River Management and Drainage Infrastructure Asset Management Plan

March 2025

horizons
REGIONAL COUNCIL

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Front Cover Photo
Horizons Regional Council

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Section 1: Executive Summary

This Asset Management Plan (AMP) outlines the decision-making framework for the operational management of Horizons Regional Council's (Horizons) Rivers Management infrastructure assets over the 10-year period FY2024-25 to FY2034-35[1]. The AMP seeks to optimise investment in Horizons Rivers Management infrastructure assets by providing the required Levels of Service within available budget, whist minimising risks.

This AMP will be refreshed to track changes which occur annually to maintain a record of asset registry and financial information, including replacement valuation and insurance, and reviewed after 3 years to maintain alignment with the Strategic Asset Plans: the Infrastructure Strategy and Long-term Plan (LTP). Consultation and forecasting about future demand are done at Infrastructure Strategy and Long-term Plan (LTP) level.

The purpose of this Asset Management Plan (AMP) is to:

- Describe the Levels of Service for the River, Flood and Drainage Schemes and the assets held by Horizons' within those Schemes.
- Describe the asset lifecycle management regime to provide confidence that the assets are achieving their desired performance.
- Establish asset condition inspection, maintenance, and repair regimes to maintain Levels of Service.
- Quantify the risks associated with river management assets through identification of asset criticality, funding requirements, and consideration of the probability and consequence of asset failure.
- Continually improve the stewardship of Horizons' river flood and drainage assets on behalf of ratepayers and other stakeholders whilst complying with statutory obligations.

The linkages between this AMP and other key Horizons planning documents are shown in Figure 1. These documents are categorised as Strategic, Tactical and Operational. At the Strategic level, the Horizons' Asset Management Strategic Policy and Strategic Asset Management Plan (SAMP) inform the Long-term Plan and Infrastructure Strategy. The SAMP also informs the structure, content and detail within the Asset Management Plans for all asset portfolios, including this AMP for Rivers Management infrastructure.

Asset Management Plans inform operational plans. Detailed workflows for asset management practices are to be documented within a separate Asset Management Operational Manual, which is under development.

This AMP recognises 3 significant impacts on the management of Rivers Management infrastructure assets going forward:

1. Challenges identified by the current Infrastructure Strategy, including:
    a. Affordability of River Management and Flood Protection Activity;
    b. Responding to the impacts of climate change and natural disasters;
    c. Delivering capital programme works to increase resilience to climate change impacts;
    d. Planning for financial implications of natural hazard events;

[1] Horizons Regional Council Financial Years run from 1st July to 30th June.

e. Maintaining existing assets and understanding our asset condition and maintenance requirements;

f. Achieving environmental, regulatory and other performance expectations; and

g. Merging the River Management and Flood Protection Activity into an integrated catchment management approach.

2. A transition from a reactive to proactive maintenance and repair approach.

3. A transition from a Scheme-based asset management approach to a regional asset management approach.

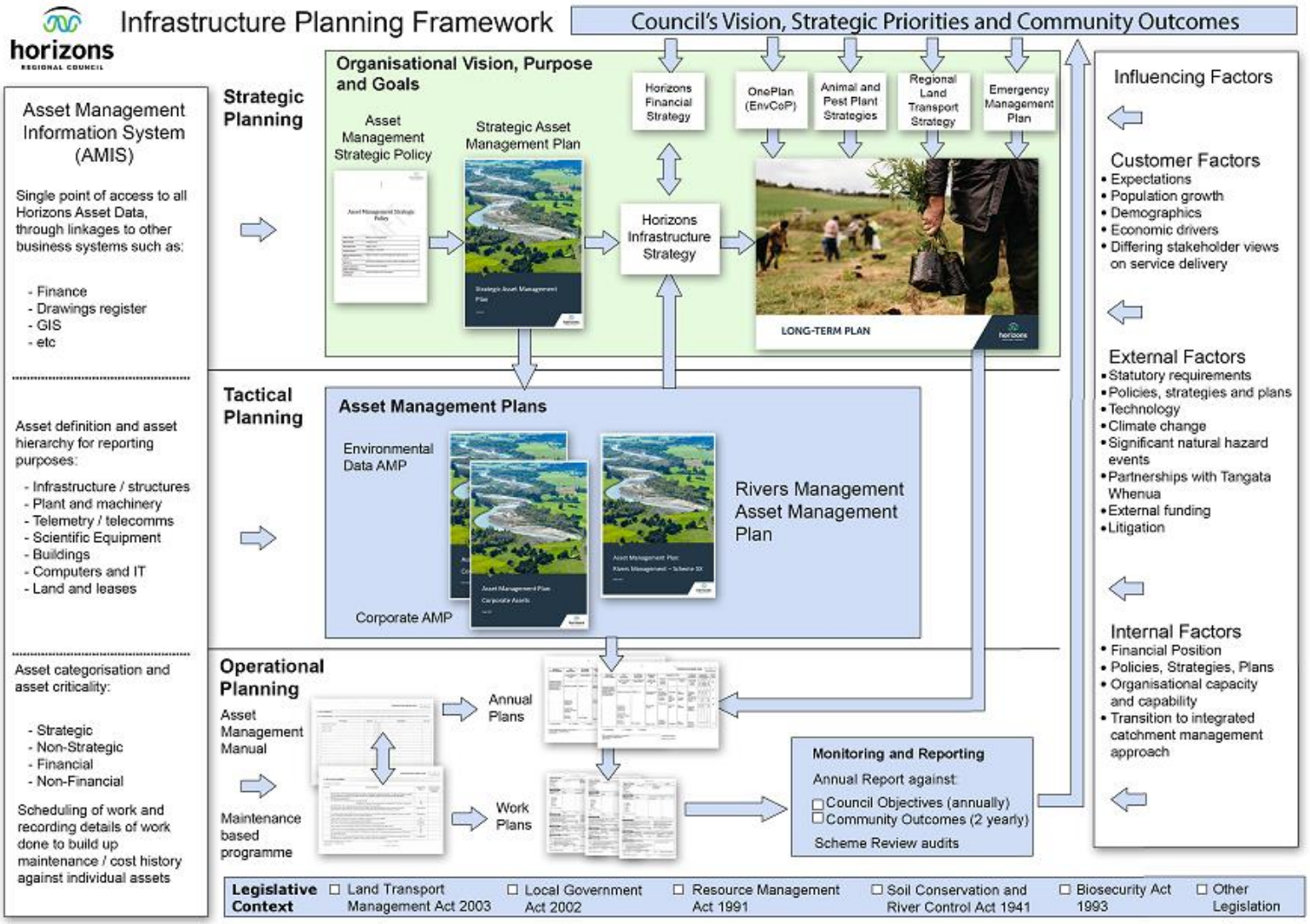


Figure 1: Asset Management Doc and Info Flow.

Section 2: Introduction

2.1 Goals and objectives

This version of Horizons Rivers Management Infrastructure Asset Management Plan (AMP) represents a transition from the previous Scheme-based asset management approach to a regional asset management approach. In effect, the previous 27 Scheme-based AMPs have been collated into this single AMP to cover all Schemes. The previous Rivers Management AMPs were last updated in 2021. Historically, these Rivers Management AMPs were divided into Part A and Part B.

- Part A provided high-level guidance and principles such as policy, guidelines, insurance requirements, asset types, and a lifecycle management approach.
- Part B was Scheme-based, with 27 plans covering the 28 Schemes with assets.

The large number of documents created by this approach made the administration and updates to these documents more complex, and hence, the accuracy and relevance of the information reduced with time. In developing this consolidated AMP, Horizons' Catchment Operations Group has introduced a number of changes as our asset management practices increase in maturity. This current version of the AMP:

- Is a single, combined document, including both parts A and B, and moving away from a Scheme specific approach to the consistent application of asset condition grade and planned maintenance approach across all Schemes and asset types.
- Moves to a planned, proactive maintenance regime to support the long-term, sustainable management of all Scheme assets.
- Aims to provide for increased efficiency and information transparency, for ease of readability and comprehension by wide audiences. This is part of an overall effort to increase information transparency around River and Drainage Scheme Management.

2.2 Contextual environment

This is the first update to the AMP following the new Infrastructure Strategy and LTP. Key contextual changes are in the movement towards an Integrated Catchment Approach; building new resilience through understanding the impacts of climate change and the response to weather events when these do occur. Cyclone Gabrielle repair works have been completed; at the beginning of which, the team was not set up for efficient tracking of works. The macroeconomic conditions have seen large increases in replacement valuation largely from increased costs of material and labour for capital works, and there have been large increases to the cost of insurance cover.

There is increased interest in River and Drainage Schemes from ratepayers and stakeholders, and with this a need for transparency in the reporting asset management activities. As part of this, performance measures for Scheme maintenance have been established. These measures aim to set out the level of activity that has been funded and provide transparent reporting on the amount of activity that has been achieved. There is a need to better communicate risks and options to those stakeholders, describe changes in Levels of Service with climate scenarios, describe asset condition and defects, then size repair work and the scale of capital work upcoming as Schemes develop replacement and renewal programmes.

Horizons is forming more certainty in the asset registry; as information held about assets becomes more complete. The Regional sector is mobilising towards common standards and practices; predominately in response to changes in what is required for these from evolving perspectives on insurance, risk, and liability.

2.3 The Schemes

Horizons Regional Council manages 34 Schemes, of which 23 are river and 11 are drainage Schemes. These Schemes are described in Figure 2 and Table 1. The Schemes range in scale from those that have no assets and are focussed on maintaining the channel capacity through vegetation clearance, to the Lower Manawatū Scheme (LMS), which has a diverse portfolio of assets. The combined replacement value of the 28 Schemes with assets (4 Schemes are vegetation management only and do not have assets) is approx. $1.2 billion. Together, they form systems that limit damage to people and property (land, buildings, roads, etc.) along rivers and on floodplains throughout the region. Lower Manawatū Scheme is the most valuable Scheme at $694 million FY23-24 replacement value.

