of renewing assets. Horizons' approach to asset renewals is discussed in further detail in Section 11. The Targeted Rate component of the renewal reserves totals $900,545 (Table 10), i.e. less than 10% of the emergency reserve amounts. After adjusting for the variation in funding policy for the Porewa-Valley Scheme (using 60% general rate and 40% targeted rate funded), the renewal reserves are estimated to total approximately $1.125 million, with the general rate contribution included. The targeted rate component of these reserves is presented here to match with the values in Horizons' Annual Report for the 2022-23 year (page 130).

Overall, 19 of the schemes provision some budget for asset renewals, including 10 of the 11 drainage schemes. Combined, the budgeted amount for renewal reserves in 2023-24 was $125,031, being approximately 0.8% of the rate take for scheme activity in 2023-24. In 2023-24 across all the schemes, a total of $338,925 (approximately 2.2% of the scheme rate take) is being rated for renewal reserves and five schemes budgeted to use reserves in 2023-24 totalling $213,894.

Other river and drainage activity reserves

In addition to the scheme emergency reserves and renewal reserves, there are three other types of related reserves (Table 13). These are the Horizons emergency insurance reserve, which is for the purpose of paying for the insurance deductible if there is an event that requires an insurance claim. The value of this is currently approximately $3.6 million, being above the insurance deductible of $3 million. There is also a scheme self-insurance reserve of approximately $1.3 million (June 2023).

Following Cyclone Gabrielle, Council committed approximately $2.407 million of general reserves to the recovery works package24. This funding was provided as scheme emergency reserves were predicted to be insufficient to meet the costs of the identified works package in three schemes (Pohangina-Ōroua, Tararua River Management and Upper Manawatū Lower Mangahao). This provision of funding included a contingency of $500,000 and additional funding for debris removal and vegetation management in Tararua District. The actual drawdowns are predicted to be lower than forecast in April 2023 when the approvals were made.

[23] https://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Integrated-Catchment-Committee-Folder/Integrated-Catchment-Committee-2023-10-05/2351%20River%20and%20Drainage%20Activity%20Report.pdf (page 3).

[24] https://www.horizons.govt.nz/HRC/media/Media/Agenda-Reports/Integrated-Catchment-Committee-Folder/Integrated-Catchment-Committee-2023-10-05/2351%20River%20and%20Drainage%20Activity%20Report.pdf (page 3)

Table 13: Summary of Horizons' emergency insurance reserve and river and drainage (R&D) reserves as at June 2023. R&D reserve totals, including general rates, are estimated based on an 80% targeted, 20% general rate contribution.

Reserve	Targeted rate component as at June 2023 ($)	Estimated total as at June 2023, includes general rate component ($)
Horizons emergency insurance reserve		3,617,960
R&D self-insurance reserve	0	1,302,000
R&D scheme reserves – emergency	11,875,917	14,844,896
R&D scheme reserves – renewals	900,545	1,125,400
Total	12,776,462	20,890,256

Implications for the Infrastructure Strategy

The financial positions of the schemes vary. Base costs of loans, reserves and insurance are approximately one-third of the overall rate income budgets for schemes in 2023-24 and approximately 50% in three schemes. These costs are predicted to increase during the duration of the strategy. Inflationary costs and new additional costs, including increased asset management work, new regulatory costs and further loan funding of capital upgrades, will also add pressure on budgets. This will contribute to affordability being a key issue for the Infrastructure Strategy. The Long-term Plan requires important decisions on affordability, and Council, via the consultation process sought the community's views to inform these decisions

7. RIVER AND DRAINAGE SCHEME ASSETS

7.1. Asset value

As at June 2023 Horizons had 3,794 river and drainage assets with a total estimated value exceeding $990 million.

Asset replacement value by scheme

Overall, 72% of the number of the assets and 88% of the asset value are within the river schemes and 12% of the assets and 28% of the asset value are within the drainage schemes (Table 14).

Table 14: Summary of number of assets and 2022-23 replacement values for the river and drainage schemes.

Type of scheme	Number of assets	2022-23 replacement value ($)	Percentage of overall number of assets	Percentage of value of assets
Total river schemes	2,735	873,984,868	72%	88%
Total drainage schemes	1,059	116,048,665	28%	12%
Total all schemes	3,794	990,033,534	100%	100%

Of the 34 schemes, 28 have infrastructure assets (Tables 14 & 15). Some of the schemes are primarily around tasks that do not require Horizons to manage assets e.g. vegetation management in the Tararua Scheme or channel management in the Ohakune Scheme.

The Lower Manawatū Scheme comprises 58% of the total asset value, with the Rangitīkei next largest amount at more than 14% (Table 15). The Manawatū Drainage Scheme has the largest asset value of the drainage schemes (Table 16) with approximately three times the asset value of Makerua, the second largest drainage scheme.

Table 15: Assets summary and 2022-23 replacement values for the river schemes

	River schemes	Number of assets	2022-23 replacement value ($)	Percentage of overall number of assets	Percentage of value of assets
1	Lower Manawatū (incl. special project)	847	571,048,740	22%	58%
2	Rangitīkei River	186	142,395,839	5%	14%
3	Lower Whanganui River	63	9,527,822	2%	1%
4	Mangatainoka	384	22,175,146	10%	2%
5	South East Ruahines	271	36,650,118	7%	4%
6	Pohangina - Ōroua	200	12,391,340	5%	1%
7	Ōhau Manakau	241	22,613,049	6%	2%
8	Tararua				
9	Upper Manawatū Lower Mangahao	133	16,600,879	4%	2%
10	Porewa Valley (60:40)	81	10,318,411	2%	1%
11	Lower Kiwitea	106	4,232,013	3%	0%
12	Tutaenui	62	4,805,091	2%	0%
13	Upper Whanganui	41	8,367,945	1%	1%
14	Matarawa	51	5,533,038	1%	1%
15	Whangaehu - Mangawhero				
16	Ruapehu DC				
17	Ohakune				
18	Ashhurst Stream	24	593,431	1%	0%
19	Turakina				
20	Mākirikiri	25	3,698,730	1%	0%
21	Pakihi Valley	6	2,389,344	0%	0%
22	Tawataia - Mangaone	14	643,934	0%	0%
23	Kahuterawa				
	Total river schemes	2,735	873,984,868	72%	88%

Table 16: Assets summary and 2022-23 replacement values for the drainage schemes.

	Drainage schemes	Number of assets	2022-23 replacement value ($)	Percentage of overall number of assets	Percentage of value of assets
1	Manawatū	309	53,676,210	8%	5%
2	Makerua	209	17,508,252	6%	2%
3	Moutoa	92	9,049,216	2%	1%
4	Koputoroa	126	16,932,492	3%	2%
5	Te Kawau	205	15,697,627	5%	2%
6	Hōkio	41	657,973	1%	0%
7	Foxton East	12	122,034	0%	0%
8	Whirokino	28	1,095,081	1%	0%
9	Himatangi	28	442,068	1%	0%
10	Forest Road	5	531,496	0%	0%
11	Haunui	4	336,216	0%	0%
	Total drainage schemes	1,059	116,048,665	28%	12%

7.2. Asset Types

The assets are considered in seven categories for this Infrastructure Strategy (Table 17). The majority, by number, are erosion protection type assets at 45%, however, flood protection assets make up more than 54% of the value of the assets.

Table 17: River management and drainage assets replacement value by asset type as at June 2023.

Asset type	Number of assets	Replacement value (June 2023) ($)	Percentage by number of assets	Percentage by value
Bank Protection	1,697	383,773,884	44.7%	38.7%
Flood Protection	1,093	535,841,379	28.8%	54.2%
Vegetation Management	770	33,934,305	20.3%	3.4%
Equipment	118	12,572,024	3.1%	1.2%
Control Structure	57	11,799,301	1.5%	1.1%
Site	44	11,359,095	1.2%	1.3%
Enhancement	15	753,545	0.4%	0.1%
Total	3,794	990,033,534	100%	100%

7.3. Changes in asset valuations

Revaluation is undertaken annually by river management staff using a methodology recommended by independent quantity surveyors. The revaluations are reviewed by audit. These revaluations are calculated based on reasonable replacement valuations. The revaluation results for 2022-23 show a total replacement value of $990 million across the asset portfolio, an increase of $80 million (9% increase) from the 2021-22 value of $910 million. There have been substantial increases in value over time (Table 18), with the value in 2023 being 166% more than the valuation in the 2015 Long-term Plan, approximately 10 years ago. The asset valuation increases from June 2022 to June 2023 were driven by a 12% increase in the valuation of bank protection works, which increased overall asset portfolio value by 52% (Table 19). Flood protection assets increased by 6%, adding 38% to the value (Table 19).

Table 18: River management and drainage asset replacement valuation changes over time.

Source	Total replacement value ($ million)	Percentage change (since valuation in row above)	Percentage change (since valuation in Long-term Plan 2015)
Long-term Plan 2015-2025	372		
Long-term Plan 2018-2028	466	25%	25%
Long-term Plan 2021-2031	679	46%	83%
2020-21 revaluation	834	23%	124%
2021-22 revaluation	910	9%	145%
2022-23 revaluation	990	9%	166%

Table 19: Asset revaluations from 2021-22 to 2022-23 by asset type.

Asset type	Number of assets	2021-22 replacement value ($)	2022-23 replacement value ($)	Change in value ($)	Percentage change for the asset type	Percentage of the overall revaluation increase
Bank Protection	1,697	341,723,472	383,773,884	42,050,412	12%	52%
Flood Protection	1,093	506,581,721	535,841,379	29,259,658	6%	36%
Vegetation Management	770	32,119,120	33,934,305	1,815,185	6%	2%
Equipment	118	10,287,730	12,572,024	2,284,294	22%	3%
Control Structure	57	8,341,281	11,799,301	3,458,020	41%	4%
Site	44	10,035,034	11,359,095	1,324,061	13%	2%
Enhancement	15	713,584	753,545	39,961	6%	0%
Total	3,794	909,801,941	990,033,534	80,231,593	9%	100%

8. INSURANCE

Insurance is an important component of managing risk for Horizons' river management, flood protection and drainage activity infrastructure as many assets are necessarily exposed to flood events and can be damaged as a consequence. Beyond floods, other types of events such as earthquakes can also impact the assets.

Insurance is one mechanism by which this risk is managed. Self-insurance (Section 8.7) and provisioning reserves (Section 6.4) are also mechanisms used by the schemes to manage the risk of damage. Insurance claims can be made when the damage exceeds the insurance deductible (Section 8.6), which is $3 million in 2023-24.

The Cyclone Gabrielle event has provided a recent example where damage was not sufficient to trigger an insurance claim, and reserve funding from schemes and general rate reserves were used to fund works after the large storm event (Section 6.4).

The increases in the asset revaluations in recent years have had an impact on the proportion of asset value that is insured and increased the amount that is self-insured. As a result, Council sought community input on the appropriate amount of insurance for the schemes as part of the Long-term Plan process. No changes to the amount of insurance were made following as a part of the Long-term Plan process following that consultation.

8.1. Insurance types

Horizons does not insure all its assets (Section 8.2). The river and drainage assets that Horizons do insure are covered by one of the two insurance schedule types:

1. The "Material Damage (All Risks) Insurance Policy" for above-ground built infrastructure, including buildings and equipment; and
2. The "Infrastructural Asset Insurance Policy" for below-ground built infrastructure, including stopbanks.

8.2. Material Damage Policy

The material damages insurance cover had a total annual cost of approximately $79,798 per annum in the 2023-24 year for scheme-related costs, and provides insurance for assets with a total of $24.7 million. This includes replacement value for buildings, plant and equipment, and includes provision for demolition and inflation for buildings.

This premium for this had been paid for as a corporate cost until, and including the 2023-24 year. From year 1 of the Long-term Plan, the scheme-related component of the material damages insurance costs is to be paid by the scheme. This will add a further costs to the schemes from year 1 of the Long-term Plan.

8.3. Infrastructural Asset Insurance Policy

The Infrastructure Asset Insurance Policy had a total budgeted cost of $1.270 million in the 2023-24 year for scheme-related costs, to provide insurance for a total of $813.3 million of asset value or 82% of the total asset value by the end of June 2023 ($990 million).

Value that can be claimed

The insurance values quoted here refer to the proportion of asset replacement value. The actual amount insured is higher than this as there is some provision for asset value inflation during the year and for enabling things like demolition of damaged assets in the event of an insurance claim.

While the total replacement value insured is in the order of 82% of the overall asset value, the actual amount that can be claimed in a single event is limited to a maximum of $100 million. Horizons' insurance is in a pooled arrangement with other councils and the maximum available for all of the claims for a single event is $300 million. If the event is larger than this then Horizons' claim will be reduced based on a comprehensive Memorandum of Understanding about fund sharing.

The $100 million and $300 million limits on single claims are based on an assumption of a 60% contribution from Central Government, i.e. if Horizons were to claim the $100 million, the assumption is that 40% ($40 million) would come from the insurance company and 60% from Central Government ($60 million). There is uncertainty around the government contribution. The insurance premium that was budgeted at $1.270 million in 2023-24 essentially purchases the ability to claim up to $40 million in a single event, with some limitations based on other Councils' claims. This $40 million can be for any of the approximately $872 million of assets across the region that are insured, i.e. listed on the insurance schedule.

Table 20: Asset replacement valuations over time and proportions of assets value insured by the insurance company, assuming a 60% contribution from Central Government.

Source	Total river and drainage asset replacement value ($ million)	Insurance cover by the insurance company ($ million)	Proportion of asset value covered by the insurance company (%)	Insurance cover assuming 40% insurance company and 60% Government contribution ($ million)	Proportion of asset value covered by the insurance company and an assumed Government contribution of 60% (%)
Long-term Plan 2015-2025	372	40	11%	100	27%
Long-term Plan 2018-2028	466	40	9%	100	21%
Long-term Plan 2021-2031	679	40	6%	100	15%
2020-21 revaluation	834	40	5%	100	12%
2021-22 revaluation	910	40	4%	100	11%
2022-23 revaluation	990	40	4%	100	10%

The $40 million of insurance per event equates to approximately 4% of the overall value of Horizons River Management and Flood Protection assets at the end of June 2023. This proportion has significantly reduced over time as asset replacement values have increased, e.g. in 2015, 11% of assets would have been covered by $40 million of insurance (Table 20). If the maximum insurance claim was to include the assumed 60% contribution from Central Government, the maximum claim would be $100 million. In 2015, this would have equated to approximately 27% of the assets' value, and this has reduced to approximately 10% in 2022-23.

Insurance premiums for similar levels of insurance

The Infrastructural Asset Insurance Policy costs are estimated to have increased in cost by 30% from the 2022-23 year to the 2023-24 year. The percentage increase is estimated as the actual change was influenced by additions to the schedule, including new assets constructed in 2022-23 and the return to insuring the Whanganui North and South Moles[25]. The North and South Mole are estimated to have added approximately 10% to the insured asset value and are therefore assumed to have added 10% of the increase to the premium. This likely overestimates the cost of insuring these assets, as other new assets were also added. The premium increased from $1.05 million to $1.469 million, an increase of $419,000 (40%). If 10 percent of this is accounted by the North and South Moles, then 30% is estimated to cover premium increases to the combination of: increased risk, addition of new assets, and the increased asset revaluation.

In 2023-24, Horizons budgeted $1.270 million for this insurance premium, approximately $200,000 less than the budget required of $1.469 million. Funding for this budget shortfall is required via some mechanism for future year budgets, adding 15.7% to the insurance budget for the Long-term Plan in year 1, without making any further allowances for premium increases.

Verbal discussions with the insurance providers have indicated premiums could increase by 15 to 20% per annum over the first 10 years of the Long-term Plan. This would have a significant rate impact for the schemes. Based on the approximately 30% increase over the 2023-24 year, an indication of increased values modelling of the potential increases for the same level of insurance has been completed as shown in Table 21. This assumes the insurance of the Whanganui moles continues, i.e. status quo, the material damage scheme related costs will be met by schemes and that there will be a 20% increase in premiums in each of the first three years and a 15% increase in the following seven years. In summary, scheme insurance costs are predicted to increase by 283% from year 1 to year 10 of the Long-term Plan. Overall budgeted amounts are projected to rise from $1.270 million in the year that ended in June 2024 to $6.512 million in year 10 of the Long-term Plan. There is uncertainty in these estimates due to the uncertainty around baseline insurance increases to cover increased risk, new assets being added and increased asset valuations.

Table 21: Insurance cost increase forecasts over the first 10 years of the Long-term Plan (see text for details).

Year	LTP year	Premium increase (%)*	Total premium budgeted for ($M)	Total increase ($M)	Total increase (%)
2023-24			1.269		
2024-25	1	20%	1.700	0.431	34%
2025-26	2	20%	2.040	0.340	20%
2026-27	3	20%	2.448	0.408	20%

[25] The Whanganui North and South moles have previously been insured by Horizons but were not insured the usual way for a period when the North mole was upgraded. They have now returned to the insurance schedule. These assets are not owned by Horizons and have a total estimated value of approximately $91 million.

2027-28	4	15%	2.815	0.367	15%
2028-29	5	15%	3.237	0.422	15%
2029-30	6	15%	3.723	0.486	15%
2030-31	7	15%	4.282	0.558	15%
2031-32	8	15%	4.924	0.642	15%
2032-33	9	15%	5.662	0.739	15%
2033-34	10	15%	6.512	0.849	15%
Total cost LTP years 1 to 10			37.34	5.24	
Percentage increase LTP years 1 to 10			283%		

Insurance loss modelling

Insurance loss modelling can assist with informing scenarios for events in terms of the likelihood that they would occur and the level of damage that would result.

In 2023, the insurance company modelled potential loss scenarios for the Manawatū-Whanganui and Hawkes Bay regions for earthquakes. This modelling indicates damage to Horizons' assets of $247 million in a 1 in 500 earthquake and $327 million in a 1 in 1,000 year event.

Insurance premium costs for additional levels of insurance

In November 2023, Council resolved to increase insurance cover to enable the pool of Councils to claim up to $500 million per event from November 2023, at an estimated additional cost of $318,000 per annum. Council also resolved to increase the maximum amount that can be claimed in a single event to $150 million in 2023-24 and to $200 million in 2024. This had an estimated additional annual cost of $175,000 in 2023-24 with the cost assumed to increase by 25% due to the increase in the amount of cover from $150 million extra cover in 2023-24, to $200 million, i.e. to $233,000 per annum before accounting for premium inflation increases. This assumption has a lot of uncertainty.

The impacts of this additional insurance were modelled with the same assumptions for premium increases outlined above in Table 20. The increases to insurance are predicted to raise the insurance premium in 2023-24 to $1.962 million, an increase of 87% on the previous year's premiums. This increase is primarily to be funded by reserves as the budget for insurance is $1.270 million, $692,000 less than the forecast cost.

Over the course of the Long-term Plan from year 1 to year 10, based on these assumptions insurance is forecast to increase to $9.285 million per year. For context, the current total rate take for River and Drainage Activity is $16.1 million. An example of the budget implications is the impact of insurance on budgets in year 1 of the Long-term Plan. A total of $1 million to increase insurance premiums was provisioned in the draft Long-term Plan for year 1. This would have raised the budget from $1.270 million to $2.270 million (a 79% increase). This was to pay for transferring the payment of the scheme component of the Material Damage Policy from a corporate cost to a scheme cost (approximately $80,000) and the Infrastructure Asset Insurance Policy costs. This amount reflects that a full year of the cost would not occur in 2024-25, as the billing period for the Asset Insurance Policy is from November to November and the financial year is July to July. The new premium cost will take effect from 1 November 2024, four months into the financial year. Following consultation Council resolved not to increase the amount of insurance and increase the budget to meet the baseline premium increases by $430k to $1.7 million in year 1.