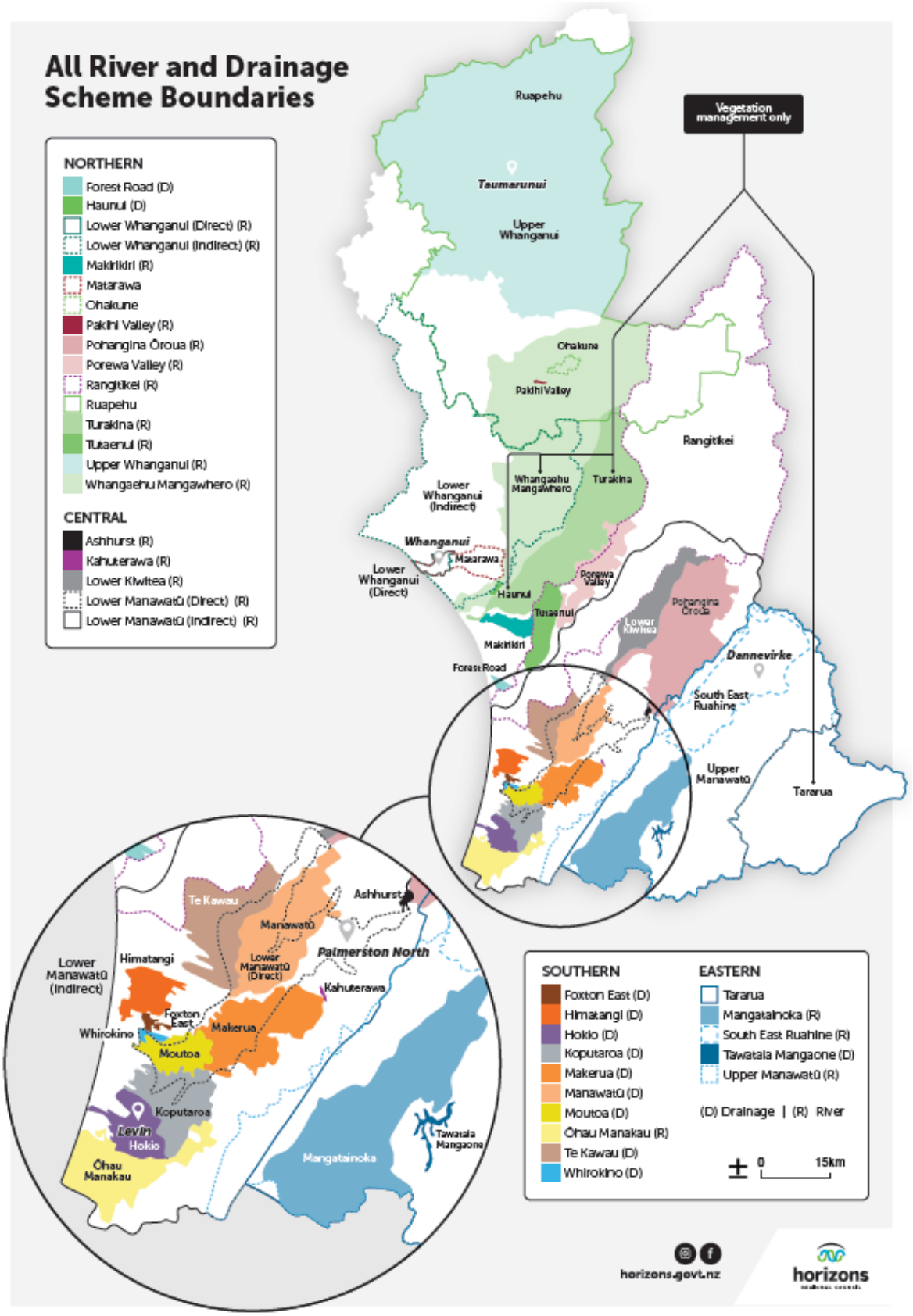


Figure 2: River and Drainage Schemes in the region.

Table 1: Horizons Regional Council Rivers Management Schemes.

Scheme Name	Scheme type	Scheme Description	Number of assets (Jun 2024)	Replacement value of assets (Jun 2024)
Ashhurst	river	The primary objective of this Scheme is to provide drainage to rural land upstream of Ashhurst to Ulysses Road and flood protection to Ashhurst Township to the 1% AEP (100-year) flood level. The Scheme is bounded by Pohangina Road and Cambridge Avenue to the east, Ulysses Road to the north, SH3 to the south, and roughly follows the 100 m contour line to the west.	25	$1,155,980
Forest Road	river	The primary objective of the Forest Road Drainage Scheme is to provide a degree of flood protection to 1,250 ha of rural land.	5	$552,460
Foxton East	river	The primary objective of this drainage Scheme is to provide a drainage outlet for approximately 80 ha of farmland to the east of Foxton Township.	14	$775,390
Haunui	drainage	The primary objective of the Haunui Drainage Scheme is to provide a degree of flood protection to 10 rural properties. The Scheme is located in the Haunui Road area of the lower Whangaehu River Valley, upstream of State Highway 3. It consists of four separate drains totalling 9 km of open channels that drain the left bank of the Whangaehu River and adjoining hill country.	4	$349,962
Himatangi	drainage	The primary objective of this drainage Scheme is to provide and maintain a network of community drainage channels that provide outlets for 4,088 ha of rural land.	28	$482,904
Hōkio	drainage	The primary objective of this Drainage Scheme is to provide land drainage to approximately 350 ha of low-lying land north and south of Lake Horowhenua and 600 ha of land south of Levin, involving maintenance of about 37 km of drains and the full length of the Hōkio Stream.	43	$637,482
Kahuterawa	river	Channel Maintenance Scheme		NA
Koputaroa	drainage	The primary objective of the Scheme is to implement a united policy of drainage development and maintenance for maximum drainage efficiency and provide flood protection to the rural land between Levin and Shannon. The Scheme has a catchment of some 8,500 ha extending from the foothills of the Tararua Ranges to the Manawatū River.	124	$19,587,962
Lower Kiwitea	river	The primary objective of the Scheme is to protect rural land and townships from flooding and erosion. The Scheme works area is the Kiwitea Stream from Reids Line, on the north-western boundary of Feilding, up to the Cheltenham-Hunterville Road, a length of 15.6 km.	115	$6,385,984
Lower Manawatū	river	To manage rivers, the Manawatū and specified tributaries protect 280 square km of pastoral, horticultural and urban land between the Manawatū Gorge and Foxton Beach, maintain its flood-carrying capacity, and minimise lateral erosion.	851	$693,930,357
Lower Whanganui	drainage	The primary objective of the Scheme is to provide flood protection to selected Whanganui urban areas and bank protection to erosion areas, primarily through the use of vegetation management throughout the urban river reaches. The Scheme works area extends from Upokongaro at the northern extremity to the river mouth at Castlecliff, a distance of 19 km. This reach of the river is very flat graded and has a very large tidal exchange capacity, with large volumes of seawater flowing in and out of the river during a tidal cycle.	83	$13,346,086
Makerua	drainage	The primary objective of this drainage Scheme is to provide and maintain a network of community drainage channels that provide outlets for 4,088 ha of rural land.	207	$18,735,810
Makirikiri	river	The Makirikiri Flood Control Scheme is a small but complex Scheme that provides flood protection and drainage benefits (direct and indirect) to three rural properties comprising a rated area of 386 ha	23	$4,321,092

Scheme Name	Scheme type	Scheme Description	Number of assets (Jun 2024)	Replacement value of assets (Jun 2024)
		of highly productive land on river flats west of Turakina Township. The Scheme lies at the lower end of the Makirikiri Stream Catchment and extends some 6 km upstream from the confluence with the Turakina River to high ground approximately 1500 m downstream of the Bulls-Whanganui Highway (State Highway 3). The Makirikiri Stream is return stopbanked for some 3 km upstream from the confluence with the Turakina River, and an overflow spillway diverts flood flows at the top end of the Scheme.		
Manawatū	drainage	The primary objective of the Scheme is to provide the required land drainage to the rural land between the Manawatū and Ōroua Rivers downstream of Feilding. The Scheme also provides flood protection to a large section of the Taonui Basin. The Scheme has a catchment of some 164 sq km extending from near Colyton to its outlet into the Manawatū River at Burkes floodgates.	312	$60,764,839
Mangatainoka	river	The Mangatainoka Scheme includes sections of the Mangatainoka River, Makakahi River, and Mangaramarama Stream and provides benefits to 39,646 ha of rural and urban land, including the township of Pahiatua. The Scheme extends from the confluence of the Mangatainoka River with the Tiraumea River to Larsen's Bridge near the Putara Valley. The primary aim of the Scheme is to prevent erosion and flooding by maintaining an appropriately sized channel and to clean and maintain Scheme drains.	385	$41,363,612
Matarawa	river	The primary objective of the Matarawa Flood Control Scheme is to protect rural land from flooding. Nevertheless, the urban area of Whanganui East derives a flood protection benefit from detention dams and from the Mateongaonga Diversion Channel.	51	$5,948,612
Moutoa	drainage	The primary objective of the Scheme is to provide and maintain a network of community drainage channels, pumping stations and flood protection assets between the Manawatū River and the Foxton Township. The Scheme provides drainage to 5012 ha of dairy, cropping and horticultural land.	92	$9,775,055
Ohakune	river	Channel Maintenance Scheme.		NA
Ōhau Manakau	drainage	The primary objective of the Scheme is to protect rural land south of Levin to the region's boundary, at the edge of the Manakau Stream Catchment south of Manakau, from flooding and erosion.	241	$26,353,835
Pakihi Valley	river	The primary objective of this Scheme is to protect rural land from flooding.	6	$2,451,304
Pohangina Ōroua	river	Located to the northeast of Feilding, the Scheme provides riparian landowners within the Scheme a degree of protection against the adverse effects of changes in the alignment of the Pohangina and Ōroua Rivers and resultant lateral river erosion. The Scheme also provides a degree of protection from erosion of the unstable sand deposits that form the Upper Ōroua terraces in the Goulters Gully area. Protection is provided by management of exotic forestry on those very fragile soils. The Scheme also provides small areas with drainage and, to a limited extent, controls flooding of some low-lying river flats.	199	$12,850,674
Porewa Valley	river	The primary objective of the Scheme is to protect the townships of Rata and Hunterville, together with approximately 800 ha of rural land on the valley floor, from flood events with return periods of up to 25 years. The Scheme assets also reduce the effects of flood events with a greater return period than 25 years.	81	$10,583,431
Rangitīkei	river	The primary objective of the Scheme is to protect highly productive lower terrace land, rural and urban property and community infrastructure between Rewa and the sea, a distance of 63 km on the Rangitīkei River, from flooding and erosion. A more recent objective has been to employ river control measures that preserve	191	$131,479,998

Scheme Name	Scheme type	Scheme Description	Number of assets (Jun 2024)	Replacement value of assets (Jun 2024)
		aspects of natural character and maintain, if not enhance, recreational access and opportunity.		
Ruapehu	river	Channel Maintenance Scheme.		NA
South East Ruahine	river	The South Eastern Ruahine Scheme includes eighteen streams and part of the Manawatū River. The Scheme offers benefit to 64,543 ha of mainly productive land, but also includes the townships of Dannevirke, Woodville and Norsewood. The primary objective of the South Eastern Ruahine Scheme is to minimise the loss of farm production caused by erosion, floods, and gravel overflows and to improve farm drainage through the maintenance of stream bed levels and through the effective maintenance of Scheme drains.	276	$67,127,746
Tararua	drainage	Channel Maintenance Scheme		NA
Tawataia Mangaone	river	The primary objective of the Tawataia-Mangaone Scheme is to protect rural land from flooding and provide land drainage. This Scheme provides for the maintenance of one detention dam, complete with spillway and outlet culvert; nearly 12 km of drainage channels; and approximately 40 km of stream channel clearance operations.	14	$675,518
Te Kawau	river	The primary objective of the Scheme is to provide an agreed level of drainage and flood protection service to the rural land to the west of the Ōroua River from Awahuri to Rangiotu and out to State Highway 1.	206	$18,634,122
Turakina	river	Channel Maintenance Scheme.		NA
Tutaenui	river	The primary objective of the Scheme is to protect the townships of Bulls and Marton and surrounding rural land from flooding. The Scheme is located on the catchment of the Tutaenui Stream, which has its headwaters to the north of Marton. The stream joins the Rangitīkei River 3.5 km downstream of the SH1 Bridge.	63	$5,083,508
Upper Manawatū	river	The Upper Manawatū Lower Mangahao Scheme includes sections of the Manawatū River, Mangahao River and 19 km of drains and provides benefit to 24,000 ha of rural and urban land, including the townships of Dannevirke, Woodville and Pahiatua. The primary objective of the Upper Manawatū / Lower Mangahao Scheme is to prevent erosion, reclaim portions of the riverbed, prevent flooding and maintain the drainage of highly productive farmland on terraces adjacent to the two rivers.	134	$27,292,781
Upper Whanganui	river	The Upper Whanganui River Management Scheme will provide landowners adjacent to, and in the floodplain of, the Whanganui River through Manunui and Taumarunui, with a degree of protection against flooding and riverbank erosion. The control of flooding is largely limited to the urban area of Taumarunui downstream of the SH 4 Bridge. The surrounding community will receive benefit from the works carried out to directly protect Taumarunui.	42	$15,946,489
Whangaehu Mangawhero	river	Channel Maintenance Scheme.		NA
Whirokino	drainage	The primary objective of the Scheme is to provide and maintain a network of community drainage channels, pumping stations and flood protection assets between the Manawatū River and the Foxton Township. The Scheme provides drainage to 5012 ha of dairy, cropping, and horticultural land.	29	$1,296,979

Note: Schemes with channel maintenance only do not have assets with a replacement value.

2.4 Scheme Levels of Service

Levels of Service (LoS) for flood control Schemes are described as the asset's ability to withstand a flood event having a particular capacity or return period known as an Annual Exceedance Probability (AEP) which is the probability of an event exceeding capacity occurring in any one year

The Levels of Service for 28 Schemes with assets are documented in Table 2 below. There are no Levels of Service defined for the 4 erosion protection Schemes.

Communities may agree to change Levels of Service, by either increasing Levels of Service expectations as demand grows or decreasing Levels of Service expectations due to financial constraints. The first stage in this process is consultation through the relevant Scheme Liaison Committee. The output of this process is Horizons approval for the changed Levels of Service, generally through the Long-term Plan review process.

The ability to achieve expected Levels of Service is determined by the current and future condition of assets. The prime objective of asset management is to maintain the Levels of Service of the respective systems and associated assets in perpetuity. This approach determines the maintenance philosophy for individual assets and asset components.

Table 2: Levels of Service for each Scheme.

Scheme	Levels of Service
Lower Manawatū	Flood flows not exceeding 1% AEP (0.2% AEP 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.
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 dams to protect adjoining developed areas and farmland.
Tutaenui	Flood flows not exceeding 5% AEP will be detained behind the dams to protect adjoining developed areas and farmland.
Pakihi	Flood flows not exceeding 1% AEP will be detained behind the dams 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.
Hōkio Drainage	NA
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	N/A

Scheme	Levels of Service
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	N/A
Forest Road	N/A
Haunui Drainage	N/A
Makirikiri	Flood flows not exceeding 50% AEP will be contained within stopbanks to protect adjoining areas and farmland.
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.

At the time of writing, a regional flood vulnerability assessment is being commissioned with co-funding from central government. A component of the flood vulnerability assessment is "to review flood protection asset condition and provide commentary on how Horizons can improve its assessment of asset condition for flood protection assets – including how this could be prioritised and likely costs". This region-wide approach involves broader consideration of how asset management practices can be improved and will provide recommendations for how to achieve this.

The brief of the Flood Vulnerability Project is to:

1. "Document Horizons' current flood protection assets to compare the design levels/flows at the time of construction with updated assessments of the level of service (annual return period and flow) based on new asset, survey and hydrological information"; and
2. "Project the changes in Levels of Service for the flood protection assets with Climate Change into the future."

AEP for Levels of Service was set historically and there is a need to review this particularly given: evolving knowledge of asset condition and Climate Change scenarios; and how landowners and ratepayers share the costs and benefits of Schemes. The next steps before the next Long-term Plan are to identity the community's values and priorities, and review the Levels of Service, as part of movement towards an integrated catchment management approach.

2.5 Asset management activities

Asset management activities are the management of River Infrastructure Assets throughout their full lifecycle. A lifecycle approach requires consideration of the management of assets throughout the planning, acquisition, maintenance and repair, and renewal or disposal stages (Figure 3).

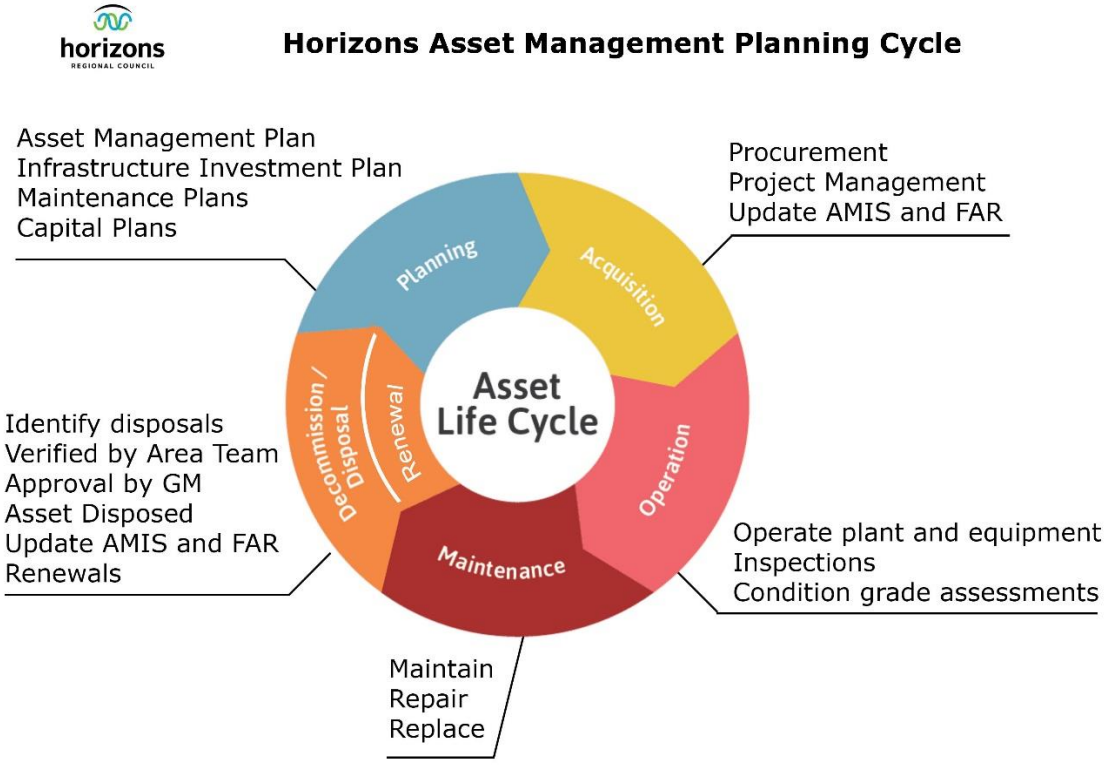


Figure 3: Asset lifecycle diagram.