8.4. Insurance in the various schemes

In the 2022-23 year, 14 of the 34 schemes paid for the Infrastructural Asset Insurance Policy (Tables 22 to 24). Overall, 91% of the insurance is paid for by 10 of the River schemes. The Lower Manawatū Scheme (71%) and the

Rangitīkei Scheme (9%) paid 80% of the overall Infrastructure Asset Insurance costs in 2022-23 (Table 23). This reflects the larger asset base in these schemes, e.g. the Moutoa Floodgates (Figure 16). The implication of this is that approximately 80% of increases in insurance premiums will be funded by these two schemes. It is also noted that the addition of the Whanganui Mole assets, valued at approximately $91 million, will increase the proportion of the Lower Whanganui Scheme contribution, which in July 2023 insured assets valued at approximately $9 million and contributed 1% of the insurance costs. Four drainage schemes had Infrastructure Asset Insurance in 2022-23, totalling 9% of the overall insurance (Table 24).

Table 22: River management and drainage asset valuations, and insurance in 2022-23.

Type of scheme	Number of assets	Replacement value 2022-23 ($)	Value of insured assets	Proportion of value of assets insured	Insurance budget 2023-24 ($)	Proportion of overall insurance budget
Total river schemes	2,735	873,984,868	722,145,609	83%	1,153,699	91%
Total drainage schemes	1,059	116,048,665	91,126,505	79%	116,072	9.1%
Total all schemes	3,794	990,033,534	813,272,114	82%	1,269,771.0	100.0%

Table 23: River scheme asset valuations, and insurance in 2022-23.

River scheme	Number of assets	Replacement value 2022-23 ($)	Number of insured assets	Value of insured assets ($)	Proportion of value of assets insured	Insurance budget 2023-24($)	Proportion of overall insurance budget
Lower Manawatū (incl. special project)	847	571,048,740	631	561,597,286	98%	951,820	75.0%
Rangitīkei River	186	142,395,839	114	84,543,843	59%	68,191	5.4%
Lower Whanganui River	63	9,527,822	56	9,263,017	97%	12,729	1.0%
Mangatainoka	384	22,175,146	123	12,894,534	58%	23,374	1.8%
South East Ruahines	271	36,650,118	1	36,962	0%	16,347	1.3%
Pohangina - Ōroua	200	12,391,340	0	0	0%		0.0%
Ōhau Manakau	241	22,613,049	123	19,572,147	87%	26,798	2.1%
Tararua							
Upper Manawatū	133	16,600,879	0	0	0%	6,834	0.5%
Porewa Valley (60:40)	81	10,318,411	81	9,948,740	100%	17,400	1.4%
Lower Kiwitea	106	4,232,013	0	0	0%		0.0%
Tutaenui	62	4,805,091	58	4,674,202	97%	6,395	0.5%
Upper Whanganui	41	8,367,945	27	8,231,124	98%	11,046	0.9%
Matarawa	51	5,533,038	44	4,905,973	89%	5,549	0.4%
Whangaehu - Mangawhero							
Ruapehu DC							
Ohakune							
Ashhurst Stream	24	593,431	22	468,540	79%	756	0.1%
Turakina							
Mākirikiri	25	3,698,730	25	3,698,730	100%	4,359	0.3%
Pakihi Valley	6	2,389,344	6	1,913,884	80%	1,691	
Tawataia - Mangaone	14	643,934	3	396,627	62%	410	0.0%
Kahuterawa							
Total river schemes	2,735	873,984,868	1,314	722,145,609	83%	1,153,699	91%

Table 24: Drainage scheme asset valuations, and insurance in 2022-23.

Drainage schemes	Number of assets	Replacement value 2022-23 ($)	Number of insured assets	Value of insured assets ($)	Proportion of value of assets insured	Insurance budget 2023-24 ($)	Proportion of overall insurance budget
Manawatū	309	53,676,210	117	37,348,381	70%	46,911	3.7%
Makerua	209	17,508,252	119	16,173,063	92%	20,135	1.6%
Moutoa	92	9,049,216	36	7,638,755	84%	7,295	0.6%
Koputoroa	126	16,932,492	75	15,848,084	94%	22,039	1.7%
Te Kawau	205	15,697,627	81	13,161,368	84%	18,260	1.4%
Hōkio	41	657,973	0	0	0%	87	0.0%
Foxton East	12	122,034	2	76,999	63%	103	0.0%
Whirokino	28	1,095,081	12	879,855	80%	1,242	0.1%
Himatangi	28	442,068					
Forest Road	5	531,496					
Haunui	4	336,216					
Total drainage schemes	1,059	116,048,665	442	91,126,505	79%	116,072	9%

8.5. Assets that are insured

Four river schemes that are primarily for erosion control and three of the smaller drainage schemes do not have any insurance (Table 24).

The combined insurance via the two mechanisms at the start of the 2023-24 year provides insurance for 1,756 of the 3,794 (46%) assets, representing $813 million (82% of the total estimated value) of assets at that time (Table 22).

The proportion of assets that are insured is based on the asset types and sub-types, where some asset sub-types are insured and others are not (Table 22).

The decisions around insurance made at a scheme level to not have insurance (Table 22) results in no cover for assets of sub-types that would be insured if they were in another scheme. These asset sub-types in the schemes that do not have any insurance have a total value of $19.172 million (Table 25).

Note, insured values reflect the provisional asset value available when the insurance schedule is required. These values are refined through audit, however are retained as the value for insurance purposes as these were the amounts available at the time insurance value was determined.

Table 25: River management and drainage schemes that have been opted out of insurance.

Scheme	2022-23 asset replacement value ($)	Total value of insurable asset sub-types not covered by insurance ($)	Percentage of assets that are insurable asset sub types but not insured
River schemes			
Lower Kiwitea	4,232,013	2,738,263	65%
Pohangina-Ōroua	12,391,340	3,640,553	29%
South East Ruahine	36,650,118	7,664,170	21%
Upper Manawatū-Lower Mangahao	16,600,879	4,850,908	29%
Drainage schemes			
Forest Road	531,496	60,198	11%
Himatangi	442,068	122,201	28%
Hōkio	657,973	96,283	15%
Total	71,505,887	19,172,578	27%

Figure 16: Top: Moutoa floodgates have the highest value of any Horizons asset in the region at $50.8 million in June 2023, and are insured as a part of the Lower Manawatū Scheme. Bottom: Moutoa spillway in operation.

Table 26: River management and drainage asset subcategories showing the policy on insuring or not insuring, and insured values[26]

Asset Type	Asset sub-type	Number of assets	2022-23 replacement value ($)	Percentage of asset value	Insured (Y/N)	Self-insurance value ($)	Insured replacement value (June 2023) ($)
Bank Protection	Erosion Protection Reserve	26	46,324,063	4.7%	N	46,324,063	
	Gabions	3	620,961	0.1%	Y		620,961
	Groyne	19	21,464,760	2.2%	Y or N	887,232	20,577,528
	Lining - Engineered	101	84,523,595	8.5%	Y or N	2,302,588	82,221,007
	Lining - Non-engineered	141	60,880,633	6.1%	Y or N	2,206,482	58,674,151
	Lining - Tiered	2	691,391	0.1%	Y		691,391
	Permeable Groyne - Driven	127	10,344,547	1.0%	N	10,344,547	
	Permeable Mesh Unit	116	4,444,713	0.4%	Y or N	1,819,285	2,625,428
	Planting	409	35,456,788	3.6%	N	35,465,931	
	Retaining Wall	6	449,302	0.0%	Y or N	15,126	434,176
	Retaining Walls – Mass block	4	4,216,319	0.4%	Y		4,216,319
	Rip Rap	269	77,113,676	7.8%	Y or N	1,044,456	76,069,220
	Stock Gate	9	68,495	0.0%	N	68,495	
	Tied Tree Work - Anchored	464	37,168,957	3.8%	N	37,167,957	
	Tied Tree Work - Layered	1	5,682	0.0%	N	5,682	
Control Structure	Bed Armouring	2	2,560,081	0.3%	Y		1,580,587
	Drop	4	2,403,765	0.2%	Y		2,403,765
	Grade	21	612,243	0.1%	Y or N	1,478	610,766
	Weir	30	6,223,212	0.6%	Y or N	1,682,048	4,541,164
Enhancement	Amenity	8	500,568	0.1%	N	500,568	
	Handrail	1	15,826	0.0%	N	15,826	
	Knee-breakers	1	25,695	0.0%	N	25,695	
	Ramp	3	34,841	0.0%	N	34,841	
	Self Help Depot	1	10,108	0.0%	N	10,108	
	Walkway	1	166,506	0.0%	N	166,506	
Equipment	Control - Auto Transformer	19	1,438,759	0.1%	Y		1,438,759

[26] Note: insured values shown are replacement values. Actual insurance is higher than this to allow for demolition there is additional insurance to account for estimated demolition and inflation value (data not shown). Two residential houses are also insured but not included in these totals.

Asset Type	Asset sub-type	Number of assets	2022-23 replacement value ($)	Percentage of asset value	Insured (Y/N)	Self-insurance value ($)	Insured replacement value (June 2023) ($)
	Control - Sensor	1	11,467	0.0%	Y		11,467
	Control - Soft Starter	1	166,889	0.0%	Y		166,889
	Control - VSD	1	1,496,000	0.2%	Y		1,439,983
	Mechanical - Pump	46	5,768,584	0.6%	Y		5,584,566
	Screen / Filter - Screen	1	63,567	0.0%	Y		63,567
	Structure - Outlet Grill	48	3,260,884	0.3%	Y		3,260,884
	Supply - Generator	1	365,875	0.0%	Y		365,875
Flood Protection	Detention Embankment	54	13,312,645	1.3%	Y		12,467,515
	Detention Inlet	5	517,627	0.1%	Y		517,627
	Detention Outlet	5	517,627	0.1%	Y		517,627
	Flood Walls	64	8,426,564	0.9%	Y		8,426,564
	Floodgate	20	1,912,034	0.2%	Y		1,912,034
	Floodgate Structure - Culvert	534	21,806,019	2.2%	Y or N	32,625	21,773,394
	Floodgate Structure - Other	18	5,016,887	0.5%	Y		7,924,887
	Flow Diversion Structure	10	54,228,546	5.5%	Y		53,696,289
	Guide bank	15	5,319,418	0.5%	Y or N	10,949	5,308,468
	Portable Flood Barrier	8	400,484	0.0%	Y		400,484
	Property Mitigation Bund	15	1,693,175	0.2%	Y		1,693,175
	Spillway	56	4,240,232	0.4%	Y		4,240,232
	Stopbank	284	417,857,963	42.2%	Y or N	3,801,182	414,056,781
	Toe Drain	5	592,159	0.1%	Y		592,159
Site	Land Use - Drainage Pump Station	24	11,075,325	1.1%	Y		12,146,427
	Pump station - Land/Access	20	283,770	0.0%	N	283,770	
Vegetation Management	Drainage Channel	770	33,934,305	3.4%	N	33,934,305	
	Total	3,794	990,033,534		Y or N	178,151,747	813,272,115
	Percentage		100%			18%	82%

8.6. Insurance deductible

The insurance deductible for Horizons is $3 million. At the start of the 2023- 24 year, Horizons had an emergency management reserve of approximately $3.6 million to enable payment of the deductible should a large-scale event occur. This reserve funding was rated over several years through a rate that is no longer being collected.

This threshold for a claim is high and was not met following Cyclone Gabrielle as some of the damage was to areas that did not have assets, but where there were requests to install new assets, some of the work identified post-Cyclone Gabrielle was proactive, i.e. to prevent damage in a future storm, and some of the damage was to assets that were not insured.

8.7. Self-insurance

Insurance claims are a risk mitigation for assets that are insured in large-scale events. Based on the June 2023 asset valuation of $990 million and the up-to $100 million of insurance cover per event at that time (including 60% assumed from Central Government), the amount of self-insurance is estimated at $890 million. It is noted that it is unlikely that a total loss of assets would occur in a single event.

Loss modelling in 2023 for a 1,000-year earthquake indicated $327 million of damage for these assets. In such an event, the ability for Horizons to claim the $100 million per event would likely be reduced due to the pooled nature of the insurance with other Councils and limits on what that total overall claim can be. This affects the amount of the maximum claim from the insurance company of $40 million for Horizons and consequently, this may also impact the 60% share from Central Government.

As a theoretical example, if Horizons' claim was reduced by 17%[27] due to the pooled nature of the insurance, the maximum insurance claim would be $33.3 million, and the Central Government 60% share to match this would be $49.95 million, raising the total claim to $83.25 million. The pooled nature of the insurance reduces annual costs and contributes to the amount of self-insurance for large events.

If Horizons were to replace all of the insured assets damaged in the 1,000-year earthquake event modelled above, the level of self-insurance for this event is estimated at a minimum of $227 million. After such a very large event there would likely be prioritisation of what would be repaired/replaced, and changes to the infrastructure design. The recovery expenditure for river and flood protection infrastructure is difficult to forecast given the shortfall from insurance and likely changes to infrastructure if there is an opportunity to rebuild in a different way.

For smaller events, where the threshold for a claim is not met, schemes rely on use of reserves/ loans or an approach of not replacing damaged assets. Overall, the schemes are provisioning in the order of 1% of the rate income to emergency reserves on an annual basis. Loan funding is a further mechanism to fund work following an event. This mechanism has been utilised as a part of the Cyclone Gabrielle repair programme in the Pohangina-Ōroua Scheme. The ability to continue to loan fund activity is limited for some schemes, with fixed costs like loan repayments and insurance starting to exceed half the rate income. This has impacts for recovery from events via reserves and self-insurance.

[27] 17% used for this scenario based on an example provided by the insurance company to demonstrate the application of the Memorandum of Understanding between Councils.

IMPLICATIONS FOR THE INFRASTRUCTURE STRATEGY

Managing risk through having insurance and reserves has been a long-standing approach with the management of scheme assets.

The schemes face key challenges around managing the increased costs of insurance over the life of the Long-term Plan. These include the ongoing ability to obtain insurance, the increasing cost of the current levels of insurance, reviewing which assets are insured, and determining the appropriate level of insurance for these assets. This forms part of the assessment of how repairs would be funded if an event exceeded the insured amounts. Insurance is a key issue for the Infrastructure Strategy and was one of the topics Council consulted on as a part of the Long-term Plan.

Council has elected to undertake self-insurance through overall insurance amounts, the decisions around what types of assets to insure and which schemes to insure these. Reliance on the Central Government co-funding and the pooled insurance model can also influence the amount of insurance claims in a large event (Figure 17). The levels of self-insurance have increased considerably with the increasing asset replacement valuations over recent years. If insurance and reserves are insufficient to fund repairs, an option is to loan fund activity. This option has its limitations due to the annual costs for loans and insurance. Financial resilience to recover from events is a key issue for both the Infrastructure Strategy and the Financial Strategy.

Having sufficient funds to complete repairs in response to more frequent climatic events is a challenge for smaller events that do not result in insurance claims. Scheme emergency reserves amounts vary by scheme and total approximately $14.9 million across the schemes. In some schemes, reserves are approved to be significantly reduced by the work programme following Cyclone Gabrielle. Decisions on reserve provisioning are required as part of the Infrastructure Strategy.

Figure 17: Examples of infrastructure not owned by Horizons. Damage to other infrastructure can influence the amount of the Horizons insurance claim or self-insurance as the infrastructure insurance is pooled with other Councils and Government have co-funding arrangements for other infrastructure repairs after events. Above: damage to State Highway 4 (Parapara's) in the 2015 flood event. Below: Churchill Bridge washout in the Pohangina near Tōtara Reserve in the Cyclone Gabrielle event 2023.

9. INFRASTRUCTURE STRATEGY KEY ISSUES

An Infrastructure Strategy must address a range of matters as part of legislative requirements. These include how a Council intends to manage its infrastructure assets regarding issues such as when assets need to be renewed or replaced, funding options, and other matters, including the need to improve health or environmental outcomes and to manage risks from natural hazards. The key infrastructure issues that have been identified relate closely to these requirements.

This section summarises the significant infrastructure issues facing Horizons during the next 30 years, along with their potential consequences and the proposed approach to managing each issue. The significant issues that have been identified are as follows:

1. Affordability of River Management and Flood Protection Activity;
2. Responding to the impacts of climate change and natural disasters;
3. Delivering capital programme works to increase resilience to climate change impacts;
4. Planning for financial implications of natural hazard events;
5. Maintaining existing assets and understanding our asset condition and maintenance requirements;
6. Achieving environmental, regulatory and other performance expectations; and
7. Merging the River Management and Flood Protection Activity into an integrated catchment management approach.

These issues are interrelated and may share contributing factors. For example, climate change is a contributing factor to our challenges around affordability and our need to better understand the condition of assets and insurance.

The key issues align to the community outcomes and strategic priorities set by Council as part of the Long-term Plan. They take into account the need to build resilience to the impacts of climate change while contributing to a vibrant and empowered community, and a thriving and environmentally sustainable economy. We recognise that work is needed to move the River Management and Flood Protection Activity into a more holistic approach for Integrated Catchment Management and challenges to adjust to existing and new regulatory requirements, many of which contribute to environmental goals.

Some trade-offs are required to achieve Council's Community Outcomes and Strategic Priorities within the River Management and Flood Protection Activity as part of implementing this strategy. For example, further flood protection related activity that is required to contribute to a thriving economy has potential to reduce significant economic impacts, however the building of that infrastructure and its ongoing maintenance must be affordable. Another example is building resilience to the impact of natural hazards and climate change through physical modification of the environment, e.g. construction of stopbanks, may impact on environmental values. Similarly, building of financial resilience to the impact of natural hazards and climate change may require additional costs for reserves and/or insurance that can impact on the goal of a thriving economy.

The sections below provide an overview of these issues, assess options and identify Council's preferred options in response to these key issues (Tables 26 to 33). To determine the preferred approach to addressing each issue, Council has considered a number of options and their potential implications alongside our strategic priorities and community outcomes. Options have been considered across the short (1-3 years), medium (3-10 years) and longer-term (10-30 years). These issues and the preferred responses are highly interconnected. Table 1 provides a summary of the key issues, preferred options and implications for the Long-term Plan.

Ngā putanga ā-hapori **Our community outcomes**

He whakamana hapori, he hapori kori
Our region's communities are vibrant and empowered

He pūnaha hauropi ora
Our region's ecosystems are healthy

He rohe piki te ōhanga, piki te taiao
Our region's economy is thriving and environmentally sustainable

9.2. Affordability of River Management and Flood Protection Activity

Issue

- Costs of the activity are increasing due to increases in loan servicing, insurance, regulatory costs, and costs of maintenance and repairs.
- Community ability and willingness to pay increasing costs is leading to questions around who should pay, what should be done and how it should be done.
- There is an increasing community expectation for additional river management and flood protection services, within and outside schemes.
- Scheme capital programmes have been accelerated with additional government co-funding increasing Horizons expenditure on capital projects, including via loan funding. Some of these costs are yet to be incurred and further loan funding has been committed to.
- More frequent storm events causing additional damage and requiring additional funding for repairs after events.
- There are requests for associated works when services or upgrades are completed, e.g. amenity upgrades or environmental improvement works as part of renewal or capital upgrade projects that contribute to additional scheme costs.
- Community views on work programmes can differ, leading to additional costs associated with determining what will be done and how major capital projects will be carried out. Additional costs for legal and planning support arise in response to some challenges to projects.

Response options

A range of response options have been considered in relation to River Management and Flood Protection activity affordability. These options are spread across the seven key issues and all options have implications for the budgets for the programme. The impacts on affordability of the options for the other key issues are discussed in those sections and a limited summary of these is provided in this section. The options assessed for affordability are overviewed in Table 27.

Preferred response

Affordability is a mix of the overall work programme levels of the cost of services, how these services are funded and the affected communities' ability and willingness to pay for the services being provided. The preferred approach seeks to find a balance between Council's goals to build increased resilience to climate change and improving the economy and community wellbeing by providing protection from weather events, and the community's willingness to pay for these services.