The objective is to optimise investment at each stage whilst achieving the required Levels of Service and minimising risk. The approach requires thorough planning, analysis and timely execution, underpinned by data-driven decision-making.

River environments are dynamic and changing. Given the complexity of our river systems, condition monitoring activities are essential to identify how we maintain the desired LoS, the prioritisation of remedial work, and capital upgrade investment decisions. The asset management activities, responsibilities and frequency of these activities are outlined in Table 3.

Table 3: Asset Management Activities.

Life cycle stage	Management Activity	Responsibility	Frequency
Planning	Infrastructure Strategy (IS). AMP document review Scheme review.	River Management leadership in consultation with Council. Council confirms the Infrastructure Strategy and budgets following consultation via the Long-term Plan.	IS refreshed 3-yearly during the Long-term Plan cycle. AMP is reviewed 3-yearly; and updated annually.
	Prioritise works required to deliver the desired Levels of Service. Review work programmes against budgets provided. Annual plans Annual budgets	River Management Engineers and Asset Information team Annual budgets are set by Council.	Work programmes and budgets are developed annually. Direction to undertake works is via Council through the Infrastructure Strategy and other Council direction.
Acquisition	Capital projects to produce new capital work. New asset capitalisation.	Project team, River Management Asset Team	Annually
	Asset revaluation. Produce and maintain the insurance schedules.	River Management Asset Information Team	Annually
	Audit of asset register and capital works records.	Audit	Annually
	Update asset register. Record asset dimensions, materials and quantities. GIS coverage.	River Management Asset Information Team	Constantly
	Condition inspections for all high criticality assets.	River Management Asset Inspection Team	Annually
Operation	Condition inspections for all low criticality assets.	River Management Asset Inspection Team	Five-yearly
	Emergency inspections.	River Management Asset Inspection Team and Engineers	As required
	Asset reporting: asset condition, defects; maintenance and repair work records.	River Management Asset Information Team	Monthly
	Safety monitoring of large dams in accordance with New Zealand Society on Large Dams. Floodgate CCTV.	River Management Engineers	As required
	Flood Vulnerability Assessment. Design alignment appropriate.	Investigation & Design	On a rolling cycle as required

	Gravel analysis.		
	Stopbank settlement (post upgrade work). Channel capacity survey (post flood). DEM/Elevation model from Lidar.	Survey Team	As required
Maintenance and repair	Undertake a maintenance and repair programme of works.	River Management Engineers	Annually
	Maintain a record maintenance and repair work.	River Management Asset Information Team	Annually
Decommission/Renewal	Record and depose of lost assets.	River Management Asset Information Team	Annually
	Renewal projects to produce renewal work.	River Management Engineers; Investigation and Design; Special Projects	As required

Section 3: Describing assets

3.1 Asset register

The register of all Rivers Management Infrastructure Assets and their associated descriptive information is maintained within the Horizons' Asset Management Information System (AMIS), which is updated as asset information changes. The quantity and quality of data within AMIS is subject to annual audit by the Horizons' Audit and Finance team.

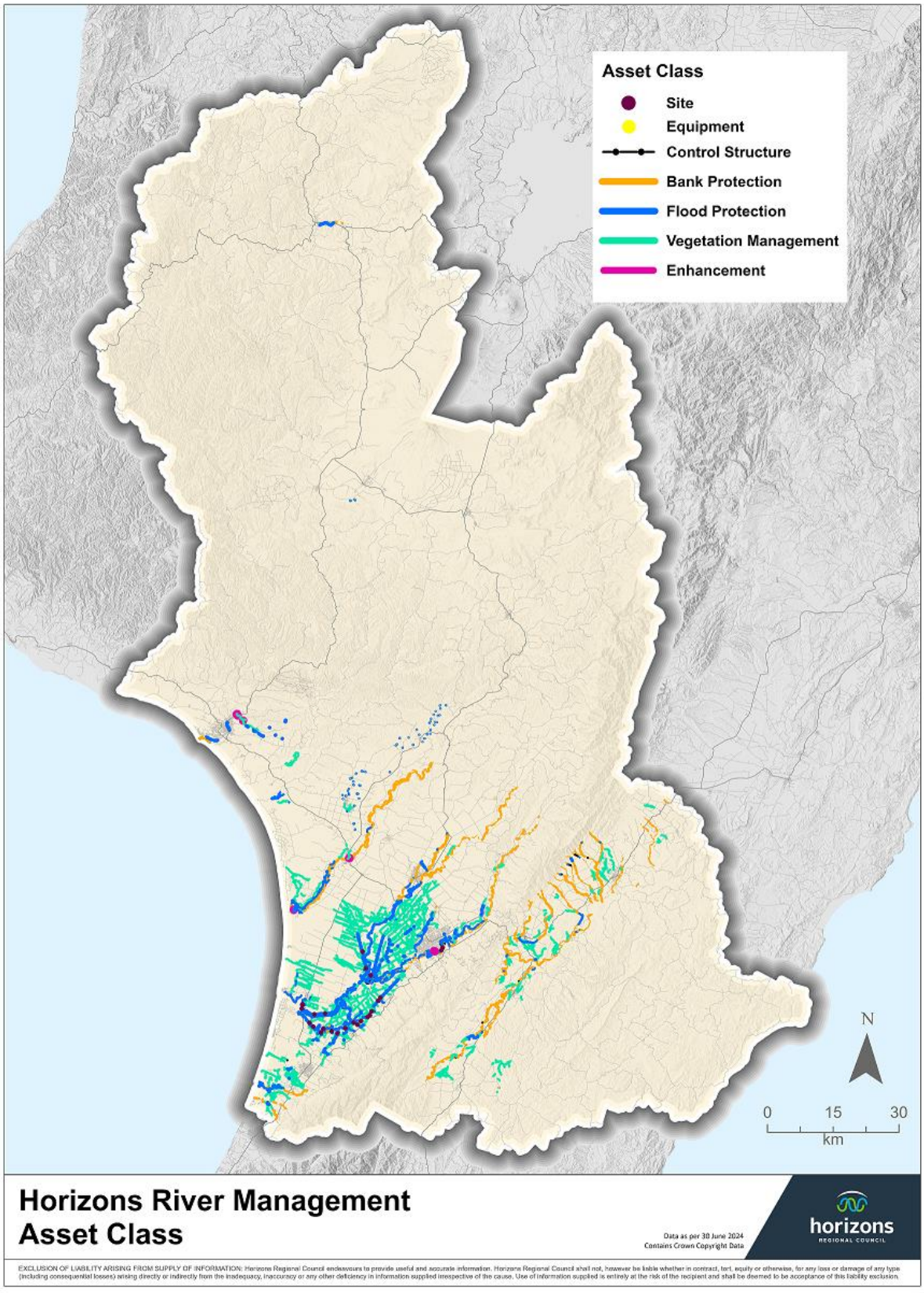
The spatial extent and location of assets, along with records of maintenance and repair works, is held in a geospatial database within HRC.GISLIVEDB.

The Asset Register presented in Table 4 provides the current asset numbers and values for different asset types, serving as a baseline for this Asset Management Plan and highlighting the changes from the previous financial year to this one. A regional map of Scheme asset types is shown in Map 1.

Table 4: Summary of the Asset Register.

		FY 2022-2023 (as at June 2023)		Acquisition		Disposal		FY 2023-2024 (as at June 2024)	
Asset types	**Asset sub-type**	**Count**	**Value**	**Count**	**Value**	**Count**	**Value**	**Count**	**Value**
Bank Protection	Erosion Protection Reserve	26	$46,324,063					26	$38,762,416
	Gabions	3	$620,961					3	$636,777
	Groyne	19	$21,464,760	2	$140,018			21	$21,710,376
	Lining – Engineered	101	$84,523,595	2	$7,925,245			103	$106,611,651
	Lining - Non Engineered	141	$60,880,633	7	$311,236	1	$32,688	147	$62,483,175
	Lining – Tiered	2	$691,391			1	$483,377	1	$213,313
	Permeable Groyne – Driven	127	$10,344,547	11	$491,347	6	$339,620	132	$7,672,534
	Permeable Mesh Unit	116	$4,444,713	4	$78,618	2	$19,449	118	$5,943,956
	Planting	409	$35,456,788	4	$158,519			413	$76,984,872
	Retaining Wall	6	$449,302					6	$469,576
	Retaining Walls – MassBloc	4	$4,216,319					4	$4,366,275
	Rip Rap	269	$77,113,676	1+8	$183,344	2	$845,740	276	$82,941,105
	Stock Gate	9	$68,495					9	$70,240
	Tied Tree Work – Anchored	464	$37,168,957	8	$239,743	15	$314,602	457	$48,798,923
	Tied Tree Work – Layered	1	$5,682					1	$11,198
Control Structure	Bed Armouring	2	$2,560,081					2	$2,625,286
	Drop	4	$2,403,765					4	$2,471,383
	Grade	21	$612,243			1	$4,467	20	$623,257
	Weir	30	$6,223,212					30	$6,398,271
Enhancement Equipment	Amenity	8	$500,568	3	$1,506,637			11	$2,538,972
	Handrail	1	$15,826					1	$16,605
	Knee-breakers	1	$25,695					1	$26,959
	Ramp	3	$34,841					3	$36,554
	Self Help Depot	1	$10,108					1	$10,606
	Walkway	1	$166,506					1	$174,695
	Control - Auto Transformer	19	$1,438,759					19	$1,527,566
	Control – Sensor	1	$11,467					1	$12,031
	Control - Soft Starter	1	$166,889					1	$175,096
	Control – VSD	1	$1,496,000					1	$1,569,573
	Mechanical – Pump	46	$5,768,584					46	$6,326,191
	Screen / Filter – Screen	1	$63,567					1	$66,080
	Structure - Outlet Grill	48	$3,260,884					48	$3,313,584
	Supply – Generator	1	$365,875					1	$383,868
Flood Protection	Detention Embankment	54	$13,312,645					54	$13,687,130
	Detention Inlet	5	$517,627					5	$523,750
	Detention Outlet	5	$517,627					5	$523,750

		FY 2022-2023 (as at June 2023)		Acquisition		Disposal		FY 2023-2024 (as at June 2024)	
Asset types	**Asset sub-type**	**Count**	**Value**	**Count**	**Value**	**Count**	**Value**	**Count**	**Value**
	Flood Walls	64	$8,426,564	1	$8,800	1	$226,304	64	$8,448,781
	Floodgate	20	$1,912,034					20	$1,987,635
	Floodgate Structure – Culvert	534	$21,806,019	27	$1,204,467	8	$246,551	553	$23,754,852
	Floodgate Structure – Other	18	$5,016,887					18	$5,158,012
	Flow Diversion Structure	10	$54,228,546					10	$54,875,679
	Guidebank	15	$5,319,418					15	$6,493,450
	Portable Flood Barrier	8	$400,484					8	$387,821
	Property Mitigation Bund	15	$1,693,175					15	$1,740,804
	Spillway	56	$4,240,232	+6	-			62	$4,359,509
	Stopbank	284	$417,857,963	1	$369,797	4	$5,614,093	281	$541,687,020
	Toe Drain	5	$592,159					5	$599,165
Site	Land Use Drainage Pump Station	24	$11,075,325					24	$11,620,009
	Pump station Land/Access	20	$283,770					20	$291,752
Vegetation Management	Drainage Channel	770	$33,934,305	5+1	$67,417			776	$35,777,888
Total		**3,794**	**$990,033,534**	**91**	**$12,685,187**	**41**	**$8,126,890**	**3,844**	**$1,197,889,973**



Map 1: Map of Scheme assets by asset type as at 30 June 2024.

3.2 Valuation

The financial value of the assets that make up Schemes are calculated from formal assessment of the current valuation of the assets, together with loans and financial reserves.

On an annual basis, asset valuations are undertaken using formulae based on current unit rates and capital goods price index (CGPI). The Valuation Report that accompanies this assessment sets out the methodology for determining the unit rates and formulae that are used in the valuation of Rivers Management assets.

The revaluation of Rivers Management assets for FY2023-24 has been completed (Report No: 2024/EXT/1883). The valuation methodology has been peer-reviewed by an independent consultant (Report No: 2024/EXT/1891), and the results will be audited later during the current financial year FY2024-25. The provisional values have been entered into this current version of the AMP.

3.3 Creation and Acquisition

Creation and acquisition involve either creating a new asset that did not previously exist, or upgrading an existing asset to exceed its original capacity or performance.

3.3.1 New assets

Upon completion of new or improved assets, details are entered into the Asset Management Information System (AMIS). If the work extends beyond the fiscal year, the annual expenditure is recorded as work in progress (WIP) in the finance system.

New capital works are subject to depreciation, which will incur one month of depreciation in the year they are constructed or discovered.

The process of new asset installation involves constructing and capitalising a new asset. This asset is then added to AMIS and the asset register, with an initial value based on the total capital cost (Table 5).

Table 5: New assets.

Financial year	Number of new assets	Replacement value of new assets[1]
2022-2023	16	$2,286,198
2023-2024	44	$11,322,918
Total	**60**	**$13,609,116**

[1] Initial value is based on the total capital cost.

Infrastructure Strategy predicts the capital programme totalling $46.4 million over 30 years, with 86% of that ($39.8 million) in the first 10 years of the LTP. The programme reduces to renewals only in year 8. This prediction is subject to change (Figure 4).

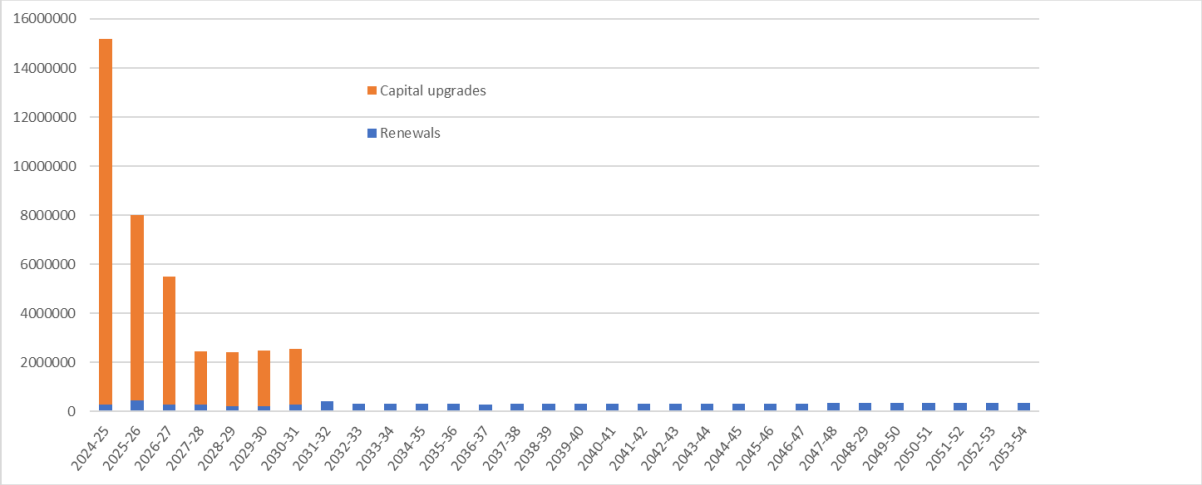


Figure 4: Projected capex from Infrastructure Strategy.

3.3.2 Found assets

Since the start of the 2023-2024 financial year, a Data Improvement Plan has been implemented. This plan has identified several assets that were previously in place but not recorded in the system.

Found Assets are assets that were previously constructed but were not documented in the current finance system. Because the original costs cannot be matched in the current system, these assets are treated differently from newly capitalised assets. Instead of using actual costs, their value is based on estimated replacement costs provided by Engineers (Table 6).

The process of identifying and recording these Found Assets will be an ongoing part of our Asset Management Activities, aimed at enhancing data accuracy and completeness.

Table 6: Found assets.

Financial year	Number of assets found	Value of assets found[1]
2022-2023	0	$0
2023-2024	40	$1,512,269
Total	**40**	**$1,512,269**

[1] Value is based on estimated replacement costs provided by Engineers.

3.4 Renewal of assets

Renewal is major capital work that does not significantly alter the original service provided by the asset, but restores, rehabilitates, replaces, or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an acquisition resulting in additional future operations and maintenance costs.

Infrastructure asset renewals are identified by several key factors, including:

1. Condition Assessments – Regular condition inspections and monitoring help determine the physical state of assets and identify those in need of renewal.
2. Lifecycle Analysis – Evaluating the expected lifespan of assets helps in planning renewals before failure occurs.
3. Risk and Criticality Assessments – Assets that pose a higher risk of failure or have a critical function are prioritised for renewal.

4. Performance Metrics – Declining efficiency, increased maintenance costs, or reduced service levels signal the need for renewal.
5. Regulatory and Compliance Requirements – Infrastructure must meet safety and environmental regulations, which may necessitate upgrades or replacements.
6. Asset Management Plans – Strategic plans outline the long-term renewal schedule based on usage, condition, and funding availability.
7. Community and Stakeholder Feedback – Reports from users and stakeholders help identify assets requiring renewal due to safety or operational concerns.

The typical useful lives of assets used to develop projected asset renewal forecasts are shown in Table 7 and discussed below.

3.4.1 Useful life of an asset

The Useful Life of an asset is the life of the asset until it ceases to be able to provide the required level of service because of physical deterioration. The maximum Useful Life is sometimes termed the Physical Life.

Asset Depreciation is based on the Useful Life, therefore; a 50-year Useful Life results in a 2% depreciation per year.

The Remaining Useful Life of an asset is the remaining life of that asset, which is assessed during the revaluation process, currently undertaken every three years.

Where assets have been assessed 'as new', this means that regardless of when it was constructed, if the Useful Life of that asset is 50 years, it is still considered to have a life of 50 years from the date of revaluation. Thus, previous years' depreciation will be zeroed. However, if the asset is assessed as having a Remaining Useful Life less than the Useful Life set out below, the previous accumulated depreciation for that asset will be carried over to the next financial year.

The condition factor is a guide as to what level of maintenance is required and is assessed at every inspection of that asset. Condition factors are used for Annual Maintenance Programs and have no bearing on the life of the asset.

The following is a list of all our asset types with their maximum useful lives and whether they will be depreciated. Some assets with a specified Useful Life are not depreciated due to uncertainty over their replacement (e.g. grade controls may not need to be replaced if the channel has stabilised) or high risk of flood damage (variable finite life).

Table 7: Useful life by asset type.