Of the options assessed in Table 27 below, the preferred approach includes:

- Transitioning to a maintenance-based programme with a view to reducing costs through efficiencies and by improving resilience of the assets by focussing on risk;
- Reviewing loan payments alongside a range of other related financial information through the Integrated Catchment Management Activity (See issue 7); and
- Transferring staff time from capital (debt) funded to being paid for in the year it occurs, reducing the long-term cost for this time.
- Other options assessed through the key issues will also impact on affordability. These include:
  - Reducing the capital programme expenditure over time (see issue 3);
  - Increasing the amount of funding for insurance premiums and considering the amount of insurance (see issue 4);
  - Increasing investment in asset management via two new staff positions (See issue 5); and
  - Investigating the use of room-for-river approaches in schemes (see issue 7).

Many of the options assessed aim to reduce risk and therefore may in turn reduce long-term costs. The Integrated Catchment Management Activity, funded separately to the River Management and Flood Protection Activity, plans to review levels of service and funding policies for a range of activities, including schemes, and is a further response to the issue of affordability for River Management and Flood protection Activity.

A further response that will inform future investment decisions is the flood vulnerability assessment (see issue 2).

Table 27: Options assessment for affordability of the River Management and Flood Protection Activity

Options	Implications of the options	Year 1-3	Year 3-10	Year 10-30	Risk (L/M/H)
a) Transition to a maintenance-based programme.	**Advantages** ▪ A more consistent structured approach to scheme operational activity focussing on maintenance of existing assets. ▪ Scheme maintenance priorities predominately driven by risk information from asset inspections, with some aspects based on policy, e.g. all scheme drains to be maintained at least once every 10 years. ▪ Increased resilience to storm events due to prioritisation of maintenance activity based on risk. ▪ Efficiency gains through a more structured programme, including enabling the introduction of larger multi-year contracts for some maintenance. **Disadvantages** ▪ Reduced ability to complete reactive work, e.g. to repair areas that are damaged in an event, where there are currently no river management assets. ▪ Programme less responsive to day-to-day requests for support. ▪ Will take time to implement and require new systems and processes to administer and report on progress.	✓	✓	✓	M
b) Review loan funding arrangements.	**Advantages** ▪ Opportunity to review payment amounts and overall costs of existing and planned loans, to consider how these are paid for, e.g. rating base and in terms of the timeframes over which the assets will provide benefits (loan terms). **Disadvantages** ▪ Will require resourcing to be completed. ▪ May increase the overall cost of loans over time, e.g. if loan terms are extended.	✓			L
c) Reduce levels of service	▪ This would reduce costs and also reduce the benefits of the work to the community.				H
d) Transition staff costs from capital (debt funded) to operationally funded.	**Advantages** ▪ Lowers the long-term cost of these staff resources. ▪ Enables these staff resources to work across capital and operational delivery. **Disadvantages** ▪ Requires fully funding this staff cost in the year it is delivered, increasing rate requirements in that year.	✓			L

9.3. Responding to the impact of climate change and natural disasters

Issue

The impacts of climate change on the programme include:

- Reductions in levels of service over time due to climate change, e.g. a stopbank constructed to provide 100-year flood protection in the 1980s will no longer provide that initial level of service and the level of service will continue to decline over time;
- The impact of more frequent events on damage to existing assets and requests to respond to, or prevent, damage at locations where there are no existing assets (Figure 18);
- Increased staff time to respond to and recover from weather events including additional asset inspection time;
- Increased operational costs, e.g. more frequent maintenance requirements such as vegetation growth in drains or increased power consumption due to increased number of hours required for pumping;
- Higher design specifications required for assets to allow for climate change into the future; and
- More demand for River Management and Flood Protection Activity to provide protection from the impacts of climate change.

Response options

A range of response options have been considered in relation to climate change. These options are spread across the key issues as they are all impacted by climate change. The establishment of additional flood protection infrastructure, which is discussed in issue 3 below and not repeated here, is part of the response to climate change. Similarly, the aspects of financial planning for natural disaster events is discussed in Issue 4 below.

The options assessed for this issue are overviewed in Table 28.

Preferred response

Many of the responses to climate change are shared by the other key Infrastructure Strategy issues, reflecting the importance of responding to climate change as a strategic priority and overarching issue for the Infrastructure Strategy, alongside affordability.

Of the options assessed in Table 28 below, the preferred approach includes:

- Completing a regional flood vulnerability assessment; and
- Having a Council policy for what level of climate change to design for.

Other options assessed through the key issues will also impact on building resilience to climate change. These include:

- Moving to a maintenance-based programme (issue 1);
- Upgrades to climate resilience via the capital programme (issue 3) ; and
- Reviewing the amount of insurance (issue 4).

Figure 18: Pohangina River near Pohangina Village in February 2023 following Cyclone Gabrielle. This location is an example of an area that did not have river assets before the Cyclone and new assets were installed following the damage to the area.

Table 28: Options assessment for responding to the impact of climate change and natural disasters

Options	Implications of the options	Year 1-3	Year 3-10	Year 10-30	Risk (L/M/H)
a) Completing a regional flood vulnerability assessment.	**Advantages** ▪ Provides a review of current and projected levels of service of existing flood protection infrastructure in the context of climate change and other new information, e.g. updated information on river flows. ▪ Provides a regional assessment of relative flood vulnerability for the communities of the region. ▪ Provides information to prioritise investment decisions. ▪ Co-funding for the study has been secured from Central Government. **Disadvantages** ▪ Requires additional investment for work. Horizons' share of the budgets to be met from existing budgets. ▪ Will divert staff time from delivery of capital and operational programmes.	✓	✓	✓	M
b) Having a council policy on what climate change projections to design for.	**Advantages** ▪ Provides for a consistent approach to planning for climate change. **Disadvantages** ▪ Less ability to customise the approach to design specifications on a project or asset basis.	✓	✓	✓	L
c) Maintain status quo.	**Advantages** ▪ Less upfront cost and therefore less rates impact. ▪ More ability to determine on an annual basis the amount of work to maintain existing assets and create new assets. **Disadvantages** ▪ A more reactive approach will continue to potentially leave existing assets more vulnerable to extreme weather events.				M

9.4. Delivering the capital programme works to increase resilience to climate change

Issue

- The scale of the capital programme was significantly increased due to Central Government funding packages to create employment in response to COVID-19. The average annual planned budget of $7.76 million for 2017-21 increased to $27.3 million for the 2021-23 year budget. The capital programme budget for 2023-24 is $13.41 million. The scale of annual delivery has increased from an average of $5.3 million per year from 2017-21 to approximately $14 million in the last two years, with about 50% of the planned budget spent.
- These new projects are contributing to additional climate resilience and Horizons' share of the cost is primarily loan-funded, increasing the rates contributions for the schemes.
- Securing the COVID-19 economic stimulus funding for projects in the region was done in a short timeframe, resulting in key design and consultation work following our commitment to the projects. This meant some alterations to projects were subsequently required.
- Capital programmes have encountered some community resistance to work proceeding, and there have been challenges in getting agreement on design approaches and securing permissions such as regulatory consents and land access agreements. The regulatory environment for projects continues to evolve, adding new requirements.
- There is an increasing community expectation of additional work, including environmental or amenity upgrade work, which can add significant costs to projects.
- Project delivery is increasingly in a partnership approach, requiring new ways of working. For example, the Te Pūwaha project in Whanganui is working to give effect to the Te Awa Tupua Treaty Settlement legislation.
- Planning for projects that are scheduled to be delivered in future years is not progressing as planned due to staff time being prioritised to delivering on current year contractual requirements.
- The scale of work nationally for delivery of river management and flood protection projects has reduced availability of engineering professionals and contractors, leading to delays in completing design work etc.
- Staff time is being spread across a range of internal and external projects, reducing capacity to deliver the capital programme.

Response options

A range of response options have been considered in relation to the delivery of the capital programme. These options have an impact on affordability (issue 1), the amount of capital project work to increase resilience (issue 2), the value of assets requiring insurance (issue 4) and requirements to get regulatory and other permissions (issue 6). The options assessed for delivery of the capital programme are overviewed in Table 29.

Preferred response

To deliver on Horizons' strategic priority for building resilience to the impacts of climate change and consider long-term affordability, Council are prioritising the delivery of projects which have current government co-funding and seeking to reduce the commitment to other projects over the first three years of the Long-term Plan to projects in Palmerston North, Feilding, the Koputaroa drainage scheme and the capital renewals programme.

During this time Council are also planning to work on the reviews of levels of service and rating systems for River Management and Flood Protection Activity via the Integrated Catchment Management work programme (issue 7) and to complete a regional flood vulnerability assessment (issue 2). These projects will inform prioritisation of the capital programme for the next Long-term Plan.

Table 29: Options assessment for delivering the capital programme works to increase resilience to climate change.

Options	Implications of the options	Year 1-3	Year 3-10	Year 10-30	Risk (L/M/H)
a) Continue with projects that are already underway.	**Advantages** ▪ Establishes additional climate resilience in the region. ▪ Continues work that is currently committed to, building on the work to date on these projects. ▪ Plans to utilise government co-funding support additional climate resilience work being completed at a lower cost to ratepayers. **Disadvantages** ▪ Requires additional loan and rate funding. ▪ Current scale of work via government co-funded projects in the first two years of the Long-term Plan is likely ambitious in terms of ability to secure permissions and have staff capacity for delivery within the contractual timeframes. ▪ Will divert staff capacity from scheme management to delivery of projects and may encounter some negative feedback from communities that are directly impacted.	✓			M
b) Reduce commitments to current projects.	**Advantages** ▪ Reduced additional climate resilience work in the region. Reduced costs of completing the works. Has potential to better match the work programme with available staff capacity. **Disadvantages** ▪ May result in existing contracts, e.g. with government not being delivered on, lowering the amount of government funding for work and potentially damaging the reputation of Horizons for future government funding. ▪ May result in negative feedback from communities that are supportive of the work continuing. ▪ May result in staff redundancies as a range of staff positions are funded via capital projects.				H
c) Continue to develop and plan for new projects beyond those currently underway.	**Advantages** ▪ Continues to develop projects for delivery to improve levels of service for river management, flood protection and drainage activity into the future. Enables consultation, design, regulatory permissions and other project management work to refine and price work packages and understand the benefits of these to proceed in advance of commitment to project construction. Creates a programme of work for delivery in future years. **Disadvantages** ▪ Requires resourcing for staff time and external costs, and will draw staff time away from programme delivery.				M
d) Reduce development and planning for new projects beyond those currently underway.	**Advantages** ▪ Enables a focus on consultation, design, regulatory permissions and other project management work for the current project commitments. **Disadvantages** ▪ Slows the rate of progress on planning for future capital programmes, increasing the timeframes by which projects, and their benefits, would be realised.	✓			M

9.5. Planning for the financial implications of natural hazard events

Issue

- Climate-related weather events are becoming more frequent due to climate change. Other natural hazard events, such as earthquakes, can also have impacts on assets.
- Natural hazard events globally and nationally are increasing the potential that asset insurance will not be able to be obtained for some assets and driving up insurance costs.
- Insurance costs for the same level of cover are predicted to increase by 15 to 20% per year over the first 10 years of the Long-term Plan.
- The major part of Horizons' insurance is via a pooled arrangement with other councils, including both regional councils and district councils. There is uncertainty around the potential impact of affordable water (previously three waters) legislation on Horizons' insurance premiums.
- Rapidly increasing asset replacement values have reduced the proportions of Horizons' insured assets that are able to be claimed for a single event while increasing the level of self-insurance by Horizons.
- Scheme emergency reserves, as a further mechanism for managing costs after events that are not large enough for an insurance claim, are increasingly being required to be used for repairs and have proven insufficient for some schemes after Cyclone Gabrielle.
- In 2023-24, all of the schemes were provisioning some of the scheme income to emergency reserves for use in years where damage exceeds the schemes' annual budgets ability to pay. However, the amount of reserves compared to the asset values in each scheme varies considerably. In 2032-24, eighteen (more than half) of the schemes have emergency reserves of less than two percent of their own schemes assets value.
- There is a trade-off in some schemes around the amount of income contributed to reserves and the amount of loan repayments completed.

Response options

A range of response options have been considered in relation to planning for the financial impacts of natural hazard events. These options are split into two categories in this section: insurance (Table 30) and scheme emergency reserves (Table 31). This issue is impacted by climate change and potentially could have significant impacts on affordability on an annual basis, and in the event of a significant natural disaster event.

A further component to planning for the financial implications of natural disasters is the ability to borrow funds if an event occurs. This is discussed further in the Financial Strategy.

Preferred response

Council's preferred approach is to continue with the same amount of insurance. Further continuing with current practice around provisioning for emergency reserves with the exception of the Mākirikiri Scheme that will not provision for emergency or renewal reserves over the Long-term Plan. Council will also review reserve provisioning as part of the Integrated Catchment Management work (issue 7).

This approach contributes to Council's strategic priority to build resilience to the impacts of climate change while acknowledging the trade-off in these decisions in relation to the additional costs to ratepayers annually and the level of insurance able to be claimed if a large event does occur.

Table 30: Options assessment for the insurance component of planning for financial implications of natural hazard events.

Options	Implications of the options	Year 1-3	Year 3-10	Year 10-30	Risk (L/M/H)
a) Continue with the current amount of insurance.	**Advantages** ▪ Continued insurance at current amounts. ▪ Lower cost than options to increase the amount of insurance cover. **Disadvantages** ▪ Increased likelihood that insurance cover will be inadequate to cover the cost of a large event. ▪ Increased rating revenue required to keep up with baseline insurance cost increases.				M
b) Reduce the current amount of insurance.	**Advantages** ▪ Lowest cost option to offset the increases in baseline insurance costs. **Disadvantages** ▪ Increased potential that the insurance cover will be inadequate to respond to a large event. ▪ Depending on the level of reduction, rating revenue may have to increase to keep up with baseline insurance price increases.				H
c) Increase the amount of insurance.	**Advantages** ▪ Provides a greater amount of cover if a large event occurs, increasing the likelihood insurance cover will be adequate to respond to a large event. ▪ Restores levels of insurance cover closer to previous levels in relation to asset value. **Disadvantages** ▪ Increased costs of insurance over and above the increases in baseline costs of insurance. ▪ May be considered unaffordable for some schemes.	✓	✓	✓	M
d) Reviewing what assets are insured and the amount of insurance for the insured assets.	**Advantages** ▪ Potential to reduce costs through insuring fewer types of assets, or choosing not to insure assets in more of the schemes. **Disadvantages** ▪ If the outcome of the review is to reduce the number and value of assets insured, there would be less increased risk that insurance cover will not be adequate if a large event occurs.	✓			L
e) Maintain the current level of Horizons' emergency insurance reserve.	**Advantages** ▪ Maintains this reserve at approximately $3.6 million more than the insurance deductible of $3 million. **Disadvantages** ▪ This amount provides for a single large event and rebuilding this reserve after its use in a significant event may be challenging. Would require resourcing.	✓			M
f) Increase the current level of Horizons emergency insurance reserve.	**Advantages** ▪ Would continue to grow the $3.6 million toward a further insurance deductible value of $3 million. **Disadvantages** ▪ Would require additional rate funding.				L

Table 31: Options assessment for the scheme emergency reserves component of planning for the financial implications of natural hazard events.

Options	Implications of the options	Year 1-3	Year 3-10	Year 10-30	Risk (L/M/H)
a) Continue with the current practice around rating for emergency reserves.	**Advantages** ▪ Continuation of the current process, minimal impact on rating for the schemes. **Disadvantages** ▪ Potential that if an event occurs, the reserve cover will be inadequate to cover the cost of damage and requests for additional work.	✓			M
b) Reduce the amount of emergency reserve revenue gathered.	**Advantages** ▪ Would lower the rating amount for the schemes. **Disadvantages** ▪ Increased potential that if an event occurs, the reserve cover will be inadequate to cover the cost of the damage and requests for additional work following events.				M
c) Increase the amount of emergency reserve revenue gathered by the schemes.	**Advantages** ▪ Would increase the amount of reserves for the schemes, increasing the likelihood that reserve cover will be adequate to cover the cost of the damage and requests for additional work following events. **Disadvantages** ▪ Increased rating required for schemes at a time when a range of costs are increasing.				L
d) Review the policy on provisioning for emergency reserves for the schemes.	**Advantages** ▪ Potential for increased consistency in the number of reserves provisioned each year in relation to scheme reserve levels and loan amounts. **Disadvantages** ▪ Reduces the ability of schemes to adjust annual provisioning of reserves in relation to their individual financial positions. ▪ Increased rating required for schemes at a time when a range of costs are increasing.	✓			L

9.6. Maintaining existing assets and understanding our asset condition and maintenance

Issue

- Horizons currently has a limited understanding of asset conditions and life cycles, as regular inspections are not being fully completed due to limited staff capacity.
- Information on asset management is spread across 27 Asset Management Plans.
- Asset condition reporting is currently limited.
- More frequent weather events continue to change asset conditions, requiring more frequent inspections and repairs and increasing the risk of asset failure (Figure 19).
- Increased asset replacement value exacerbates the impact of asset condition change on financial outcomes.
- The asset infrastructure, much of which was established in the 1960s and 1970s, has not been assessed in terms of remaining life cycle based on up-to-date information to update the renewal programme.
- When ageing equipment is due for replacement, requirements for replacement are generally greater than a simple replacement of "like for like" due to new regulatory requirements, climate change and/or community expectations.

Response options

A range of response options have been considered in relation to asset management. These options link with affordability issues in terms of cost to the ratepayer for the activity and the linkage to providing information to prioritise and report on the maintenance programme. The options assessed for asset management are overviewed in Table 32.

Preferred response

Council's preferred options are centred on increased asset management capacity to better assess risk and inform management of the programme. This contributes to Horizons' strategic priority to build resilience to climate change. The preferred approach includes prioritising critical asset inspections, improving reporting, simplifying asset management plans, and reviewing the asset renewal programme to update information on the issue of ageing infrastructure.

Together, these options will enable Council to improve its information, planning processes and work programmes, resulting in greater confidence and efficiency in its asset management.

Figure 19: Example of asset failure. Stopbank breach in Sluggish Main Drain in the Te Kawau Drainage Scheme during the 2015 flood event.

Table 32: Options assessment for maintaining existing assets and understanding our assets' condition and maintenance.

Options	Implications of the options	Year 1-3	Year 3-10	Year 10-30	Risk (L/M/H)
a) Increasing capacity for asset management activity.	**Advantages** ▪ Increased understanding of, and reporting of, asset condition and risks. Improved prioritisation of the maintenance programme to areas of greatest risk in order to increase resilience and reduce risk. ▪ Greater capacity to coordinate, prioritise and report on asset management and scheme maintenance activity. **Disadvantages** ▪ Increased resourcing required.	✓	✓	✓	L
b) Prioritising critical asset inspections.	**Advantages** ▪ Increases the focus on assets with the greatest risk. **Disadvantages** ▪ No disadvantages identified.	✓	✓	✓	L
c) Transitioning to fewer, if not one, Asset Management Plan.	**Advantages** ▪ Increased consistency in approach, greater efficiency and improved ability to manage risk at programme level rather than individual scheme level. **Disadvantages** ▪ This is an administrative project that will require resourcing.	✓			L
d) Reviewing the asset renewal programme.	**Advantages** ▪ This will identify the extent of the ageing infrastructure issue using up-to-date asset condition assessments in order to enable decision-making around what assets will be replaced when, and what changes may be required due to new regulatory or community expectation. **Disadvantages** ▪ Resourcing required to undertake this task.	✓	✓	✓	L
e) Maintain status quo.	**Advantages** ▪ Less upfront cost and, therefore, less rates impact. **Disadvantages** ▪ Continued lack of clarity about the condition of our assets makes it difficult to plan with clarity. ▪ May result in unbudgeted costs in the event of asset failure or damage to already vulnerable assets during weather events and increased potential for legal action in relation to asset failure. ▪ Reactive approach leading to new work being done, thus reducing the amount of maintenance to the existing assets.				