Asset types	Asset types	Useful Life
Bank Protection	Erosion Protection Reserve	Perpetual
	Gabions	Perpetual
	Groyne	Perpetual
	Lining Engineered	Perpetual
	Lining Non-Engineered	Perpetual
	Lining Tiered	100
	Permeable Groyne Driven	Undefined
	Permeable Mesh Unit	Undefined
	Planting	Perpetual
	Retaining Wall	50

Asset types	Asset types	Useful Life
	Retaining Walls MassBloc	100
	Rip Rap	Perpetual
	Stock Gate	Perpetual
	Tied Tree Work Anchored	Perpetual
	Tied Tree Work Layered	Perpetual
Control Structure	Bed Armouring	Perpetual
	Drop	70
	Grade	70
	Weir	70
Enhancement	Amenity	Perpetual
	Handrail	Perpetual
	Knee-breakers	Perpetual
	Ramp	Perpetual
	Self Help Depot	Perpetual
	Walkway	Perpetual
Equipment	Control Auto Transformer	50
	Control Sensor	50
	Control Soft Starter	50
	Control VSD	50
	Mechanical Pump	25
	Screen / Filter Screen	70
	Structure Outlet Grill	70
	Supply Generator	50
Flood Protection	Detention Embankment	Perpetual
	Detention Inlet	70
	Detention Outlet	70
	Flood Walls	50/200
	Floodgate	100
	Floodgate Structure Culvert	70
	Floodgate Structure Other	70
	Flow Diversion Structure	100/200
	Guidebank	Perpetual
	Portable Flood Barrier	50
	Property Mitigation Bund	Perpetual
	Spillway	70
	Stopbank	Perpetual
	Toe Drain	Perpetual
Site	Land Use Drainage Pump Station	100
	Pump station Land/Access	Perpetual
Vegetation Management	Drainage Channel	Perpetual

Table notes:

1. Detention dam culvert/spillway includes Inlet Structure, Outlet Structure, Inlet/Outlet Structure, and Spillway.

2. Some assets with an undefined Useful Life are not depreciated due to uncertainty over their replacement (e.g. grade controls may not need to be replaced if the channel has stabilised) or high risk of flood damage (variable finite life).

3. Control buildings and electrics plus pump station assets are covered by Material Damage (All Risks) Insurance Policy, not Infrastructural Asset Insurance Policy.

4. Property assets currently include a house property at Kopane (insured under Material Damage Policy) and land for Makino Diversion structure (not insured).

5. Portable Flood Barrier and Stoplog assets include site works (not insured) and portable flood barriers (insured under Material Damage Policy).

6. Weirs are generally concrete except the nine rock weirs in lower Ashhurst Stream, which are not insured.

7. The Matarawa Flow Diversion structure is an exception. It is a single culvert structure acting as a flow constriction and is treated as a floodgated culvert with a 70-year life.

3.4.2 Renewal ranking criteria

Asset renewal is typically undertaken to either:

- Ensure the reliability of the existing infrastructure to deliver the service it was constructed to facilitate; or
- To ensure the infrastructure is of sufficient quality to meet the service requirements.

Renewals are prioritised in Table 8 by identifying assets or asset groups that:

- Have a high consequence of failure;
- Have high use and subsequent impact on users would be significant;
- Have higher-than-expected operational or maintenance costs; and/or
- Have potential to reduce lifecycle costs by replacement with a modern equivalent asset that would provide the equivalent service.

Table 8: Infrastructure Renewal Programme.

Asset Type	Phase	Scope of Work	Timeframe	Priority
Stopbanks	Immediate (0-3 years)	Reinforce eroded sections in flood-prone areas.	1-2 years	High
		Repair or upgrade vulnerable embankments.		
	Short-term (3-5 years)	Erosion control measures (riprap, vegetation).	2-3 years	Medium
		Heightening or widening of low-risk stopbanks.		
	Mid-term (5-10 years)	Comprehensive stopbank assessment and long-term repair program.	3-5 years	Low
	Long-term (10+ years)	Full reconstruction or redesign if major structural issues identified.	5+ years	Low
Dams	Immediate (0-3 years)	Structural reinforcement.	1-3 years	High
		Spillway and dam safety improvements.		
		Seepage monitoring installation.		
	Short-term (3-5 years)	Upgrade safety features (e.g., emergency gates).	2-3 years	Medium

Asset Type	Phase	Scope of Work	Timeframe	Priority
		Improve monitoring systems (sensors, instrumentation).		
	Mid-term (5-10 years)	Major rehabilitation of aging dams.	3-5 years	Low
		Upgrade structural components (embankments, spillways).		
	Long-term (10+ years)	Comprehensive dam modernization.	5+ years	Very Low
		Full system replacement if necessary.		
Floodgates	Immediate (0-3 years)	Replace/repair malfunctioning gates.	1-2 years	High
		Improve mechanical systems and seals.		
	Short-term (3-5 years)	Refurbish older floodgates.	2-3 years	Medium
		Install automated control systems.		
	Mid-term (5-10 years)	Full replacement of old floodgates.	3-5 years	Low
		Upgrade floodgate automation and remote management.		
	Long-term (10+ years)	Major upgrade for large-scale flood protection.	5+ years	Very Low
		Integration of new technologies for flood management.		
Pump Stations	Immediate (0-3 years)	Replace pumps or motors nearing end-of-life.	1-2 years	High
		Upgrade electrical and control systems.		
	Short-term (3-5 years)	Modernize automation systems and controls.	2-3 years	Medium
		Improve backup power systems.		
	Mid-term (5-10 years)	Full system overhaul (replacement of mechanical and electrical components).	3-5 years	Low
	Long-term (10+ years)	Integration of energy-efficient systems.	5+ years	Very Low
		Major upgrades for capacity enhancement.		

Table Notes:

1. **Asset Categories**

- **Stopbanks**: Focus on reinforcing or upgrading areas with erosion, heightening low stopbanks, and improving flood protection capabilities.
- **Dams**: Prioritize safety, structural integrity, and monitoring. Reinforcement and upgrading are critical for preventing failures.
- **Floodgates**: Replace malfunctioning gates, automate control systems, and modernize flood protection mechanisms.
- **Pump Stations**: Upgrade mechanical systems (pumps), electrical components, and automation to ensure operational reliability.

2. **Phases**

- **Immediate (0-3 years)**: Focus on assets that are most at risk and require urgent attention.
- **Short-term (3-5 years)**: Focus on assets with medium risk that need upgrades or refurbishments.
- **Mid-term (5-10 years)**: Rehabilitation and upgrading of critical systems, with preventive maintenance and future-proofing.
- **Long-term (10+ years)**: Major reconstruction or system-wide upgrades based on long-term sustainability needs and technological improvements.

3. **Budgeting and resources**

- The budget estimates are to be developed for general guidance and can vary based on the scale of assets and their conditions.
- Critical assets are those that affect public safety or have the potential for catastrophic failure if not renewed. These assets should be addressed first.

4. **Adjustments and updates**

- The program should be **re-evaluated regularly**, and adjustments should be made as new data becomes available or as assets undergo inspections and monitoring.

3.5 Asset Upgrades

Upgrades enhance or extend an existing asset to increase its level of service, whereas renewals restore the asset to its original level of service without changing it. Both upgrade and renewal job costs are charged as Capital Expenditure (Capex). Renewals do not alter the asset's value, whereas upgrades generally increase the asset's value (Table 9).

When an upgrade job is complete, the Capex, along with information on dimension or material changes, is recorded as an adjustment to the asset in AMIS. By accurately capturing this data, the asset's value is adjusted to reflect the improvements.

Table 9: Asset Upgrades.

Financial year	Number of assets upgraded	Value of assets upgraded
2022-2023	14	$1,085,522
2023-2024	8	$269,457
Total	**22**	**$1,354,979**

3.6 Disposal

The process of disposing of an asset involves removing it from the AMIS asset register and Financial Fixed Asset Register once it has been identified as no longer viable. This identification can occur when the Engineering Teams plan works on assets, or, through the asset condition inspections, or, through a review such that ongoing for how disposal versus depreciation should be treated for tied tree work.

When the Area Engineer confirms that an asset is no longer providing the required level of service, the Asset Management team will mark the asset for disposal in AMIS after obtaining approval from the Group Manager. The asset will then be marked as expired in AMIS and removed from the asset register. The Asset Information team notifies Finance to ensure proper reconciliation with the financial fixed asset register. A history of the number and value of asset disposals is shown in Table 10.

Table 10: Asset disposal.

Financial year	Number of assets disposed	Value of assets disposed
2022-2023	16	$1,410,093
2023-2024	41	$8,126,890[1]
Total	**57**	**$9,536,983**

[1] In the FY2023-2024, additional assets have been confirmed as damaged, particularly after Cyclone Gabrielle.

3.7 Criticality

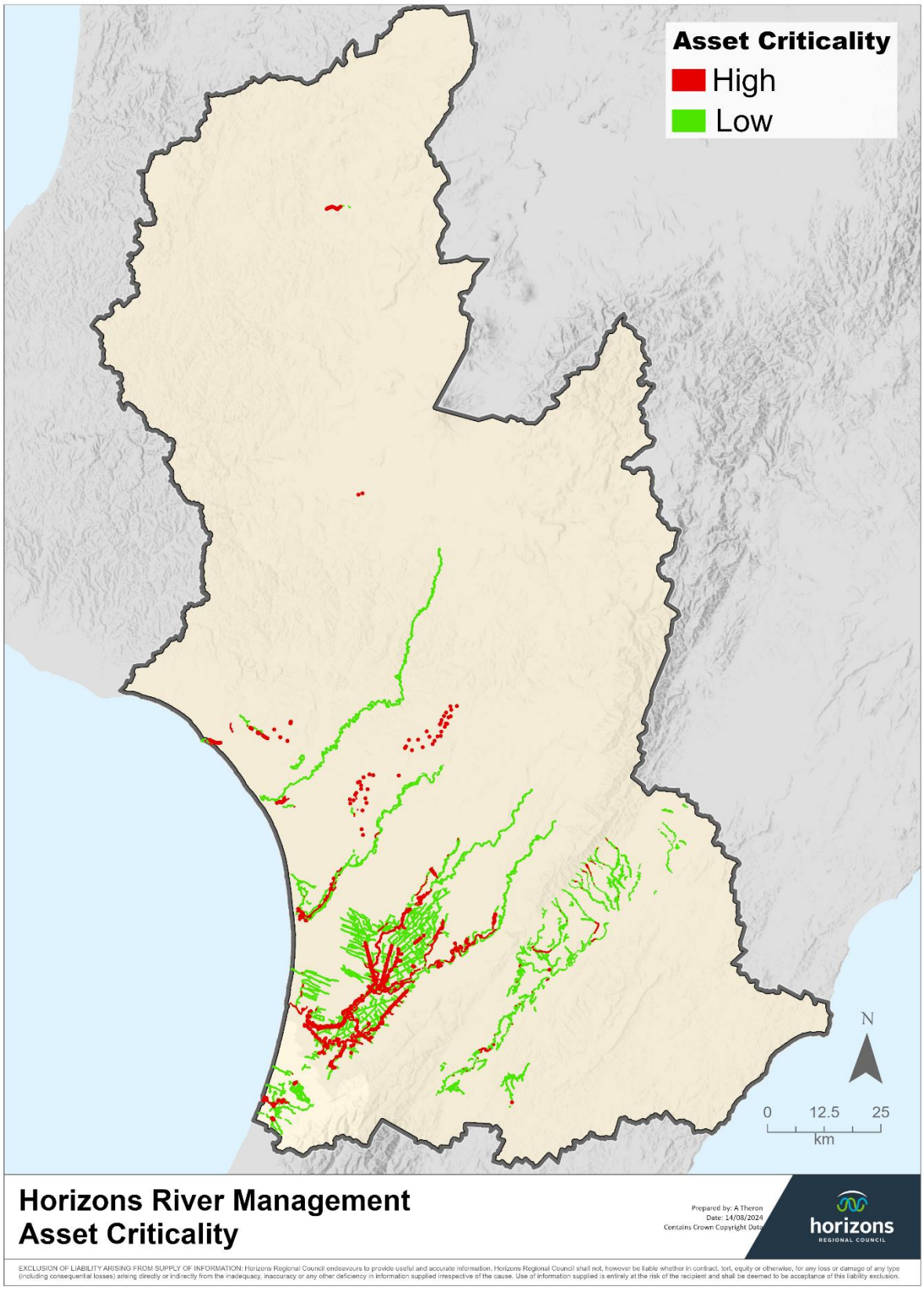
Assets are categorised into high and low criticality groups (Table 11). High-criticality assets are essential for maintaining the scheme's service level and due to their likelihood for changes and wear and tear between flood events, these require regular condition inspections. These include: dams, pump stations, stopbanks, floodgates, and weirs.

In contrast, low-criticality assets are less likely to change between flood events and serve as support for the high-criticality assets in ensuring the Scheme's functionality. Examples of low-criticality assets include drains, tied tree works, rock linings, and vegetation plantings. These assets are unlikely to change between flood events. The location of high and low-criticality assets is shown in Map 2.

Table 11: Summary of asset criticality ratings for asset subtypes, as at June 2024.

Asset Type	Asset sub-type	Number of high criticality assets	Value of high criticality assets	Number of low criticality assets	Value of low criticality assets
Bank Protection	Erosion Protection Reserve			26	$38,762,416
	Gabions			3	$636,777
	Groyne			21	$21,710,376
	Lining - Engineered			103	$106,611,651
	Lining - Non-Engineered			147	$62,483,175
	Lining - Tiered			1	$213,313
	Permeable Groyne - Driven			132	$7,672,534
	Permeable Mesh Unit			118	$5,943,956
	Planting			413	$76,984,872
	Retaining Wall	6	$469,576		
	Retaining Walls - Mass block	4	$4,366,275		
	Rip Rap			276	$82,941,105
	Stock Gate			9	$70,240
	Tied Tree Work - Anchored			457	$48,798,923
	Tied Tree Work - Layered			1	$11,198
Control Structure	Bed Armouring			2	$2,625,286
	Drop	4	$2,471,383		
	Grade	20	$623,257		
	Weir	30	$6,398,271		
Enhancement	Amenity			11	$2,538,972
	Handrail			1	$16,605
	Knee-breakers			1	$26,959
	Ramp			3	$36,554
	Self Help Depot			1	$10,606
	Walkway			1	$174,695
Equipment	Control - Auto Transformer	19	$1,527,566		
	Control - Sensor	1	$12,031		
	Control - Soft Starter	1	$175,096		
	Control - VSD	1	$1,569,573		

Asset Type	Asset sub-type	Number of high criticality assets	Value of high criticality assets	Number of low criticality assets	Value of low criticality assets
	Mechanical - Pump	46	$6,326,191		
	Screen / Filter - Screen			1	$66,080
	Structure - Outlet Grill	48	$3,313,584		
	Supply - Generator	1	$383,868		
Flood Protection	Detention Embankment	54	$13,687,130		
	Detention Inlet	5	$523,750		
	Detention Outlet	5	$523,750		
	Flood Walls	64	$8,448,781		
	Floodgate	20	$1,987,635		
	Floodgate Structure - Culvert	553	$23,754,852		
	Floodgate Structure - Other	18	$5,158,012		
	Flow Diversion Structure	10	$54,875,679		
	Guide bank	15	$6,493,450		
	Portable Flood Barrier			8	$387,821
	Property Mitigation Bund			15	$1,740,804
	Spillway	62	$4,359,509		
	Stopbank	281	$541,687,020		
	Toe Drain			5	$599,165
Site	Land Use - Drainage Pump Station	24	$11,620,009		
	Pump station - Land/Access	20	$291,752		
Vegetation Management	Drainage Channel			776	$35,777,888
Total		**1,312**	**$701,048,002**	**2,532**	**$496,841,970**



Map 2: Asset criticality map as at 30 June 2024.

Section 4: Measuring performance

4.1 LTP Performance targets

Historically, a lack of proactive, planned maintenance has led to a reactive maintenance approach and previous budgets have not been revised to address this. The current approach is that maintenance is budgeted based on a volume of planned maintenance jobs for each Scheme.

The maintenance based programme will change the way in which we conduct works and will ensure that we are proactive in maintaining our assets. This will ensure that assets continue to function as intended in order to provide their expected LoS.

A programme of maintenance will be planned annually. This programme will generally be discussed with a Scheme Liaison Committee of ratepayer representatives prior to adoption by Horizons for inclusion in the Draft Long-term Plan (LTP). The Levels of Service provided through the maintenance programme were defined by the performance targets in the current LTP (Table 12).

New performance targets have also been added through the LTP 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 (Table 13).

Table 12: Maintenance performance targets define in the LTP.

Maintenance within the river and drainage Schemes		Annual target FY 24/25	Total units FY24/25
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	1,123 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	593 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	875 km
1.4	Number of Scheme flood gates maintained e.g. cleaned, repaired, adjusted etc.	97	699
1.5	Kilometres of Scheme stopbanks maintained e.g. mowing of stopbanks, repairs to stopbanks etc.	65 km	509 km
1.6	Number of River Scheme amenity works maintained (e.g. tracks on stopbanks).	1	21

Table 13: LTP targets for asset management.

Asset management activity within the river and drainage schemes		Annual target FY 24/25	Baseline FY 23/24
2.1	% of critical assets inspection completed.	75%	100%
2.2	% of non-critical assets inspections completed.	20%	21%
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	

4.2 Measuring Maintenance and Repairs

The Infrastructure Strategy emphasises a proactive approach to managing operational activities within the Schemes. It aims to:

- Focus on Maintenance: Prioritise the upkeep of existing assets over the development of new ones. By enhancing the maintenance of current assets, the approach seeks to mitigate damage during events and ensure long-term asset reliability.
- Prioritisation and Planning: Asset inspections play a crucial role in identifying defects and determining the condition of assets. This information will enable Operational Teams to plan and prioritise maintenance tasks based on the asset's condition a, risk and criticality
- Horizons' categorisation of Opex and Capex expenditure by work type is shown in Table 14New Assets are funded through the schemes Capex budget, the Opex budget is used in situations where there is no Capex funding available.

Table 14: Description of expenditure types used for Operations works.

Works	Description	Expenditure Type
Maintenance	The ongoing day-to-day maintenance work required to keep assets operating at required service levels.	Operating expenditure
Repair	Repairing an asset once a failure occurs.	Operating expenditure
Renewals	Significant work that restores or replaces an existing asset towards its "as-new" condition, original size, condition, or capacity (service level).	Capital expenditure
New development	A new asset works to create a new asset, or to upgrade or improve an existing asset beyond its original capacity or performance, in response to changes in usage, customer expectations, technology or anticipated future needs.	Capital expenditure

Some infrastructural assets are considered to have an infinite life for financial depreciation purposes and due to the type of asset as well as material it is constructed of. Timely and effective scheduled planned maintenance routines allow these assets to achieve their required extended useful life. Horizons' categorisation of maintenance, repairs, and Capex investment by Asset Group is shown in Table 15.

Table 15: Maintenance, Repairs and Capex Policy by Asset Group.