9.7. Achieving environmental, regulatory and other performance expectations

Issue

- Many of the schemes were established in the 1960s and 1970s in an operating and climate environment quite different to that today. As these assets are renewed, it is challenging to meet new regulatory and societal expectations for these assets.
- Horizons has more than 200 resource consents to enable activity within schemes and in addition to these relies heavily on working through an Environmental Code of Practice established through the One Plan. Ensuring compliance with these regulatory mechanisms has associated costs, and reporting on this work could be improved.
- As consents expire and new consents are sought for the activity, the process to obtain these consents is generally more complex, longer and more costly than the past processes to obtain these permissions.
- The regulatory environment is evolving and a range of new regulations have added costs and additional process steps to undertaking projects. Examples include new dam safety regulations and new freshwater rules, e.g. requirements for stream fencing and fish passage.
- Legislation at a national and local level is predicted to continue to change. This is introducing additional costs to respond to proposed new legislation and responding once it is in place.
- Treaty settlements and work to strengthen partnerships with tangata whenua are changing the way projects are delivered.
- There is increasing complexity in obtaining permissions, including consents, land owner approvals, land purchases, etc., and this is leading to delays in projects proceeding, increased costs and changes to projects.
- There is potential for reduced levels of service due to legislation/ permission changes, e.g. activities no longer being undertaken as the cost of gaining permission is viewed as prohibitive to the activity continuing.
- There are increasing requests for environmental and/or amenity enhancement works as part of projects.

Response options

A range of response options have been considered in relation to this issue. These options link with the Integrated Catchment Management work of issue 7 and affordability (issue 1). The options assessed for this issue are overviewed in Table 33.

Preferred response

This approach of increasing resourcing and reporting on regulatory matters contributes to Council's strategic priority of building resilience to the impacts of climate change. The preferred approach contributes to this goal by providing reduced risk of non-compliance with various regulatory permissions, where non-compliance could potentially reduce the amount of work that could be done, e.g. several hundred jobs are being completed under the River Works Code of Practice in 2023-24. Losing the ability to operate under the code due to non-compliance could restrict future work and require individual resource consents to be obtained, increasing costs and potentially making advancing some jobs cost-prohibitive.

Resourcing to meet the dam safety regulations is a necessary cost of compliance. An alternative approach that was assessed was abandoning some of this infrastructure in the face of increasing costs for these structures. Budget has not been included in the Long-term Plan for this at this stage. This is to enable likely resourcing costs, timing of expenditure and funding models to be confirmed, noting some expenditure is likely to be in 2023-24. This will be the subject of a Council item when further information is known.

Table 33: Options assessment for achieving environmental, regulatory and other performance expectations.

Options	Implications of the options	Year 1-3	Year 3-10	Year 10-30	Risk (L/M/H)
a) Increasing staff resourcing for consent and permissions processes.	**Advantages** ▪ Increased capacity to reduce risk of non-compliance with resource consents and other permissions, as well as to support obtaining new consents. ▪ Increased capacity to assess and respond to new legislative requirements. **Disadvantages** ▪ Increased resourcing required to enable this.	✓			L
b) Maintain status quo resourcing for consent and permissions processes.	**Advantages** ▪ Reduced costs. **Disadvantages** ▪ Increased risk of non-compliances. ▪ Non-compliance with dam safety regulations.				M
c) Reduce levels of resourcing for consent and permission processes.	**Advantages** ▪ Reduced costs. **Disadvantages** ▪ Increased risk of non-compliances.				H
d) Resourcing activity to meet the dam safety legislation.	**Advantages** ▪ Enables the new legislative requirements to be assessed and responded to for the 50-plus dams within the programme. ▪ Enables the ongoing benefits of the structures to the community. **Disadvantages** ▪ Increased resourcing required to enable this and the limited ability of schemes to fund this.	✓	✓	✓	M
e) Not resourcing activity to meet the dam safety legislation and continuing to operate the infrastructure.	**Advantages** ▪ Lower cost. **Disadvantages** ▪ Would involve operating in a non-compliant manner, thus increasing risk of enforcement action. ▪ The work to assess the dams would not be completed, and the benefits of this safety-related activity would not be realised.				H
f) Not resourcing activity to meet the dam safety legislation and seeking to exit this infrastructure.	**Advantages** ▪ Would reduce costs of compliance **Disadvantages** ▪ Would require assessment of how to exit this infrastructure.				H

9.8. Merging the River Management and Flood Protection activity into an integrated catchment approach

Issue

- To align with Council's strategic priority of a more holistic approach from the mountains to the sea, there is a need to transition the River Management, Flood Protection and Drainage activity into an Integrated Catchment Management approach. As part of this, Council are seeking a greater alignment of the River Management and Flood Protection activity with the Community Outcome "Our region's ecosystems are healthy".
- Council have changed the committee reporting structure by replacing the previous Catchment Operations and Environment Committees with an Integrated Catchment Committee. This has merged reporting to Council of the non-regulatory programmes into a single committee.
- The Council's non-regulatory programmes for Biodiversity, Biosecurity, Land Management and Freshwater Management are now in the same operational group within Council as the River Management and Flood Protection activity. The Long-term Plan activities have also been reviewed to draw together for these programmes.
- An Integrated Catchment Management approach will require stronger alignment of the regulatory and non-regulatory programmes.
- Council is currently reviewing its Freshwater policies through the Oranga Wai process, and this will inevitably have a direct impact on the Integrated Catchment Management approach and the operating environment for both the River Management and Flood Protection Activity and the other non-regulatory programmes. This impact will include alignment of the non-regulatory programmes with the new visions, objectives and direction setting of the new Freshwater policy and also, through this Freshwater policy setting, the policies and rules within which the programmes will need to operate.

Response options

A range of response options have been considered in relation to this issue. These options relate to the issue of affordability and the trade-offs between River Management and Flood Protection work to build climate resilience and other activities. The options assessed for this issue are overviewed in Table 34.

Preferred response

The preferred approach includes undertaking the Integrated Catchment Management project that is funded separately to the River Management and Flood Protection activity. This contributes to Council's second strategic priority, which is to undertake a more holistic approach from the mountains to the sea. It is also a mechanism to consider how the range of activity Horizons undertakes can be better aligned to achieve all of the desired strategic priorities and community outcomes, and to review levels of service and funding models in an integrated manner.

The other component of the preferred approach is investigating Room for River approaches, with some co-funding from Central Government. This seeks to find a more sustainable model for scheme management in terms of resilience to flood events, financial resilience of river management and potential ecological benefits.

Table 34: Options assessment for merging the River Management and Flood Protection Activity into an Integrated Catchment Management Approach.

Options	Implications of the options	Year 1-3	Year 3-10	Year 10-30	Risk (L/M/H)
a) Undertake an integrated catchment management project.	**Advantages** ▪ Reviewing levels of service will provide greater clarity on how the River Management and Flood Protection Activity and other activities (regulatory and non-regulatory) can better align to provide for an Integrated Catchment Management approach. ▪ This would enable levels of service and the associated funding model to be reviewed alongside other activities. **Disadvantages** ▪ Increased resourcing required to enable this.	✓			L
b) Consider use of Room for River approaches for scheme management.	**Advantages** ▪ Will investigate different scheme management options similar to those being used in the Rangitīkei Scheme. ▪ May have benefits for environmental outcomes, scheme resilience to future events and operational costs. ▪ Co-funding secured from Central Government for the first year of the Long-term Plan. **Disadvantages** ▪ Resourcing required to complete this task. ▪ Potential costs of transitioning to a new way of working. ▪ Approach is likely to require changes to the way some land is used.	✓			L
c) Maintain status quo.	**Advantages** ▪ Continuation of the current model that has been in place over a number of years ▪ Reduced costs. **Disadvantages** ▪ Provides less scope to review current practice and consult with the community on the future direction of Integrated Catchment Management and the role of River Management and Flood Protection within this.				M

10. MAJOR CAPITAL PROJECTS

Delivery of the capital programme has been identified as a key issue for the Infrastructure Strategy. The capital programme is an important component of achieving Council's strategic priority to build resilience to climate change and the community outcomes around building resilience to natural hazards and climate change. The capital programme also supports the community outcomes for a thriving economy and vibrant community through building flood protection and other assets that protect against the impacts of weather events by reducing the disruption the events cause.

The capital programme includes eight projects that have co-funding from Central Government. These projects are underway and are planned to be delivered in the first two years of the Long-term Plan. The other three proposed major projects are: 1. to increase flood resilience for the Mangaone Stream in Palmerston North; 2. to increase resilience to flooding in the Feilding area; and 3. to lower the Koputaroa number 4 submersible pump to increase levels of service for drainage in the area. The Palmerston North and Feilding projects will be in the planning phases in the first year of the Long-term Plan, with delivery planned over the following six years. Throughout the Long-term Plan, capital renewal programmes are proposed, averaging approximately $324,000 per annum.

No major capital expenditure is planned beyond year 8 of this Long-term Plan (2031-32), where the programme is proposed to be limited to capital renewals only. The Integrated Catchment Management work to review levels of service and funding models, combined with the regional flood vulnerability assessment, will inform the next Long-term Plan process and may lead to additional capital expenditure over the period of this Infrastructure Strategy. Affordability is a key issue, and this approach reduces, over time, the capital expenditure on new capital assets.

A particular challenge for forecasting future projects is the need to consult with the community and undertake preliminary design and cost-estimate work. In recent years, with an expanded capital programme and additional work around flood response and recovery, staff time has not been sufficient to advance this level of planning for future projects.

The approach to the capital programme enables future applications to Central Government and/or other partnerships to continue to establish future capital projects but acknowledges the current work programme in the first few years of the Long-term Plan will be challenging to deliver, and new information will be available for the next Long-term Plan to prioritise potential projects.

The delivery of the projects in the first five years of the Long-term Plan, in particular the first two years, will be challenging in terms of the scale and scope of work and the ability to get the appropriate permissions, land agreements, etc., to enable the work to proceed. All projects have the project assumptions that design and scoping, consents and other permissions will be able to be secured to enable project delivery within the timeframes specified. More specific project assumptions for the projects are provided in Tables 35 to 39 and in the Financial Assumptions section.

Some projects may take longer than planned. Costs for the projects also have the potential to escalate, for example the Feilding project budgets are based on estimates and do not include funding for land purchase. Further information on total project costs for the work programmes will refine as further design work, consultation, etc., are completed. A further consideration for project delivery is the appropriate weather, river flow, and ground conditions etc. enabling construction to occur. For example, some projects require low flow conditions for construction to be completed and these do not occur every year.

A brief overview of the major projects, including the planned expenditure and timing, is provided in the following sections.

10.1. Climate resilience projects

Four Climate Resilience Projects (Rangitīkei, Lower Manawatū, Te Awahou Foxton and Palmerston North) are underway with co-funding by Central Government through Kanoa. These projects were initiated in 2020 as a part of the government's response to the economic impacts of COVID-19. Horizons received $26.9 million of funding from Government, and Horizons' ratepayer contribution is an additional $9 million.

These projects were initially scheduled for completion in March 2024. However, contract variations have been completed to extend the construction component of the projects to the end of June 2025, i.e. by the end of year 1 of the Long-term Plan. The four projects and the planned activity as part of the Long-term Plan are overviewed in Table 35. In total, the planned spend on these projects is $10.618 million, all of which is in year 1 of the Long-term Plan. All of the projects have 75% co-funding from Central Government, with the remaining contribution through ratepayer contributions. The Te Awahou Foxton project has also received co-funding from Horowhenua District Council. Some further work may be carried forward into year 1 of the Long-term Plan if the full work programme for 2023-24 is not delivered.

Table 35: Overview of the four Climate Resilience projects, planned expenditure as part of the Long-term Plan 2024-54 and project assumptions. Note: common project assumptions to the project are also discussed in the text and not repeated here.

Project	Planned Expenditure	Timing	Project Assumptions
Rangitīkei Climate Resilience Project The Rangitīkei Climate Resilience project is implementing a more resilient "room for the river" approach to river management for the river downstream of the Bulls Bridge, with one aim being to reduce future damage cost.			
The planned works as part of the Long-term Plan include: ▪ Channel management and other room for river works; and ▪ Some berm land planting.	$0.6 million with 75% co-funding from Central Government.	Year 1.	Permissions and weather condition assumptions are considered the highest risks for this project.
Lower Manawatū Climate Resilience Project This project focusses on construction of improvements to the flood protection in the Lower Manawatū Scheme.			
The planned works as part of the Long-term Plan include: ▪ Upgrades to Moutoa flood gates; ▪ Upgrades to Moutoa outlet flood gates; ▪ Replacement of Rangiotu flood gates; ▪ Upgrades to Tokomaru stopbanks; and ▪ The continuation of some works on the Koputoroa stopbanks.	$4.9 million with 75% co-funding from Central Government.	Year 1.	Scoping of the work on the Moutoa flood gates and being able to complete the projects within timeframes are considered the highest risks. Consents and other permissions are a further risk for the projects.
Te Awahou Foxton Climate Resilience Project This project aims to provide 1:50 year flood protection to the township of Foxton.			
The planned works as part of the Long-term Plan include: ▪ Completion of a resilience works package that is subject to Council decisions in the 2023-24 financial year. May include installing sheet pile, the Cook Street wetland, upstream attenuation and/or other measures.	$1.8 million with 75% co-funding from Central Government.	Year 1.	Decisions on the works to be undertaken are yet to be determined by Council and are awaiting updated design and costing information.

Project	Planned Expenditure	Timing	Project Assumptions
Palmerston North Climate Resilience Project This project is focussed on construction of improvements to the flood protection in the Palmerston North area.			
The planned works as part of the Long-term Plan include: ▪ The Tremaine Avenue gabion replacement on the Mangaone Stream; and ▪ The Belvedere Crescent stopbank upgrade on the Mangaone Stream.	$3.3 million with 75% co-funding from Central Government.	Year 1.	Securing consents and other permissions is a risk for this project. Weather conditions could pose a risk to project timeline.

10.2. Te Pūwaha

The Te Pūwaha project is multi-partner project based around the revitalisation of the port in Whanganui, with support through the Provincial Growth Fund that is administered through Kanoa. Horizons' component of the larger work programme is the River Training Structures infrastructure upgrades. This work is being delivered in partnership with Te Mata Pūau, the hapū collective who steer and guide the project to ensure it has been developed and guided by Tupua te Kawa and in the context of the Te Awa Tupua (Whanganui River Claims Settlement) Act, 2017. Whanganui District Council are a further funding partner, contributing $1.8 million to the $16.4 million project budget.

The River Training Structures project is being delivered in three main stages (Figure 20).

- Stage 1 is the upgrade to the North Mole River Training Structure.
- Stage 2 includes:
  - Stage 2a: construction of the Tanae Groyne (Stage 2a); and
  - Stage 2b: upgrading the South Mole River Training Structure.
- Stage 3 is the upgrade of river training structures on South Spit, upstream of the Tanae Groyne.

The project was initiated in 2019 and the work programmes for Stages 1 and 2 were originally planned to be delivered by December 2023. Stage 1 was completed in December 2023 and some associated additional flood protection and amenity work is planned in 2024.

The project is seeking an extension to the delivery timeframe, subject to approval by Central Government. The Long-term Plan proposes to carry out construction of resilience upgrades to the southern side of the awa in the project area in year 1 and year 2 of the project (Table 36). The Long-term Plan includes $5.4million of funding to meet the balance of the $16.4 million project budget prior to the Long-term Plan. As part of decisions on the Long-term Plan Council added an additional $1.8M of funding in year 1 to support applications for additional co-funding and delivery of resilience upgrades on the southern side of the awa in the project area (noting this may not include all the previously planned works and will be limited to the budget available).

Figure 20: Te Pūwaha project stages and assets overview.

Table 36: Overview of the Te Pūwaha project activity, planned expenditure as a part of the Long-term Plan 2024-54 and project assumptions. Note: common project assumptions to the project are also discussed in the text and not repeated here.

Project	Planned Expenditure	Timing	Project Assumptions
Te Pūwaha project Horizons' contribution to the Te Pūwaha project is delivery of River Training Structure upgrades in the location of the Whanganui Port.			
The planned works as part of the Long-term Plan include: ▪ Upgrades to resilience on the southern side of the awa in the project area (note this may not include all of the previously planned works).	$7.2 million with co-funding from Central Government.	Years 1 & 2.	Permissions and weather condition assumptions are considered the highest risks for this project.

10.3. Local Government Flood Resilience Co-investment Fund

The Local Government Flood Resilience Co-investment Fund is one of a number of initiatives as part of Central Government's budget in 2023 to support response and recovery from the North Island weather events in early 2023, which included Cyclone Hale and Cyclone Gabrielle. This initiative provides funding for Crown co-investment with local authorities in areas impacted by the 2023 North Island weather events to support the proactive management of climate-exacerbated flood risk. The lead agency for this fund is the Department of Internal Affairs.

Horizons received funding for two projects through this fund. The projects were initiated in the 2023-24 financial year and are programmed to be completed in the 2024-25 year (year 1 of the Long-term Plan). In summary, these are:

- To reduce risks to people and houses in the Pohangina Catchment. The total project value is $1.2 million, with the local share being $560,000 and $640,000 of Central Government funding; and
- For a regional project to undertake flood forecasting and communication resilience upgrades. The total project value is $4.985 million, with the local share being $1.345 million and $3,645,000 of Central Government funding.

The Pohangina Catchment project included a range of work to complete physical flood protection works and a project to assess options for potential flood protection at the River Road, Saddle Road area near Ashhurst. The remaining component of the work that is to be delivered is design and construction of flood protection at Tōtara Reserve, where there are risks to infrastructure and people at the regional park and also risks to roading infrastructure. Horizons' contribution to this project is a total of $210,000 toward the $615,000 sub-project. This funding is via the budget for Tōtara Reserve, which is part of the Biodiversity and Biosecurity budgets. In year 1 of the Long-term Plan, $200,000 of capital has been budgeted toward this project, but as this is funded from the Biodiversity budgets is not included in the river management capital budget totals.

The regional project to undertake flood forecasting and communication resilience upgrades (Table 37) has a range of sub-projects comprising of:

- Upgrades to the hydrological monitoring network, including new monitoring stations to provide additional information for flood event management and improve flood forecasting predictions, radio network upgrades and standby power upgrades to build additional resilience in the communication networks during storm events;
- Upgrades to Horizons' flood forecasting system to improve predictions of river flows and inform flood event management;
- Updates to regional flood mapping to provide publicly available information on flood risk;
- A regional flood vulnerability assessment to identify current and predicted levels of service for existing flood protection infrastructure and a regional assessment of flood vulnerability to improve understanding of relative risk across the region and prioritise the work programme; and
- Pump station upgrades to improve communication and reporting from pump stations, thus removing reliance on cell phone communication and third parties during storm events. Some power supplies will be

upgraded to enable pump stations to continue to operate if there is a loss of power supply via the national grid.

The projects are a mix of both operational and capital expenditure with funding from a range of budgets across Horizons. Expenditure is planned over 2023-24 year and year 1 of the Long-term Plan. The flood vulnerability assessment is to be funded via operational budgets. The one aspect of this work to be funded via river management capital expenditure in year 1 of the Long-term Plan is the pump station power supply upgrades, which have a budget of $1.135 million in year 1 of the Long-term Plan of which Central Government co-funding is contributing $1.1 million.

Table 37: Overview of the regional flood forecasting and communication resilience upgrades project planned expenditure as part of the Long-term Plan 2024-54 and project assumptions. Note: common project assumptions to the project are also discussed in the text and not repeated here.

Project	Planned Expenditure	Timing	Project Assumptions
Regional flood forecasting and communication resilience upgrades project The river management and flood protection capital programme component of this project as part of the Long-term Plan, is to improve communication and reporting from pump stations and installing backup power supplies to some pump stations.			
The planned works as part of the Long-term Plan include: ▪ Upgrading communication and reporting from pump stations; and ▪ Establishing backup power supplies in some pump stations.	$1.135m with 97% co-funding from Central Government.	Year 1.	Ability to source materials within the timeframes is considered the highest risk for this project.

10.4. Nature-based solutions funding

The Nature Based Solutions funding via the Ministry for the Environment is to investigate Room for the River concepts being applied to the Pohangina and Ōroua rivers, and the stretch of the Manawatū River from the lower end of the Manawatū Gorge to the confluence with the Ōroua River. This project has evolved from requests by the community and scheme meetings in the Pohangina-Ōroua catchments following Cyclone Gabrielle, to investigate alternative methods of river management to reduce the costs of repairs after significant rainfall events.

The Room for the River approach is being implemented in the Lower Rangitīkei scheme and the concept is demonstrated in Figures 21 & 22.

The Room for the River approach aims to:

- Increase engineering resilience by increasing the channel size, thus increasing the capacity to maintain river flows within the defined channel/s;
- Increase financial resilience by decreasing costs via two mechanisms: 1. through reducing the work to highly confine the river/s through maintenance and construction of assets; and 2. reducing future flood damage and ongoing repairs and maintenance through having fewer assets that maintain tightly confined systems;
- Increase ecological resilience by providing gravel beaches, improving riparian zones, widening corridors for native species movement between the ranges and the floodplains, increasing bird habitat, and recreating in-river habitat by allowing habitat complexity with pools, riffles, runs, meanders and side channels; and
- Create more open river spaces that the community can access, use and interact with.

This approach does require additional land area for the river system, which can be in direct competition with the use of this land for other purposes, including agricultural production.

This project was initiated in 2023-24, and the Central Government co-funded aspect of the work is programmed for completion in year 1 of the Long-term Plan. The implementation of the project is budgeted to continue beyond then. All current budgeted costs for this project are operational, and this project is included here for completeness of the summary of government co-funded projects. It is also included as it could lead to changes in scheme management that may have transitional costs, including capital costs.

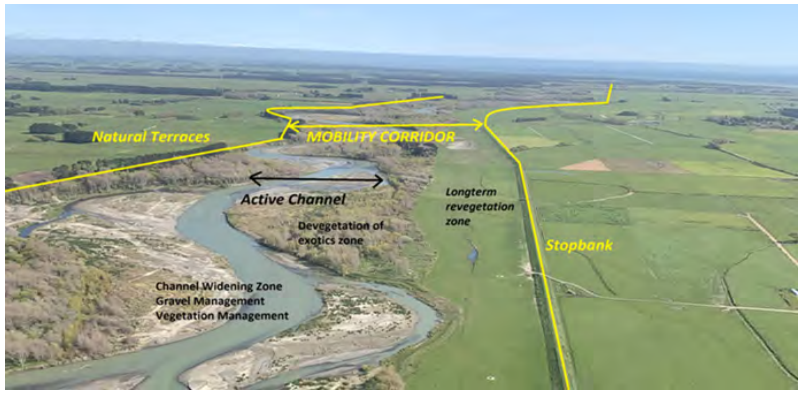

Figure 21: Annotated photo showing the concept of Room for River approach in the Rangitīkei River with a mobility corridor, channel widening zone and de-vegetation of exotics zone.

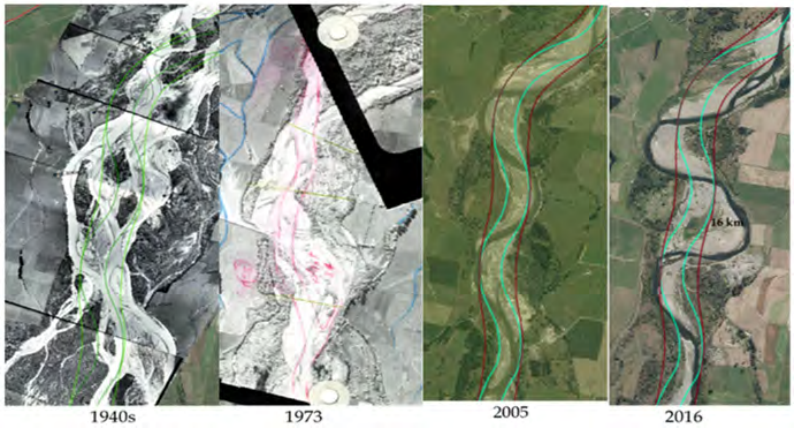

Figure 22: Aerial photos of the Rangitīkei River showing how the river channel has changed from a braided channel to controlled incised channel requiring regular maintenance.

10.5. Palmerston North Mangaone Stream resilience upgrades

This project proposes additional flood resilience upgrades to the Mangaone Stream through Palmerston North. A breach to flood defences in this area would impact a highly populated area and could have significant impacts on the community.

Upgrades to flood resilience in this area have been ongoing over a number of years, and the Long-term Plan includes, via the Palmerston North Climate Resilience Project, significant upgrades to the area near Tremaine Avenue and to a stopbank in the Belvedere Crescent location.

This project is a continuation of resilience work for the Mangaone Stream, and the works package will be further defined over the course of the first two years of the Long-term Plan. Works are likely to include erosion protection upgrades, particularly on the outsides of bends in the river channel. Works will also likely include channel capacity upgrades and may include amenity and environmental improvement works (Table 38)

Table 38: Overview of the Palmerston North Mangaone Stream resilience upgrades project planned expenditure as part of the Long-term Plan 2024-54 and project assumptions. Note: common project assumptions to the project are also discussed in the text and not repeated here.

Project	Planned Expenditure	Timing	Project Assumptions
Palmerston North Mangaone Stream resilience upgrades project This project is to complete flood resilience upgrades to the Mangaone Stream.			
The planned works as part of the Long-term Plan include: ▪ Resilience upgrades.	$4.1 million funded by loans to be paid via the Palmerston North Special Project rating mechanism.	Years 2 & 3.	Permissions and weather condition assumptions are considered the highest risks for this project.

10.6. Feilding area flood resilience upgrades.

This project is a continuation of work to establish improved flood resilience for Feilding. The work includes the remaining component of the Rural Upgrade project in the Te Arakura Road area, upgrades to the Reid Line spillway to divert an increased amount of water from flowing through the township and work to increase flood carrying capacity and erosion protection in the Makino Stream through the town (Table 39).

The Te Arakura Road component of the project aims to complete the final component of the rural upgrade project that was halted by protests in 2020. In 2023, the Cyclone Gabrielle event caused flooding of a marae and approximately four houses in this area. The risk of further flooding remains while this stopbank is not complete. An estimated budget provision has been included to enable the remaining approximately 2 km of stopbank to be installed to provide 1 in 100-year flood protection. Delivery, timing and design of the works is subject to agreements and decisions around a stopbank in this location.

The Reid Line spillway was established after the 2004 flood event (around 2009) and a further upgrade was initiated after the 2015 flood event. The upgrade seeks to further reduce the amount of water entering Feilding from upstream sources during flood events. Work over the period from 2018 has progressed with some design and land purchases, however, this work programme has been delayed due to the focus on the Climate Resilience and Te Pūwaha projects and response/recovery from weather events. The Long-term Plan includes provision for further planning, design and permissions work in years 1 and 2 with an aim to complete construction from years 3 to 7. The major risks to this project include securing the resource consents and obtaining permissions of impacted landowners. The budgets for the Long-term Plan have not included any capital budget for land purchase for this project.

Even with the upgrades to the spillway, there are ongoing challenges with the capacity of the Makino Stream within Feilding. This is partly due to additional development, over time, contributing additional peak inflows downstream of the diversion structure. A project to increase capacity and upgrade resilience in the Makino Stream is also included in the Long-term Plan. The capacity upgrades component of this are likely to focus on the area of the Duke Street Bridge, which is where the capacity is currently most limited. The other aspect of the work will be repairing and upgrading existing flood defence and erosion protection in the Makino Stream and establishing new assets for this purpose. The assets established through the Makino Stream since the major flooding in 2004 to improve resilience have mixed

ownership and are in a range of asset conditions. This work programme aims to consolidate the management of these assets, complete repairs and upgrades, and establish an ongoing maintenance programme.

Table 39: Overview of the Feilding area resilience upgrades project planned expenditure as a part of the Long-term Plan 2024-54, and project assumptions.
Note: common project assumptions to the project are also discussed in the text and not repeated here.

Project	Planned Expenditure	Timing	Project Assumptions
Feilding Area flood resilience upgrades project. This project is to complete flood resilience upgrades in the Feilding area.			
The planned works as part of the Long-term Plan include: ▪ Completion of the stopbank on the Ōroua River near Te Arakura Road; ▪ Upgrades to the Reid Line Spillway; and ▪ Resilience and capacity upgrades to the Makino Stream through Feilding.	$15.4 million funded by loans to be paid via the lower Manawatū Scheme funding policy.	Years 1 to 7.	Permissions and budget assumptions are considered the highest risks for this project, which requires land access and resource consents. Land purchases have not been budgeted.

10.7. Koputaroa Number 4 Pump Lowering.

This project is to lower an existing submersible pump to improve drainage in the area. The task requires modification of an existing structure to enable the pump to be lowered. Lowering the pump will provide for the pump to operate more effectively and for longer periods. This project is budgeted to cost $100,000 in year 1 of the Long-term Plan.

[28] https://media.umbraco.io/te-waihanga-30-year-strategy/mmahiykn/rautaki-hanganga-o-aotearoa-new-zealand-infrastructure-strategy.pdf

11. ASSET MANAGEMENT

This section of the report overviews asset renewals and disposal practices, and summarises asset conditions based on the available data.

11.1. Asset renewals

Asset renewals are a critical component of infrastructure management. As outlined in the New Zealand Infrastructure Strategy28 our infrastructure comes with ongoing costs, and alongside expenditure on new infrastructure there is a need to spend on repairing or renewing worn-out infrastructure assets that have been established over time.

The ageing nature of Horizons' river management and drainage assets adds to this challenge, as do new regulatory settings and community expectations around replacement of asset infrastructure. A further consideration is maintaining levels of service when replacing assets where larger or different assets may be required to provide the same levels of service due to climate change impacts.

11.2. Assigning useful life to assets

The assignment of a useful life to Horizons' assets fits into three types of categorisation (Table 40). These are:

- Assets that are perpetual;
- Assets that have an undefined life span; and
- Assets with specific lifespans in years (Table 41, Table 42).

The lifespans for the various asset sub-types is shown in Table 43.

Table 40: Summary of assets by useful life categorisation

Useful life	Perpetual	Undefined	Defined period of time	Total
Number of assets	2,622	243	929	3,794
Percentage of number of assets	69.1%	6.4%	24.5%	100%
Value of assets	$839,934,672	$14,789,260	$135,309,601	$990,033,534
Percentage of value of assets	85%	1%	14%	

Table 41: Summary of assets with a specified numeric useful life by asset subtype.

Asset Type	Asset sub-type	Number of assets	2022-23 replacement value ($)	Percentage of the number of assets with a numeric useful life	Percentage of value of assets with a numeric useful life
Bank Protection	Lining - Tiered	2	691,391	0%	1%
	Retaining Wall	6	449,302	0.6%	0%
	Retaining Walls - Mass block	4	4,216,319	0.4%	3%
Control Structure	Drop	4	2,403,765	0.4%	2%
	Grade	21	612,243	2.3%	0%
	Weir	30	6,223,212	3.2%	5%
Equipment	Control - Auto Transformer	19	1,438,759	2%	1%
	Control - Sensor	1	11,467	0.1%	0%
	Control - Soft Starter	1	166,889	0.1%	0%
	Control - VSD	1	1,496,000	0.1%	1%
	Mechanical - Pump	46	5,768,584	5%	4%
	Screen / Filter - Screen	1	63,567	0.1%	0%
	Structure - Outlet Grill	48	3,260,884	5.2%	2%
	Supply - Generator	1	365,875	0.1%	0%
	Detention Inlet	5	517,627	0.5%	0%
Flood protection	Detention Outlet	5	517,627	0.5%	0%
	Flood Walls	64	8,426,564	6.9%	6%
	Floodgate	20	1,912,034	2.2%	1%
	Floodgate Structure - Culvert	534	21,806,019	57.5%	16%
	Floodgate Structure - Other	18	5,016,887	1.9%	4%
	Flow Diversion Structure	10	54,228,546	1.1%	40%
	Portable Flood Barrier	8	400,484	0.9%	0%
	Spillway	56	4,240,232	6%	3%
Site	Land Use - Drainage Pump Station	24	11,075,325	2.6%	8%
Total		929	135,309,601	100%	100%

Table 42: Summary of assets with a specified numeric useful life by the timeframe of the useful life.

Useful life (years)	Number of assets	2022-23 replacement value ($)	Percentage of the number of assets with a numeric useful life	Percentage of value of assets with a numeric useful life
25	46	5,768,584	5%	4%
50	37	4,328,775	4%	3%
70	722	44,662,064	78%	33%
100	50	17,895,069	5%	13%
100/200	10	54,228,546	1%	40%
50/200	64	8,426,564	7%	6%
Total	**929**	**135,309,601**		

Perpetual assets make up the majority of the assets (69% of number of assets and 84% of the overall value, Table 40). This in part reflects the nature of the assets, including: earth embankments, in the forms of either stopbanks or detention dams; rock riprap; and open drains.

The assets with an undefined lifecycle total approximately 6.5% of the number of assets and approximately 2% of the overall value (Table 40). These assets comprise of three asset subtypes of the bank protection category. Approximately half of these (51.6%) are driven permeable groynes, with nearly all of the other half (47.2%) being permeable mesh units. The remainder (1.2%) are gabions. The undefined nature of these relates to the unpredictability of lifespan and the need to monitor conditions to inform maintenance and replacement.

For assets that have a numerically defined asset life (Table 41), the periods range from 25 to 200 years (Table 42). Assets in this category represent approximately one-quarter of the number of assets and 14% of the overall value (Table 40). More than 75% of these assets are flood protection assets with 57% of these being culverted flood gate structures. Predominately (88% by number of assets and 90% by value) of the assets with specified time frame for useful life have a lifespan of over 50 years (Table 42).

Where assets have been assigned a useful life, i.e. where gradual deterioration in condition and performance over time is expected, it is generally not critical that the asset is renewed or replaced in a particular year. However, this management approach does require careful consideration of whole-of-life cost and operating risks. Regular inspections and asset condition assessment are a key management tool with this approach.

Funding asset renewals

Horizons' approach to funding renewals is to rate relatively consistent amounts on an annual basis and use renewal reserves as a mechanism to fund the renewal expenditure, which varies on an annual basis in relation to information from inspections. As identified above, Horizons does not have established renewal programmes based on up-to-date estimates of the lifespans for the assets for all of the schemes. This is an identified gap in the asset management programme. Renewal upgrades are occurring both through use of renewal reserves as issues are identified and as part of the capital programme.

A summary of the renewal reserves for each of the schemes, and forecast expenditure over the period of the Long-term Plan, is shown in Tables 44 to 46. There is no expenditure shown for the majority of schemes. The Infrastructure Strategies approach has been to continue to rate as per previous years and build up reserves while the formal asset renewal programme is updated.

Table 43: Summary of asset sub-types, useful life and depreciation policies.

Asset Type	Asset sub-type	Number of assets	2022-23 replacement value	Percentage of Asset value	Useful Life	Depreciated (Y/N)	Depreciated value ($)	Not depreciated (value $)
Bank Protection	Erosion Protection Reserve	26	46,324,063	4.7%	Perpetual	N		46,324,063
	Gabions	3	620,961	0.1%	Undefined	N		620,961
	Groyne	19	21,464,760	2.2%	Perpetual	N		21,464,760
	Lining - Engineered	101	84,523,595	8.5%	Perpetual	N		84,523,595
	Lining - Non-engineered	141	60,880,633	6.1%	Perpetual	N		60,880,633
	Lining - Tiered	2	691,391	0.1%	100	Y	691,391	
	Permeable Groyne - Driven	127	10,344,547	1.0%	Undefined	N		10,344,547
	Permeable Mesh Unit	116	4,444,713	0.4%	Undefined	N		4,444,713
	Planting	409	35,456,788	3.6%	Perpetual	N		35,465,931
	Retaining Wall	6	449,302	0.0%	50	Y	449,302	
	Retaining Walls - Mass block	4	4,216,319	0.4%	100	Y	4,216,319	
	Rip Rap	269	77,113,676	7.8%	Perpetual	N		77,113,676
	Stock Gate	9	68,495	0.0%	Perpetual	N		68,495
	Tied Tree Work - Anchored	464	37,168,957	3.8%	Perpetual	N		37,167,957
	Tied Tree Work - Layered	1	5,682	0.0%	Perpetual	N		5,682
Control Structure	Bed Armouring	2	2,560,081	0.3%	Perpetual	N		1,580,587

Asset Type	Asset sub-type	Number of assets	2022-23 replacement value	Percentage of Asset value	Useful Life	Depreciated (Y/N)	Depreciated value ($)	Not depreciated (value $)
	Drop	4	2,403,765	0.2%	70	Y	2,403,765	
	Grade	21	612,243	0.1%	70	Y	612,243	
	Weir	30	6,223,212	0.6%	70	Y	6,223,212	
Enhancement	Amenity	8	500,568	0.1%	Perpetual	Y/N	378466.85	122,101
	Handrail	1	15,826	0.0%	Perpetual	N		15,826
	Knee-breakers	1	25,695	0.0%	Perpetual	N		25,695
	Ramp	3	34,841	0.0%	Perpetual	N		34,841
	Self Help Depot	1	10,108	0.0%	Perpetual	N		10,108
	Walkway	1	166,506	0.0%	Perpetual	N		166,506
Equipment	Control - Auto Transformer	19	1,438,759	0.1%	50	Y	1,438,759	
	Control - Sensor	1	11,467	0.0%	50	Y	11,467	
	Control - Soft Starter	1	166,889	0.0%	50	Y	166,889	
	Control - VSD	1	1,496,000	0.2%	50	Y	1,439,983	
	Mechanical - Pump	46	5,768,584	0.6%	25	Y	5,584,566	
	Screen / Filter - Screen	1	63,567	0.0%	70	Y	63,567	
	Structure - Outlet Grill	48	3,260,884	0.3%	70	Y	3,260,884	
	Supply - Generator	1	365,875	0.0%	50	Y	365,875	
Flood Protection	Detention Embankment	54	13,312,645	1.3%	Perpetual	N		12,467,515
	Detention Inlet	5	517,627	0.1%	70	Y	517,627	

Asset Type	Asset sub-type	Number of assets	2022-23 replacement value	Percentage of Asset value	Useful Life	Depreciated (Y/N)	Depreciated value ($)	Not depreciated (value $)
	Detention Outlet	5	517,627	0.1%	70	Y	517,627	
	Flood Walls	64	8,426,564	0.9%	50/200	Y	8,426,564	
	Floodgate	20	1,912,034	0.2%	100	Y	1,912,034	
	Floodgate Structure - Culvert	534	21,806,019	2.2%	70	Y	21,806,019	
	Floodgate Structure - Other	18	5,016,887	0.5%	70	Y	7,924,887	
	Flow Diversion Structure	10	54,228,546	5.5%	100/200	Y	53,696,289	
	Guide bank	15	5,319,418	0.5%	Perpetual	N		5,319,418
	Portable Flood Barrier	8	400,484	0.0%	50	Y	400,484	
	Property Mitigation Bund	15	1,693,175	0.2%	Perpetual	N		1,693,175
	Spillway	56	4,240,232	0.4%	70	Y	4,240,232	
	Stopbank	284	417,857,963	42.2%	Perpetual	N		417,857,963
	Toe Drain	5	592,159	0.1%	Perpetual	N		592,159
Site	Land Use - Drainage Pump Station	24	11,075,325	1.1%	100	Y	12,146,427	
	Pump station - Land/Access	20	283,770	0.0%	Perpetual	N		283,770
Vegetation Management	Drainage Channel	770	33,934,305	3.4%	Perpetual	N		33,934,305
Total	Total	3,794	990,033,534			Y or No	138,894,879	852,528,982

Table 44: Summary of asset renewal reserves, planned rating for renewals and planned renewal expenditure for the life of the Long-term Plan for river schemes. Values are in dollars.

	2024-25			2025-26			2026-27			2027-34			2034-2044			2044-2054			
River schemes	Opening Balance	Income	Expenditure	Opening Balance	Income	Expenditure	Opening Balance	Income	Expenditure	Opening Balance	Income	Expenditure	Opening Balance	Income	Expenditure	Opening Balance	Income	Expenditure	Closing Balance
Lower Manawatū (including special project)	17,780	-	-	17,780	-	-	17,780	-	-	17,780	-	-	17,780	-	-	17,780	-	-	17,780
Rangitīkei River	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lower Whanganui River	-6,810	-	-	-6,810	-	-	-6,810	-	-	-6,810	-	-	-6,810	-	-	-6,810	-	-	-6,810
Mangatainoka	-22,922	-	-	-22,922	-	-	-22,922	-	-	-22,922	-	-	-22,922	-	-	-22,922	-	-	-22,922
South East Ruahines	59,146	12,814	-	71,960	12,814	-	84,774	12,814	-	97,588	89,698	-	187,286	128,140	-	315,426	128,140		443,566
Pohangina - Ōroua	-28,901	-	-	-28,901	-	-	-28,901	-	-	-28,901	-	-	-28,901	-	-	-28,901	-	-	-23,623
Ōhau Manakau	179,527	10,098	-	189,625	10,000	-	199,625	10,000	-	209,625	70,000	-	279,625	100,000	-	379,265	100,000	-	479,625
Tararua	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Upper Manawatū	711	1,000	-	1,711	1,000	-	2,711	1,000	-	3,711	7,000	-	10,711	10,000	-	20,711	10,000	-	30,711
Porewa Valley (60:40)	27,792	5,100	-	32,892	5,100	-	37,992	5,100	-	43,092	35,700	-	78,792	51,000	-	129,792	51,000	-	180,792
Lower Kiwitea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tutaenui	6,630	350	-	6,980	350	-	7,330	350	-	7,680	2,450	-	10,130	3,500	-	13,630	3,500	-	17,130
Upper Whanganui	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Matarawa	30,844	6,750	-	37,594	6,750	-	44,344	6,750	-	51,094	47,250	-	98,344	67,500	-	165,844	67,500	-	233,344
Whangaehu - Mangawhero	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ruapehu DC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ohakune	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ashhurst Stream	1,942	-	-	1,942	-	-	1,942	-	-	1,942	-	-	1,942	-	-	1,942	-	-	1,942
Turakina	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Makirikiri	45,060	-	2,109	42,951	-	7,267	35,684	3,500	-	39,184	24,500	-	63,684	35,000	-	98,684	35,000	-	133,684
Pakihi Valley	1,276	345	-	1,621	345	-	1,966	345	-	2,311	2,415	-	4,726	3,450	-	8,176	3,450	-	11,626
Tawataia - Mangaone	8,614	100	-	8,714	100	-	8,814	100	-	8,914	700	-	9,614	1,000	-	10,614	1,000	-	11,614
Kahuterawa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total river schemes	320,689	36,557	2,109	355,317	36,459	7,267	384,329	39,959	-	424,288	279,713	-	704,001	399,590	-	1,103,591	399,590	-	1,503,181

Table 45: Summary of asset renewal reserves, planned rating for renewals and planned renewal expenditure for the life of the Long-term Plan for drainage schemes. Values are in dollars

	2024-25			2025-26			2026-27			2027-34			2034-2044			2044-2054			
River schemes	Opening Balance	Income	Expenditure	Opening Balance	Income	Expenditure	Opening Balance	Income	Expenditure	Opening Balance	Income	Expenditure	Opening Balance	Income	Expenditure	Opening Balance	Income	Expenditure	Closing Balance
Manawatū	245,158	55,928	85,306	215,780	55,928	140,649	131,059	55,928	69,106	117,881	391,496	263,812	245,565	559,280	458,423	346,422	559,280	460,359	445,343
Makerua	157,486	74,395	65,000	166,881	70,000	117,415	119,466	70,000	62,700	126,766	490,000	436,590	180,176	700,000	653,364	226,812	700,000	673,814	252,998
Moutoa	6,413	81,569	84,194	3,788	65,000	45,945	22,843	65,000	49,123	38,720	455,000	508,230	-14,510	650,000	782,381	-146,891	650,000	839,618	-336,509
Koputoroa	154,108	38,826	34,835	158,099	30,000	31,597	156,502	30,000	68,131	118,371	210,000	424,277	-95,906	300,000	641,742	-437,648	300,000	821,484	-959,133
Te Kawau	118,154	44,726	27,700	135,180	44,726	123,577	56,329	44,726	40,755	60,300	313,082	396,067	-22,685	447,260	622,700	-198,125	447,260	653,682	-404,547
Hōkio	3,399	516	-	3,915	516	-	4,431	516	-	4,947	3,612	-	8,559	5,160	-	13,719	5,160	-	18,879
Foxton East	4,547	630	-	5,177	630	-	5,807	630	-	6,437	4,410	-	10,847	6,300	-	17,147	6,300	-	23,447
Whirokino	8,566	1,589	-	10,155	1,589	2,297	9,447	1,589	-	11,036	11,123	16,628	5,531	15,890	-	21,421	15,890	-	37,311
Himatangi	3,163	430	-	3,593	430	-	4,023	430	-	4,453	3,010	-	7,463	4,300	-	11,763	4,300	-	16,063
Forest Road	3,893	200	-	4,093	200	-	4,293	200	-	4,493	1,400	-	5,893	2,000	-	7,893	2,000	-	9,893
Haunui	0		-	-	-	-	-	-	-	-	-	-	-	-	-			-	-
Total drainage schemes	704,887	298,809	297,035	706,661	269,019	461,480	514,200	269,019	289,815	493,404	1,883,133	2,045,605	330,932	2,690,190	3,158,610	-137,488	2,690,190	3,448,957	-896,255

Table 46: Summary of asset renewal reserves, planned rating for renewals and planned renewal expenditure for the life of the Long-term Plan for river and drainage schemes. Values are in dollars.

	2024-25			2025-26			2026-27			2027-34			2034-2044			2044-2054			
River schemes	Opening Balance	Income	Expenditure	Opening Balance	Income	Expenditure	Opening Balance	Income	Expenditure	Opening Balance	Income	Expenditure	Opening Balance	Income	Expenditure	Opening Balance	Income	Expenditure	Closing Balance
Total river schemes	320,689	36,557	2,109	355,317	36,459	7,267	384,329	39,959	-	424,288	279,713	-	704,001	399,590	-	1,103,591	399,590	-	1,503,181
Total drainage schemes	704,887	298,809	297,035	706,661	269,019	461,480	514,200	269,019	289,815	493,404	1,883,133	2,045,605	330,932	2,690,190	3,158,610	-137,488	2,690,190	3,448,957	-896,255
Total all schemes	1,025,576	335,366	299,144	1,061,798	305,478	468,747	898,529	308,978	289,815	917,692	2,162,846	2,045,605	1,034,933	3,089,780	3,158,610	966,103	3,089,780	3,448,957	606,926

11.3. Asset disposals

Planned disposal of an asset occurs when the asset is confirmed as no longer in-service, under two main scenarios:

1. Following the end of a fixed lifespan, e.g. a portable flood barrier which has a fixed expiry date recommended by the manufacturer. Decisions about replacement will be made based on a review of the asset purpose and the requirement to replace the asset in order to maintain the level of service, and it is likely to be funded through reserve drawdowns or loan funding; and
2. When assets come up for renewal as they are approaching the end of an estimated useable life based on a calculation of the lifespan of the asset class. For these assets, decisions about renewal will be made based on the current performance and condition of the asset and its capability to continue to provide the level of service for which it was designed. Renewals of this type are funded through renewal reserve drawdowns or loan funding.

Other asset disposals can occur when an asset is damaged or assessed, and decisions are made not to replace it. Decisions not to replace can relate to new community or regulatory requirements for an asset if it is to be replaced, and the costs of doing so are assessed to outweigh the benefits. An example might be removing a weir that is a barrier to fish passage, where a replacement structure would require fish passage to be provided.

Implications for the Infrastructure Strategy

Asset renewals are an item of expenditure that will need to be provisioned for in the Infrastructure Strategy and budgets for the Long-term Plan (Figure 23). The current plan for asset renewals remains consistent with that of the previous Long-term Plan.

There is a risk that due to affordability challenges, some renewals do not advance, and the current projections include funding for this activity to occur. This assumes like-for-like replacements, and with changing climatic conditions, regulatory requirements and community expectations, there may be additional costs that cannot be foreseen at the time of writing this Infrastructure Strategy. Should these arise, they would need to be addressed via scheme budgets and/or Annual Plan or Long-term Plan processes.

Figure 23: Burkes pump station commissioning/opening 2015. This asset is the biggest of the region's 24 pump stations, and the concrete structure has an estimated life span of 100 years.

12. ASSET CONDITION

Asset condition inspections and reporting are essential components of managing infrastructure assets. Over recent years Horizons has had challenges meeting the asset inspection targets of the Long-term Plan due to the impacts of Covid-19, Cyclone Gabrielle and capacity constraints.

During the 2022-23 year there were 3,794 assets having a declared value and requiring inspection to meet the Long-term Plan targets. Operationally, these were separated into groups based on criticality of inspection. The programme was disrupted during the year, particularly due to Cyclone Gabrielle and only 951 of the 1,231 critical asset inspections (76%) were completed while none of the remaining 2,563 assets were inspected. Overall, approximately 25% of the assets were inspected in 2022-23, limiting the accuracy of the available data for this Infrastructure Strategy. It is noted that many of the assets will have been inspected, however that information has not been recorded into the asset management database.

Over the last two years, Horizons has increased the size of its asset management team to enable more inspections and improve reporting. The reporting on asset condition is an important component of prioritising maintenance programmes and assessing risk within the asset network.

12.1. Asset condition ratings

Our asset condition monitoring programme is designed to identify assets that are most in need of works, according to their condition ratings. Condition ratings (Table 47) are assessed on a scale of 1 (excellent) through 5 (very poor) and there are two additional categories used for monitoring inspections which are 6 (not accessible at last inspection) and 7 (not yet assessed).

Table 47: Summary of asset condition ratings for river and drainage assets as at November 2023.

Rating	Classification	Action	Description
1	Excellent	No Action Required	New or near new condition. Some wear but no evidence of damage. Can include repaired assets where the repair is as good as the original.
2	Good	Monitor to see if there are changes	Deterioration or minor damage that may affect performance. Includes most repair assets.
3	Average	Consider assessment by Area Engineer	Clearly needs some attention but is still working. Structure in need of repair. Includes repairs where the repair deteriorated.
4	Poor	Get assessment by Area Engineer	Either not working or is working poorly because of damage or deterioration. Condition of structure is poor or structural integrity in question.
5	Very Poor	Replace or Repair	Needs urgent attention.
6	Not accessible at the last inspection	Refer to Area Engineer for a plan to restore access.	Not able to do visual inspection.
7	Not yet assessed	Refer to Area Engineer to investigate.	Assets without a condition rating.

12.2. Prioritising assets based on criticality

Assets are grouped into high and low criticality classifications (Table 48). High criticality assets are those which are critical to providing the service level of the scheme and require regular inspections of their condition between flood events. These include dams, pump stations, stopbanks, floodgates and weirs. The remaining asset classes are considered to have low criticality. These are unlikely to alter between flood events and provide support to the high critical assets in providing the service level of the scheme. Low criticality assets include drains, tied tree works, rock linings, and vegetation plantings.

The Long-term Plan proposes changes to inspection targets to focus on the high criticality assets being inspected at least once annually and the low criticality assets at least once every five years. This is a change in asset inspection frequency compared to the previous Infrastructure Strategy, where all assets were to be inspected annually. This change in approach is to align with risk and enable further time and focus on following up on asset conditions that are identified as requiring further work, and for repeating inspections of high criticality assets after flood events.

Table 48: Summary of asset criticality ratings for asset subtypes.

Asset Type	Asset subtype	Number of assets	2022-23 replacement value	Percentage of asset value	Number of low criticality assets	Number of high criticality assets	Value of low criticality assets	Value of high criticality assets
Bank Protection	Erosion Protection Reserve	26	46,324,063	0.047	26		46,324,063	
	Gabions	3	620,961	0.10%	3		620,961	
	Groyne	19	21,464,760	0.022	19		21,464,760	
	Lining - Engineered	101	84,523,595	8.50%	101		84,523,595	
	Lining - Non-engineered	141	60,880,633	0.061	141		60,880,633	
	Lining - Tiered	2	691,391	0.10%	2		691,391	
	Permeable Groyne - Driven	127	10,344,547	0.01	127		10,344,547	
	Permeable Mesh Unit	116	4,444,713	0.40%	116		4,444,713	
	Planting	409	35,456,788	0.036	409		35,456,788	
	Retaining Wall	6	449,302	0.00%		6		449,302
	Retaining Walls - Mass block	4	4,216,319	0.004		4		4,216,319
	Rip Rap	269	77,113,676	7.80%	269		77,113,676	
	Stock Gate	9	68,495	0	9		68,495	
	Tied Tree Work - Anchored	464	37,168,957	3.70%	464		37,168,957	
	Tied Tree Work - Layered	1	5,682	0	1		5,682	
Control Structure	Bed Armouring	2	2,560,081	0.20%	2		2,560,081	
	Drop	4	2,403,765	0.002		4		2,403,765
	Grade	21	612,243	0.10%		21		612,243
	Weir	30	6,223,212	0.006		30		6,223,212
Enhancement	Amenity	8	500,568	0.10%	8		500,568	

Asset Type	Asset subtype	Number of assets	2022-23 replacement value	Percentage of asset value	Number of low criticality assets	Number of high criticality assets	Value of low criticality assets	Value of high criticality assets
	Handrail	1	15,826	0	1		15,826	
	Knee-breakers	1	25,695	0.00%	1		25,695	
	Ramp	3	34,841	0	3		34,841	
	Self Help Depot	1	10,108	0.00%	1		10,108	
	Walkway	1	166,506	0	1		166,506	
Equipment	Control - Auto Transformer	19	1,438,759	0.10%		19		1,438,759
	Control - Sensor	1	11,467	0		1		11,467
	Control - Soft Starter	1	166,889	0.00%		1		166,889
	Control - VSD	1	1,496,000	0.001		1		1,496,000
	Mechanical - Pump	46	5,768,584	0.60%		46		5,768,584
	Screen / Filter - Screen	1	63,567	0	1		63,567	
	Structure - Outlet Grill	48	3,260,884	0.30%		48		3,260,884
	Supply - Generator	1	365,875	0		1		365,875
Flood Protection	Detention Embankment	54	13,312,645	1.30%		54		13,312,645
	Detention Inlet	5	517,627	0.001		5		517,627
	Detention Outlet	5	517,627	0.10%		5		517,627
	Flood Walls	64	8,426,564	0.008		64		8,426,564
	Floodgate	20	1,912,034	0.20%		20		1,912,034
	Floodgate Structure - Culvert	534	21,806,019	0.022		534		21,806,019
	Floodgate Structure - Other	18	5,016,887	0.80%		18		5,016,887
	Flow Diversion Structure	10	54,228,546	0.054		10		54,228,546

Asset Type	Asset subtype	Number of assets	2022-23 replacement value	Percentage of asset value	Number of low criticality assets	Number of high criticality assets	Value of low criticality assets	Value of high criticality assets
	Guide bank	15	5,319,418	0.50%		15		5,319,418
	Portable Flood Barrier	8	400,484	0	8		400,484	
	Property Mitigation Bund	15	1,693,175	0.20%	15		1,693,175	
	Spillway	56	4,240,232	0.004		56		4,240,232
	Stopbank	284	417,857,963	42.10%		284		417,857,963
	Toe Drain	5	592,159	0.001	5		592,159	
Site	Land Use - Drainage Pump Station	24	11,075,325	1.20%		24		11,075,325
	Pump station - Land/Access	20	283,770	0		20		283,770
Vegetation Management	Drainage Channel	770	33,934,305	3.40%	770		33,934,305	
Total	Total	3,794	990,033,534		2503	1291	419,105,580	570,927,954

12.3. Asset condition ratings as at November 2023

The asset condition ratings as at November 2023 show that overall, 94% of the assets are average to excellent, i.e. require no further immediate action (Figure 24, Table 49)[29]. A total of 3% of the assets are poor or very poor, and a further 3% require further inspection as they were unable to be accessed last time or have not been inspected. The ratings show that 9% of high criticality assets are in poor or very poor condition, in part reflecting the impact of storm events like Cyclone Gabrielle and the current work programmes to complete repairs after those events.

The accuracy of this information is considered limited given the low number of asset inspections over the previous year.

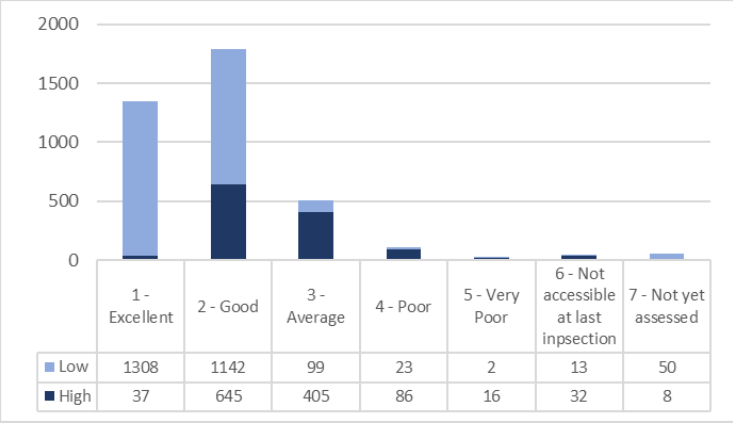

Figure 24: Summary of Asset Condition ratings as at November 2023.

Table 49: Asset condition rating summary for Horizons River Management assets at November 2023

Asset condition rating				
Criticality	Average to Excellent	Poor to very poor	Unable to be accessed, or have not been inspected	Total
High	1,087	102	40	1,229
Low	2,549	25	63	2,637
Total	3,636	127	103	3866
High	88%	8%	3%	100%
Low	97%	1%	2%	100%
Total	94%	3%	3%	100%

The more specific asset summary information for the individual schemes are shown in Tables 48 & 49 below.

Figure 25: Asset condition inspection at the Makino flood gates upstream of Feilding. This asset is an example of high criticality asset.

[29] In November 2023, there were 1,228 high criticality assets (Figure 25) and 2,637 low criticality assets. The total number of assets reported differs from some other parts of the Infrastructure Strategy that report on assets as at the end of June 2023.

Table 50: Summary of asset condition ratings for Horizons river scheme assets as at November 2023.

		Asset condition rating								
	River scheme	Criticality	1-Excellent	2-Good	3-Average	4-Poor	5-Very Poor	6 -Not accessible at last inspection	7- Not yet assessed	Row Total
1	Lower Manawatū (incl. special project)	High	9	179	136	30	5	17	7	383
		Low	3	451	21	4		2	4	485
2	Rangitīkei River	High		17	23	2			1	43
		Low	7	126	15	7	1	1	2	159
3	Lower Whanganui River	High		29	14					43
		Low	1	16					9	26
4	Mangatainoka	High		5	15	4	1			25
		Low	164	175	12	4		2	3	360
5	South East Ruahines	High		10	22	2	6			40
		Low	44	170	16	4		3	1	238
6	Pohangina - Ōroua	High								0
		Low	143	33	14				4	194
7	Ōhau Manakau	High	2	15	11	6	1			35
		Low	214	16			1			231
8	Tararua	High								0
		Low	3	2	1				15	21
9	Upper Manawatū	High		1	1	1				3
		Low	48	64	8	2		5	5	132
10	Porewa Valley (60:40)	High	1	61	14	5				81
		Low		1						1
11	Lower Kiwitea	High	1	1						2
		Low	120	3	1					124
12	Tutaenui	High	5	48	4					57
		Low		6						6
13	Upper Whanganui	High		7	5			3		15
		Low	2	23	3				1	29

		Asset condition rating								
	River scheme	Criticality	1-Excellent	2-Good	3-Average	4-Poor	5-Very Poor	6 -Not accessible at last inspection	7- Not yet assessed	Row Total
14	Matarawa	High		23	17	1		1		42
		Low	1	6	3					10
15	Whangaehu - Mangawhero	High								0
		Low							2	2
16	Ruapehu DC	High								0
		Low							1	1
17	Ohakune	High								0
		Low								0
18	Ashhurst Stream	High	1	12	6	1		2		22
		Low	2							2
19	Turakina	High								0
		Low	1		1				3	5
20	Mākirikiri	High		6	11	4	1	2		24
		Low		1						1
21	Pakihi Valley	High		6						6
		Low								0
22	Tawataia - Mangaone	High		3						3
		Low	2	11						13
23	Kahuterawa	High								0
		Low								0
	Total river schemes	High	19	423	279	56	14	25	8	824
	Total river schemes	Low	755	1104	95	21	2	13	50	2040
	Total river schemes	Total	774	1527	374	77	16	38	58	2864

Table 51: Summary of asset condition ratings for Horizons drainage scheme assets as at November 2023.

		Asset condition rating								
	River scheme	Criticality	1-Excellent	2-Good	3-Average	4-Poor	5-Very Poor	6 -Not accessible at last inspection	7- Not yet assessed	Row Total
1	Manawatū	High	4	49	44	12	2	3		114
		Low	183	7	2					192
2	Makerua	High	7	58	23	2		1		91
		Low	82							82
3	Moutoa	High		21	6	2				29
		Low	52	1	1					54
4	Koputoroa	High	3	36	23	5		1		68
		Low	46	6						52
5	Te Kawau	High	1	51	24	4		1		81
		Low	118	4		1				123
6	Hōkio	High	1		2	1		1		5
		Low	33	3						36
7	Foxton East	High				1				1
		Low	9	1						10
8	Whirokino	High		6	4	1				11
		Low	6	9	1					16
9	Himatangi	High	2			2				4
		Low	24							24
10	Forest Road	High		1						1
		Low		4						4
11	Haunui	High								0
		Low		3		1				4
	Total drainage schemes	High	18	222	126	30	2	7	0	405
	Total drainage schemes	Low	553	38	4	2	0	0	0	597
	Total drainage schemes	Total	571	260	130	32	2	7	0	1002

Implications for the Infrastructure Strategy

Asset condition inspections and reporting are an essential part of asset management. Horizons has not fully achieved its goals around asset inspections in recent years and additional staff are being proposed to add capacity to the team. New performance targets have been added to the Long-term Plan to provide additional reporting on asset inspections and asset condition ratings on an annual basis. This includes measures for annual inspections for all high-criticality assets and at least 20% of the low-criticality assets each year.

This Infrastructure Strategy includes a shift to a more maintenance-based programme for operational activity within the schemes, informed by the asset inspections and condition ratings. A further aim of this more structured maintenance-based approach is to reduce the damage that occurs to assets in events and to focus on existing assets, rather than establishing new assets as part of the operational programme.

Additional staffing in the asset management team will provide further capacity to enable this additional work and improved reporting on asset condition and the maintenance programme. The staff cost will add additional cost to the programme that will be spread across the schemes.

13. PLANNING ASSUMPTIONS

The Infrastructure Strategy investment programme is based on the assumptions in Table 52. The full list of assumptions is included in the Long-term Plan.

Table 52: Planning assumptions for the Infrastructure Strategy.

Assumption	Description of risk	Level of uncertainty about assumption	Potential effects of uncertainty on financial estimates
Infrastructure asset lifecycle			
The predicted useful lifespans of assets are correct and kept relevant (in line with policies) through the entire lifecycle of the significant infrastructure assets.	That the actual lives are of a shorter duration than those assumed, and that a significant event could shorten asset life.	Medium	There may be additional costs if asset conditions deteriorate faster than the projections used.
That our condition assessments will maintain a high level of confidence grading, giving confidence that our work plans are most appropriate for the condition and life cycles of our assets.	That our condition information grading deteriorates, and Council cannot make informed decisions on asset renewals or works programmes.	Medium	There may be increased costs if the programme is not prioritised based on up-to-date asset information.
Change in demand for services			
The operational budgets for management of the River Management and Flood Protection Activity will be sufficient to meet demand for service, including the refinement as a part of the Long-term Plan of budgets to place more emphasis on maintenance and a reduction in the amount of budgets for reactionary work.	There is a risk that weather events combined with the reduced availability of funds for repair work creates increased demand for out-of-budget work that is not budgeted (including through availability of reserves).	Medium	There may be additional unbudgeted costs for delivery of unplanned work.
	There is a risk that the increased maintenance programme will not be able to be delivered within the resources available, as when the programme is rolled out there are insufficient staff or budget for the work programme, including budgets for obtaining permissions for the programme.	Medium	If less work is delivered than planned there may be savings. There may also be increased risk that could lead to additional costs.
Insurance			
That insurance costs will increase by 20% per year for the first three years, 15% per year for years 4 to 10, 10% per year for years 11 to 20 and 5 percent per year for year 21 to 30.	The annual insurance cost increases are a mix of increases due to inflation, increases in the value of the assets insured previous, addition of assets to the schedule and increases due to increased risk and other factors in the insurance market. The assumptions used are based on the approximately 30% increase in the 2023-24 year, and market indications from the insurance company, including via verbal conversations.	High	If the insurance cost increases are more or less than this there may be further budget required. Alternatively if they are lower the costs may not be as much.
That the current assets that are insured continue to be insured.	The infrastructure strategy signals a review of insurance that may result in reductions in the amount of insurance.	High	If Council chooses to reduce the amount of insured assets the insurance costs may reduce.

Assumption	Description of risk	Level of uncertainty about assumption	Potential effects of uncertainty on financial estimates
That Council continue to insure at the increased amounts for a single event and for the pooled insurance as per insurance at the start of the 2023-24 year.	Council consulted on insurance and as a result of feedback from the community and two other Councils not proceeding with additional pooled insurance decided to stay with the previous dollar amounts for insurance cover. A review of insurance is proposed as part of the infrastructure strategy and may increase or decrease the amount of insurance. As asset revaluations are completed the proportional amount of insurance may increase, or more likely decrease. Council may choose to reconsider insurance amounts.	High	Insurance costs may increase or decrease.
That Horizons continues to insure the Whanganui North and South Moles that Horizons do not own.	Horizons are working with Whanganui District Council around ownership, maintenance and insurance of the North and South Mole. This may result in Horizons no longer insuring the North and South Moles. Noting that if Horizons is continuing to complete construction on the moles, construction insurance may still be required.	High	Potential for reduced insurance costs for the Whanganui North and South Moles.
Whanganui North and South Mole ownership			
That Horizons continues to complete maintenance and construction work on the North and South Moles and does not own these.	Horizons are working with Whanganui District Council around ownership, maintenance and insurance of the North and South Mole. These discussions could impact the way funds spent by Horizons are accounted for. As Horizons does not own the moles, the expenditure on the moles is considered an operational expense, rather than a capital expense.	Medium	If Horizons were to assume ownership of the moles, the expenditure on the moles would be able to be accounted for as a capital expense.
Changes to levels of service			
The levels of service required for River Management and Flood Protection Activity stay the same over the course of the Long-term Plan, with the exception of the upgrades proposed as a part of the capital works programme.	There is a risk that during the course of the Long-term Plan there is an increased demand for services, e.g., more regular maintenance and/or a greater amount of repair work or upgrades to levels of service than budgeted for. This risk is considered high, particularly if there are more frequent damage-causing events.	High	There is potential for further resourcing and staff and funding may be required to deliver work that is requested. This may mean financial budgets need to be adjusted via the annual planning processes during the course of the Long-term Plan.
	A further risk is that there may be a drop in demand for levels of service if costs for repairs and/or maintenance are considered unaffordable, or if the community chooses a reduced level of service. This could lead to asset retreat and lowering levels of service.	Medium	Some aspects of the work programme may not be continued, potentially resulting in savings. This may mean financial budgets need to be adjusted via the annual planning processes, during the course of the Long-term Plan.

Assumption	Description of risk	Level of uncertainty about assumption	Potential effects of uncertainty on financial estimates
The assumption in the Long-term Plan is that landowner arrangements will be acquired to enable works to go ahead within timeframes without budget provision for land arrangements.	There is a risk that costs related to arrangements for land access as part of capital programmes are significant. Costs may including legal processes, consultation, purchase, leases, compensation etc.	High	As land arrangements are identified, additional unbudgeted expenditure may be required.
Capital programme delivery			
That Council will complete 100% of planned annual capital works programme each year as part of the River Management and Flood Protection Activity.	Completion of the capital works programme requires the appropriate operational permissions, resourcing and often suitable weather conditions. Achieving this combination is not always possible, e.g., years where there are major storm events or regular high-flow events during the usual summer construction season.	Very High	The non-completion of capital programmes can have a flow-on effect to subsequent years, changing budget requirements and staffing requirements. There is potential that some projects will not be completed within anticipated timeframes, impacting on the ability to complete other projects. There is also potential for increased costs due to: inflation if the projects are spread over additional years; and requirements for project changes if there are challenges to the way projects are proposed to be delivered.
That staff capacity will be sufficient to enable delivery of the capital programme.	The programme also relies on staff availability, which can be reduced when responding to weather events or new and unanticipated projects. Staff availability can also be impacted due to staff turnover in an environment with very little, if any, spare staff capacity. Staff can also be drawn away from the core work programme to other activity for Horizons and others, e.g. to provide expertise on issues such as policy development or to assist other organisations with their processes and projects.	Very High	If work is unable to be progressed due to staff capacity there may be savings in annual budgets and increases in future budgets due to work being deferred. Deferred work may have additional cost due to inflation. There may be loss of government or other co-funding if contractual obligations are not met, e.g., delivery within timeframes.
That Horizons, as an applicant, will obtain regulatory permissions within the planned budgets and timeframes for projects.	Experience shows that often, when river and drainage projects are proposed, there is some opposition to the work programme that can lead to delays or changes in the way the project is delivered. This can lead to delays and additional costs to get permissions. Regulatory processes and new legislation can lead to changes in project methodologies and additional costs.	Very High	There may be additional costs associated with obtaining permissions, or meeting requirements of existing or new regulatory requirements.

Assumption	Description of risk	Level of uncertainty about assumption	Potential effects of uncertainty on financial estimates
Changes in land use and population			
Changes in population and land use will not significantly impact the programme over the duration of the Long-term Plan.	Changes in land use and population growth could impact the programme, for example; climate change and freshwater reform may drive land use changes in the primary sector and populations are projected to grow. There is a risk that land-use change and population changes may lead to requests for new levels of service.	Medium	Financial forecasts and programmes may have to change the amount of delivery or the way they are delivered in response to changes to land use and population.
That recent land-use changes in the region, e.g. increased forestry will not impact the River Management and Flood Protection Activity.	There may be elements of land-use change that have occurred where impacts on Horizons' programmes are yet to be fully realised and this could lead to additional costs for some programmes. Alternatively, if prevailing land use changes markedly, this may require large-scale reassessment of levels of service. Issues around forestry slash have been significant issues in other regions during flood events, and there is no known work programme to identify the risk of this causing issues in this region.	Medium	

14. FINANCIAL IMPLICATIONS OF COUNCIL'S KEY DECISIONS

14.1. Summary

Overall operational and capital expenditure projections for the 30 years of the Infrastructure Strategy (years 1 to 30) are shown in Figure 26. The combined operational expenditures (loan costs, depreciation costs, insurance costs and other costs) are projected to increase significantly over the 30 years, largely driven by forecast increases in insurance. Capital budgets are projected to peak in year 1 and reduce over the first 7 years to renewals only in year 8. Loans are projected to peak in year 5 before reducing and being nearly fully paid off by year 30. There is significant uncertainty around the operational and capital forecasts, as discussed in the following sections.

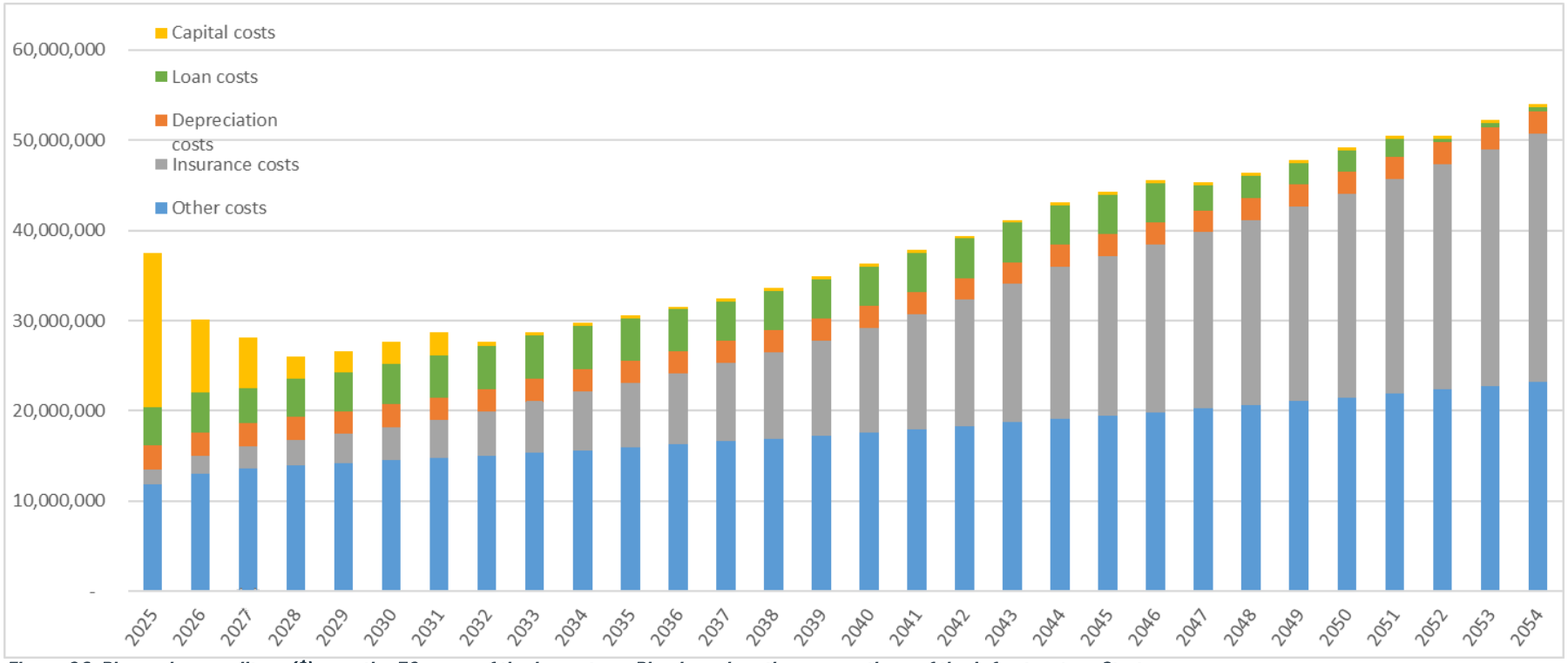

Figure 26: Planned expenditure ($) over the 30 years of the Long-term Plan based on the assumptions of the Infrastructure Strategy.

14.3. Capital programme financial summary

Capital expenditure is predicted to peak in year 1 of the Long-term Plan at $17.1 million, up from $13.5 million in 2023-24 (Figure 27). This includes some work being deferred from the 2023-24 programme to year 1 of the Long-term Plan. The capital programme totals $48.2 million over 30 years, with 86% of that ($41.5 million) in the first 10 years of the Long-term Plan. The programme reduces to renewals only in year 8. The renewals programme averages approximately $324,000 per annum over the 30 years and totals $9.7 million. There are a range of assumptions underlying these projections (Section 10). The size and timing of the capital programme has historically been modified by Council through annual planning cycles. Council will likely add projects in the future. The next Long-term Plan will revisit the forward capital programme with the benefit of considerable new information. This will include the flood vulnerability assessment, which will review levels of service of existing assets and provide a flood risk assessment for the region's communities. Further, the Integrated Catchment Management work programme, which will review levels of service and funding models, is programmed to be completed to inform the next Infrastructure Strategy.

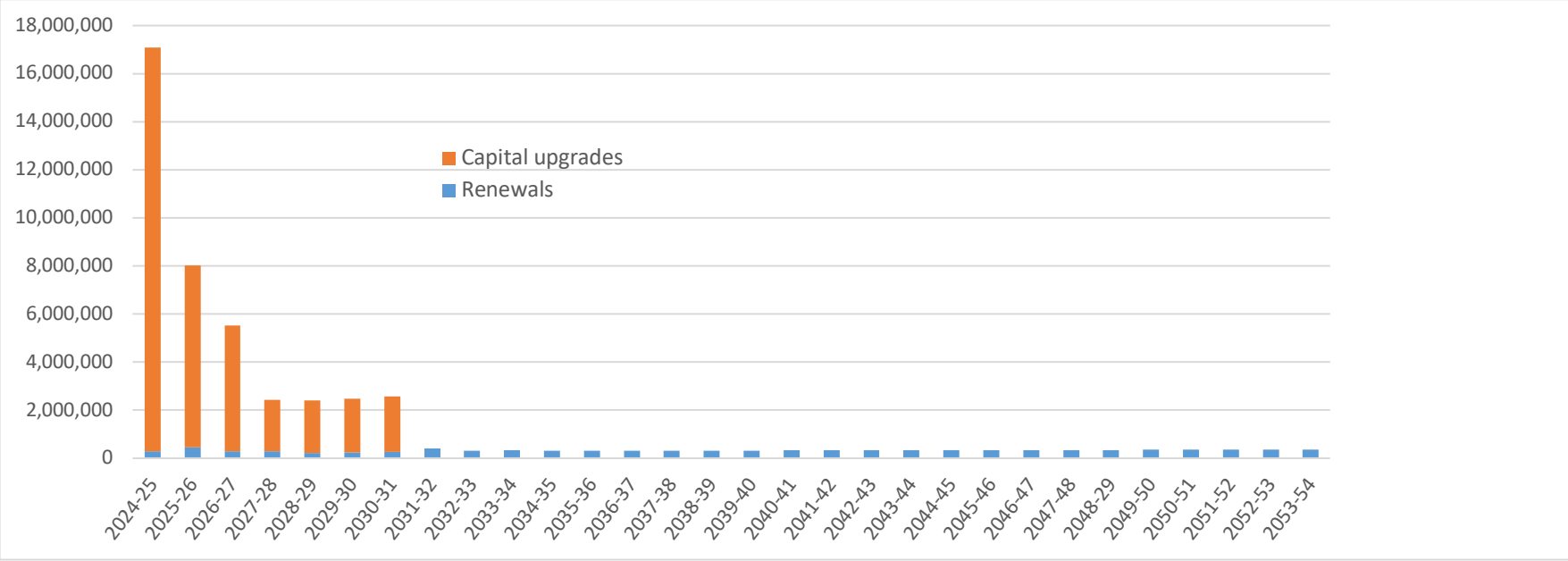

Figure 27: Summary of River Management and Flood Protection capital expenditure budgets ($) over the 30 years of the Long-term Plan.

14.4. Debt and loan repayments

Budgeted loan balances, loan drawdowns and loan payments are shown in Figure 28. Overall loan balances are forecast to rise from $44.6 million at the start of year one to a peak of $57.9 million at the start of year 7 of the Long-term Plan. With the planned reduction in capital spend (Section 10, Section 14.2), loan drawdowns reduce to zero by year 8 and loan repayments are forecast to nearly repay all debt by year 30 (2054). Loan repayments are projected to increase by approximately 34% from the 2023-24 year to year 1 of the Long-term Plan ($3.40 million to $4.22 million) reflecting the significant budgeted capital programme in 2023-24. The peak loan repayments are predicted in year 8 at $4.81 million, with average loan repayments predicted to be $4.5 million annually over the first 10 years.

There are a range of assumptions in this modelling that could lead to a different profile of debt for the programme over the 30 years of the Infrastructure Strategy. These include additional capital programmes being added to the programme following the completion of the current government co-funded projects and the flood vulnerability assessment. The amount of work completed in the 2023-24 year, is likely to reduce the starting point for debt in the first year of the Long-term Plan. If more of this work is carried forward into the Long-term Plan than currently planned, the peak debt estimate is unlikely to change significantly, however the timing may be delayed. The proposed review of loans may increase or reduce loan repayments changing the debt profile over time. Any borrowings for the dam safety compliance work will also add to debt and repayment requirements. A significant natural hazard event, or land purchases for projects could also alter the debt profile.

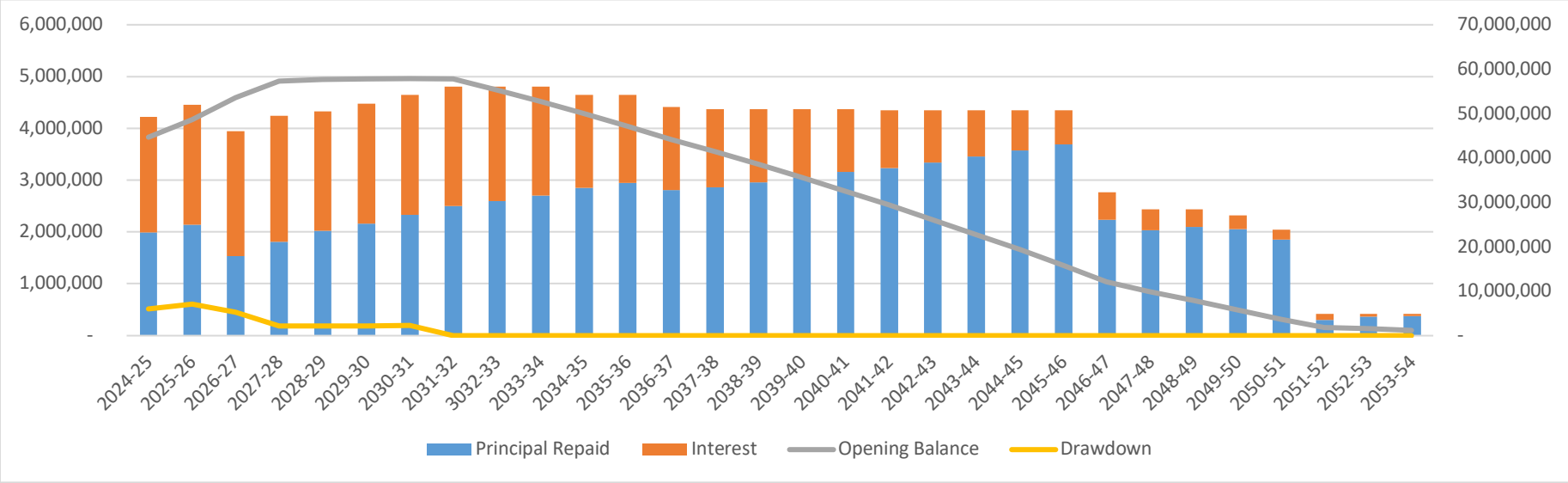

Figure 28: Summary of total scheme loan costs ($) over the 30 years of the Long-term Plan, showing loan debt and drawdowns (left axis) and loan repayment amounts split into principal and interest (right axis)

14.4. Insurance financial summary

The budget for insurance costs is forecast to increase significantly (Figure 26). Current budgets increase from $1.270 million in 2023-24 to $1.7 million in 2024-25 (year 1 of the Long-term Plan) and up to approximately $6.51 million by year 10, noting significant uncertainty in the assumptions. The assumptions include annual increases of 20% for the first three years, 15% for years 4 to 10, 10% for years 11 to 20 and 5% for the remaining 10 years.

These assumptions include the inflationary increases in the base premiums and the increased insurance cover through the amount of pooled insurance and increased Horizons sub-limit. A further assumption is that the planned insurance review does not result in changes to these insurance budget projections. A factor that has not been accounted for, is the ongoing addition of assets through the capital and operational programmes. This could further increase insurance premiums.

A review of infrastructure insurance is planned within the first three years of the Infrastructure Strategy in response to the forecast increases in budgets for insurance.

14.5. Operational costs financial summary

The operational budgets include depreciation, loan payments, insurance and other costs. The other costs include contractor and staff time, corporate costs, hydrological monitoring costs, and scheme operational costs.

Overall operational costs are predicted to increase over time (Figure 26) with inflationary pressure and the addition of new expenditure in years 1 to 3. Insurance is forecast to be the major driver of increases in the operational costs.

Operational costs are predicted to increase from $20.4 million to $22.6 million over the first three years of the Long-term Plan. Over the longer term, these costs are forecast to increase from $29.4 million in year 10 to $53.6 million in year 30.

The increases from 2023-24 to year 1 of the Long-term Plan include:

- approximately $430,231 of budget increase for insurance;
- an allowance of $250,000 of additional budget for scheme maintenance;
- two new asset management positions ($250,000);
- reduced rating for the Makirikiri Scheme (use of reserves and no longer rating for adding to emergency or renewal reserves as a part of this scheme);
- increased expenditure in the Ruapehu District Wide Scheme of $150,000, noting up to $120,000 of reserves use was also approved;
- changes to debt servicing costs of capital loans, including increased interest costs and variable loan terms; and
- some inflationary increases.

The year 2 and 3 increases include: further insurance premium increases; the transition of some staff from capital funded to operationally funded; a further increase for scheme maintenance programme in year 3; and some inflationary increases.

The impact of the cost increases over years 1 to 3 is predicted to be variable across the schemes. For example, approximately 80% of the insurance increases are likely to be apportioned to the Lower Manawatū and Rangitīkei schemes.

ANNEX 1: SUPPORTING INFORMATION

This annex provides further supporting information for the Infrastructure Strategy, including a further comment on the asset information data reliability and levels of service. In summary, the Infrastructure Strategy has identified some issues with components of the asset information, and this annex draws these together to provide an overall assessment of data reliability. The levels of service section draws together the deliverables in terms of Long-term Plan performance targets for maintenance with the objectives for asset condition ratings and the goals of the assets e.g. 1 in 500-year flood protection for a particular area.

1.1 Asset Information Data Reliability

There are a range of types of asset management information that underpin the Infrastructure Strategy e.g. asset condition scores, asset valuations, renewal programmes etc. The quality of these various types of data sources are commented on the Infrastructure Strategy and this Annex draws these together to provide further comment on the data confidence for individual types of data and an overall rating using a common framework (Table 1).

The Infrastructure Strategy notes there are gaps in the Asset Information and some processes. The Strategy identified asset management as a key issue and assessed options to improve this. The preferred responses include:

- Additional capacity for asset management activity;
- Improving asset renewal information and programming;
- Changes to asset inspection targets;
- New reporting to Council annually;
- An increased focus on maintenance of assets in the programme (reduced reactive work and establishment of new assets); and
- Using asset condition ratings to prioritise the maintenance-based programme.

These responses combine to improve the quality of asset information and increase the use of asset information to direct the programme. Overall this aims to improve the overall level of asset condition and reduce risk.

Improving the quality of asset information over time is a key part of this approach and the assessment below provides a framework to rate the overall quality of asset management information and provides a benchmark to measure improvements over time. As part of improving asset management, the Long-term Plan performance targets for asset management have been revised to the measures shown in Table 2.

Table 1: Data reliability matrix.

Confidence Grade	Description
Highly Reliable	Data based on sound records, procedures, investigations and analysis, documented properly and recognised as the best method of assessment. Dataset is complete and estimated to be accurate ± 2%.
Reliable	Data based on sound records, procedure, investigations and analysis, documented properly but has minor shortcomings, for example some data is old, some is documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate ± 10%.
Uncertain	Data based on sound records, procedure, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade A or B data are available. Dataset is substantially completed but up to 50% is extrapolated data and accuracy estimated ± 25%.
Very Uncertain	Data based on unconfirmed verbal reports and/or cursory inspection and analysis. Dataset may not be fully complete, and most data is estimated or extrapolated. Accuracy ± 40%.
Unknown	None or very little data held.

Table 2: Draft Long-term Plan targets for asset management.

Asset management activity within the river and drainage schemes		24/25 Target
2.1	% of critical assets inspection completed	75%
2.2	% of non-critical assets inspections completed	20%
2.3	% of Assets Renewal program completed.	75%
2.4	Asset condition report provided to Council. May report on the previous year's information	Achieved
2.5	Asset revaluation process completed and reported to Council. May report on the previous year's information.	Achieved
2.6	Number of assets upgraded or modified to meet NPS-FM requirements	2

Overall the assessment is that the current data confidence level is a grade D overall (Table 2). Grade D (very uncertain) is defined as "Data based on unconfirmed verbal reports and/or cursory inspection and analysis. Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy ± 40%".

The assessment of the individual components that contribute to this rating are:

- Asset condition ratings for high criticality assets being assessed as grade B. Data for these assets is increasingly up to date due to a focus on data collection for these assets over the 2023-24 year.
- Asset condition ratings for low criticality assets being assessed as grade D. This reflects that few inspections on these assets have occurred over the last two years. The Infrastructure Strategy proposes that these assets be inspected once every five years with a target of 20% of these assets inspected each year. Over 2022-23, and 2023-24 very few inspections of these assets have been recorded in the Asset Information system (less than 5%). Some asset inspections will have occurred, however, this information has not been captured. There is a risk that due to the storm events over the last few years, and other factors, the information for these assets is inaccurate.
- The asset renewal programme is rated as a Grade D. In total, 24 of the 34 schemes have assets that require asset renewals. Of these 24 schemes 19 currently have some funding of renewal within the first 10 years of the Long-term Plan. Of the 22 schemes that fund renewals, 7 of these have a programme for asset renewals (Tables 44 and 45). The 7 schemes with asset renewal programmes are 6 of the drainage schemes and one of the river schemes. None of the other 22 River Schemes have programmed expenditure for asset renewal in the first 10 years of the Long-term Plan. Further, there are gaps in the information on establishment dates for some assets. An upgrade to the asset renewal programme is proposed as a part of the implementation of the Infrastructure Strategy.
- Asset information quality in terms of consistency between the data in the asset database and the geospatial files that support them is graded as C. In February 2024, 82% of our asset database matches our geospatial data, this forms part of our data improvement plan to ensure that all data is most up to date.
- The accuracy of the data for physical dimensions and installation dates is considered a grade C. There is inconsistency in the way some of the physical dimensions have been measured and significant data gaps. Overall the data set had installation dates for 8% of the data in 2023.
- The completeness of the data in terms of number of assets is considered grade C. This grading reflects that we do not know what we do not know. It is considered that the larger part of this risk is around assets being in the register that no longer exist due to loss in storm events. Another risk is that assets have been established over time, however have not been recorded in the asset database. It is noted that this may have implications for insurance.
- The revaluation information is considered to be a grade C. The process is considered highly reliable, however, the data used does have some potential issues as identified above. The process for asset revaluation

was reviewed in May 2020. This review identified areas for improving data management to increase the accuracy of the revaluation.

1.2 Levels of Service

Horizons River Management and Flood Protection Activity has a range of goals, objectives and performance measures.

Levels of service

The levels of service provided through the Long-term Plan are defined via the performance targets of the Long-term Plan for maintenance. An example of this is the target to complete 520 km of drain maintenance on an annual basis. This is the level of service the budget is set up to provide.

Achieving the performance targets aims to achieve the objectives for asset condition e.g. 95% of flood gate condition ratings being good or excellent (2 or better).

The maintenance programme combined with other river management and flood protection activity aims to provide for the goals of programme e.g. capacity to carry flows that would occur if 15 mm of rainfall occurred in one day, with free board.

In the event the asset condition objectives and/or goals for flood protection, drainage capacity etc. are not being provided for, there may need to be adjustments to the programme to achieve these goals. This may require additional investment in the maintenance programmes, renewal programme and/or new capital programme works.

Maintenance programme

The budgets for the programme have been set to deliver the maintenance performance targets define in the Long-term Plan (Table 3). The intervention logic assumes that this level of service will provide for the objectives around asset condition (Table 4) and goals (Table 5). The maintenance programme has been defined at a regional level, to provide a more consistent approach to maintenance based on common rates for budgeted works. The work programmes were defined using concepts and programmes for some existing schemes and applying these more consistently across the schemes.

Table 3: Objectives for asset condition ratings. Note the "rating 2 or above" reflects good or excellent asset condition ratings.

Maintenance within the River and Drainage Schemes		Annual target 2024-34
1.1	Maintenance is undertaken on scheme drains (note a drain may receive maintenance more than once per year, and each maintenance activity counts to the target).	520 km
1.2	Kilometres of scheme river erosion protection maintained, e.g. mulching of maintenance of vegetation used for river bank erosion (such as mulching of willows).	75 km
1.3	Kilometres of river channel maintenance completed, e.g. movement of gravel in a reach to reduce erosion pressure on stopbanks.	18 km
1.4	Number of scheme flood gates maintained, e.g. cleaned, repaired, adjusted etc.	97
1.5	Kilometres of scheme stopbanks maintained, e.g. mowing of stopbanks, repairs to stopbanks etc.	65 km
1.6	Number of river scheme amenity works maintained (e.g. tracks on stopbanks).	1

Asset condition objectives

The asset condition objectives aim to meet 80% of asset condition rating 2 or above on Stopbanks, 95% on floodgate condition rating 2 or above and 95% on Dam condition rating 2 or above. These are all high-criticality assets, and inspections are to be conducted annually to determine if planned maintenance activities are adequate to meet our required levels of service. To monitor the achievement of the asset condition and ratings, there are several Long-term Plan performance targets to ensure the monitoring and reporting are completed.

Table 4: Objectives for asset condition ratings. Note the "rating 2 or above" reflects good or excellent asset condition ratings.

Asset condition objective	Annual target 2024-2034
Stopbanks at maintenance rating 2 or above	80%
Floodgates at maintenance rating 2 or above	95%
Dam is at maintenance rating 2 or above	95%

Scheme goals

The underlying structure for the activity has been based around the 34 schemes that each have their own goals and purpose e.g. 1 in 100-year flood protection in a certain area of the river or drainage capacity to handle a 2–5-year rainfall event or 15mm/day with free board. These goals vary between and within schemes, for example, at a broad level, the lower Manawatū Scheme has a goal of 1 in 500-year flood protection in the Palmerston North area and 1 in 100-year flood protection goal for the areas with stopbanks outside of Palmerston North.

The various goals of the programme are documented in Table 5 below. This is a compilation of the information that was previously spread across the 27 scheme-based asset management plans. This table summarises the locations where the schemes have set various goals or objectives. The goals include flood protection and drainage goals. There are no goals defined for the erosion-protection schemes.

It is highly likely that the work required to achieve the objectives and goals will vary from year-to-year, based on the rainfall events and other seasonal conditions. There is budget provision for a certain amount of maintenance of existing work, and some reactive work (including establishment of new assets). The approach of this Infrastructure Strategy is to clearly define that there are limits to what the programme is set up to do and that to achieve the goals in some years will likely require further resources.

It is recognised that the goals of the programme, like 1 in 500-year flood protection are likely to be being impacted by climate change, further that with new hydrological information the assessment of what height a stop bank may need to be to provide protection in 1 in 500-year flood event may be changing. The flood vulnerability assessment performance target provides for an assessment of this for the flood protection goal.

Table 5: Compilation of the goals of the various schemes. Note all drainage schemes have, for the areas with defined drains, the goal of drainage capacity to handle a 2-5-year rainfall event or 15mm/day with free board. Note there are no defined goals around erosion control works. Annual Exceedance Probability (AEP) is the probability of an event occurring in any one year.

Scheme	Scheme Goal
Lower Manawatū	Flood flows not exceeding 1% AEP (0.2% for Palmerston North) will be contained within stopbanks to protect adjoining developed areas and farmland.
Ashhurst	Flood flows not exceeding 1% AEP will be contained within stopbanks to protect adjoining areas and farmland.

Scheme	Scheme Goal
Rangitīkei	Flood flows not exceeding 2% AEP for Tangimoana and 1% AEP for the Parewanui area will be contained within stopbanks to protect adjoining areas and farmland.
Lower Whanganui	Flood flows not exceeding 0.5% AEP will be contained within stopbanks to protect adjoining urban areas.
Upper Whanganui	Flood flows not exceeding 1% AEP will be contained within stopbanks to protect adjoining areas and farmland
Porewa	Flood flows not exceeding 4% AEP will be detained behind the dam to protect adjoining developed areas and farmland.
Tutaenui	Flood flows not exceeding 5% AEP will be detained behind the dam to protect adjoining developed areas and farmland.
Pakihi	Flood flows not exceeding 1% AEP will be contained within stopbanks to protect adjoining developed areas and farmland.
Matarawa	Flood flows not exceeding 5% AEP will be contained within stopbanks to protect adjoining developed areas and farmland.
Lower Kiwitea	Flood flows not exceeding 1% AEP will be contained within stopbanks to protect adjoining areas and farmland.
Foxton East Drainage	Flood flows not exceeding 10% AEP will be contained within stopbanks to protect adjoining developed areas and farmland.
Himatangi Drainage	Flood flows not exceeding 5% AEP will be contained within stopbanks to protect adjoining developed areas and farmland.

Scheme	Scheme Goal
Hōkio Drainage	nā
Koputaroa Drainage	Flood flows not exceeding 10% AEP will be contained within stopbanks to protect adjoining developed areas and farmland.
Makerua Drainage	Flood flows not exceeding 1% (Linton) AEP will be contained within stopbanks to protect adjoining developed areas and farmland (secondary drains have non-specific design standards).
Manawatū Drainage	Flood flows not exceeding 20% AEP will be contained within stopbanks to protect adjoining developed areas and farmland.
Moutoa Drainage	NA
Ōhau-Manakau	Flood flows not exceeding 10% AEP will be contained within stopbanks to protect adjoining developed areas and farmland.
Te Kawau Drainage	Flood flows not exceeding 20% AEP will be contained within stopbanks to protect adjoining developed areas and farmland.
Whirokino Drainage	Flood flows not exceeding 4% AEP will be contained within stopbanks to protect adjoining developed areas and farmland.
Pohangina-Ōroua	NA
Forest Road	NA
Haunui Drainage	NA
Mākirikiri	Flood flows not exceeding 50% AEP will be contained within stopbanks to protect adjoining areas and farmland.

Ngā putanga ā-hapori **Our community outcomes**

He whakamana hapori, he hapori kori
Our region's communities are vibrant and empowered

He pūnaha hauropi ora
Our region's ecosystems are healthy

He rohe piki te ōhanga, piki te taiao
Our region's economy is thriving and environmentally sustainable

Scheme	Scheme Goal
Mangatainoka	Flood flows not exceeding the following AEP will be contained within stopbanks to protect adjoining areas and farmland: Burmeister stopbank 20% AEP Kamo stopbank 10% AEP Hamua stopbanks 5% AEP
Tawataia - Mangaone	Flood flows not exceeding 5% AEP will be detained behind the dam to protect adjoining developed areas and farmland
South Eastern Ruahine	Flood flows not exceeding 20% AEP will be contained within stopbanks to protect adjoining developed areas and farmland
Upper Manawatū-Lower Mangahao	Flood flows not exceeding 20% AEP will be contained within stopbanks to protect adjoining developed areas and farmland