Asset group	Maintenance	Repairs	Capex
Amenity	Maintain in perpetuity.	Repair structural deterioration.	Replace if structural failure; upgrade if necessary.
River Channel	Maintain to ensure river capacity and keep the ideal shape, including vegetation management, siltation removal, etc.	Repair eroded bank, clear major debris, re-align the channel.	N/A
Dam	Maintain earth embankments in perpetuity, clear vegetation accumulation, inlet/culvert blockage and debris in spillway. Conduct Intermediate Dam Safety Reviews (IDSRs) &Comprehensive Dam Safety Reviews (CDSRs).	Repair leaks, fix structural cracks, silted inlets and spillway scour.	Renew culverts and concrete spillways if necessary.
Drain	Maintain in perpetuity. Localised blockage to clear, chemical treatment to control weed growth marginally affecting performance, minor impediment to flow.	Significantly ineffective drainage and major slumping, loss of gradient, structural damage, culvert collapse or obstruction.	Enlargement or relocation when required for increased LoS.
Flood barrier maintenance	Regular inspections. Portable Flood Barrier's annual installation exercise, quasi-test of capacity and capability.	Repair damaged sections, fix any leaks or malfunctions.	Replace if structural failure; Flood walls upgrade if necessary.
Floodgate	CCTV monitoring, clear debris and blockages, maintain exposed components, e.g. flap gates and screens.	Repair damaged hinge arms, winch components, significant gate leakage, access safety concerns, conduit seepage evident, structural deterioration	Upgrade to higher capacity gates; Replace outdated or worn components; implement automated systems.
Pump station	Maintain to ensure design service capacity. Check electrical and mechanical systems, vibration monitoring. Maintain surrounding areas.	Address electrical problems, repair component failure, noisy running, building leaks, pump seized, and structural defects.	Upgrade pumps and systems. Renew components as required.
River edge protection	Maintain in perpetuity. Rock: Minor vegetation/debris presence. Planting: Layering or infill planting required.	Repair exposed bank/major damage, rock loss, slumping, protruding steel or planting dead/destroyed.	Upgrade rock placement. Enhance planting for better stabilisation.
Stopbank	Maintain to design standard, in perpetuity. Maintain vegetation.	Repair when structural deficiencies are identified, animal burrows, no grass cover, tracking, terracing, slope slumping.	Reinforce or upgrade stopbank structure. Increase height or capacity.
Weir	Clean and maintain surrounding areas, clear debris, treat corrosion.	Repair apron scour, repair component damage, structural deterioration/failure.	Component replacement or extension required.

In preparing the annual Scheme maintenance work programmes consideration will be given to:

- Works identified as necessary in Table 15;
- Works that can be anticipated given a 'normal' season;

- Flexibility to meet unbudgeted damages;
- Scheme funding available; and
- Environmental effects.

A Y1 plan is in place to meet the maintenance targets and a GIS-based maintenance tracking system has been development to track progress; the Y1 plan and target achievement will be reviewed at the end of year in preparation for the development of Y2 plan. A detailed maintenance workflow and guidelines will be developed and included in the Asset Management Operational Manual.

4.3 Measuring Asset Condition

In September 2024, our condition rating methodology was reviewed to gain greater consistency and understanding between Teams. Currently, there is a transition underway between two condition rating systems. The following displays the most recent condition rating scale; the previous one in use is available within the previous Asset Management Plan 2021. Consequently, there is some misalignment between condition scores whilst we transition to the new scoring system.

Both high criticality and low criticality assets are inspected and given an asset condition rating. Condition ratings are shown in Table 16, where condition 1 and 2 reflect the maintenance status of the assets, and conditions 3 through 5 identify defects that trigger repair or replacement actions.

Table 16: Asset condition descriptions (in use from September 2024).

Condition Rating	Classification	Description	Action
1	Fully Effective	Operating at agreed level of service	No Action Required.
2	Functional	Maintenance program	Requires maintenance to maintain agreed level of service.
3	Minor damage	Minor damage	Requires minor repairs to return to agreed level of service.
4	Major damage	Damage reduces agreed level of service	Requires major repair to return to agreed level of service.
5	Significant loss	Damage reduces agreed level of service significantly	Requires replacement or new capital work to return to agreed level of service.

With thorough planning and implementation of maintenance, infrastructural assets can be kept in good condition. Once maintenance, repair or renewal tasks are completed, the asset condition will be updated to reflect the completion of the action.

4.4 Defects and quantifying risk

Assets can fail when the LoS they provide is exceeded, such as during an AEP event. Failure may start with relatively minor issues, such as the loss of erosion protection to a stopbank. This can leave the stopbank vulnerable to further erosion, potentially leading to a catastrophic breach. Infrastructure risk management involves identifying risks that may impact the continued delivery of services.

Asset condition inspections identify defects in the as-built assets, this is a visual inspection and there is a piece for future improvements in how we do this more thoroughly using additional tools such as drones and CCTV and spectral camera inspections. After the visual inspection, a risk assessment is undertaken to prioritise repairs by the Engineering team, which assesses the risk of that defect, evaluating likelihood, and consequences using a matrix.

During risk assessments, each defect is assigned a likelihood or condition score on a scale of 1 to 5. The Consequence Rating measures the potential impact of asset failure, factoring in different consequences. This allows for weighing the consequence of impacts, such as loss of infrastructure or buildings, to reflect magnitude (Table 17).

Table 17: Risk prioritisation matrix for defects.

Title	**Defect Prioritisation Matrix**
Source	Guided by River Managers Forum, 2015. *Flood Protection Assets Performance Assessment Code of Practice*. The consequence of failure is usually structured in such a way as to consider the full range of impact that a failure may have, including specific items for floodbank failures such as: - Value of the land being protected - Land use - Loss of production on inundated land - Lost wages of employees unable to attend work - Damage to the flood protection assets - Damage to other critical infrastructure (e.g. transport, telecommunications, power) AND https://www.horizons.govt.nz/HRC/media/Media/Grant-and-Sponsorship/20230130-Environmental-Grant-Eligibility-for-River-works.pdf
Date	27/02/2023 revised 10/09/2024
Revision	Operational as at 17/09/2024

Risk = likelihood x consequence			Likelihood of **defect** impairing asset performance, inferred using asset condition score				
			Excellent	Good	Average	Poor	Very Poor
Consequence of a flood occurring before **defect** is repaired	Paddock scale or single property, no buildings.	**1**			Low	Low	Low
	Multiple properties, no buildings.	**2**			Low	Medium	Medium
	Infrastructure, or up to 9 buildings impacted.	**3**			Medium	High	High
	Between 10 and 49 buildings impacted.	**4**			Medium	High	Very High
	Greater than 50 buildings impacted.	**5**			High	Very High	Very High

Note: assets will each have an intrinsic strength and capacity towards delivering the Level of Service of the Scheme. However, for the purpose of this we are not assessing the asset, we are assessing the indicative consequence of the defect which is impairing the asset. Where there are multiple defects impairing the asset, consider the compounding effect of those defects. For the purposes of considering consequence, flood plain modelling and banks-down scenarios may be used where available. Over time, this approach for assessing consequence can improved to use a modelled Flood Vulnerability assessment.

Whether the assets within the Scheme are designed for and performing to meet LoS, given current and future Climate Scenarios, is also a key consideration when assessing risk. Detailed risk assessments will be undertaken by the Investigations and Design team. For example, the Lower Manawatū Scheme (LMS) Risk Assessment project (Report number: 2024/EXT/1894) was conducted using the River Manager Forum Assessment Tool. The LMS was divided into 73 distinct reaches, with high-risk areas identified as likely to experience failure in the event of a design-level flood.

Over time, using criteria such as asset criticality, condition rating, available research (such as the Flood Vulnerability report), and location sensitivity, a comprehensive understanding of risk will be developed. This

understanding will provide a clearer framework for prioritising repair works and ensuring effective risk management within the Schemes.

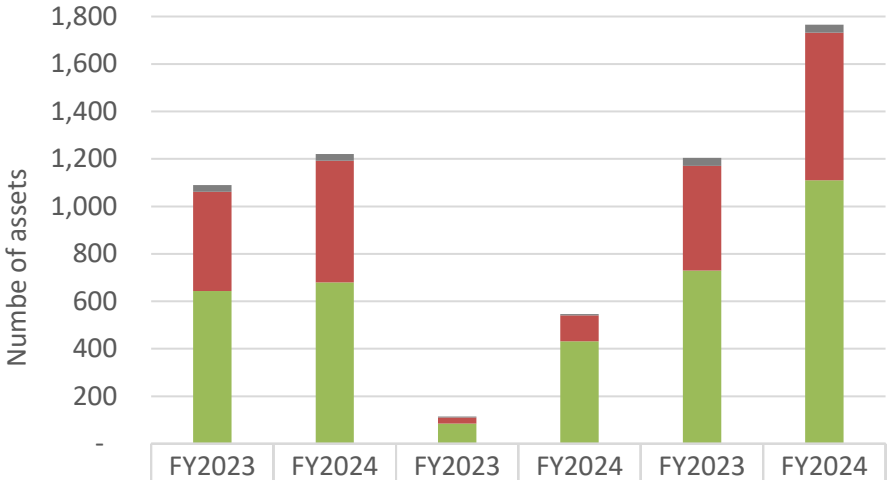
Section 5: Monitoring performance

Monitoring activities are essential to demonstrate that the River Management Group is achieving its performance targets (section 4) in providing the agreed LoS and ensuring ongoing maintenance of assets. Regular asset condition inspections and reporting are key components of this monitoring.

5.1 Asset Condition Inspection progress

Assets are grouped into high and low criticality classifications (details in section 3.6). The inspection targets focus on the high criticality assets being inspected annually and the low criticality assets five-yearly. The progress towards the asset condition inspection targets is regularly monitored throughout the financial year. The results of the previous years are recorded here.

During FY 2023-2024, there were 3,837 assets recorded in the inspection list; of these, 1,766 assets were inspected, up from 1,205 in FY2022-2023. One hundred percent of high-criticality assets (1,221) and 21% (546) low-criticality assets were inspected, meeting the LTP targets for asset inspection in that year. Figure 5 shows the total number of assets inspected by year and asset condition, and table 18 shows the number inspected by criticality and Scheme.



	High Criticality		Low Criticality		Total	
	FY2023	FY2024	FY2023	FY2024	FY2023	FY2024
Inspected Other	29	29	5	5	34	34
Inspected Average/Poor/Very Poor	417	512	25	110	442	622
Inspected Excellent/Good	644	680	85	431	729	1,110
Total number inspected	1,090	1,221	115	546	1,205	1,766
Total assets	1,219	1,221	2,530	2,616	3,749	3,837

Figure 5: Number of asset condition inspections completed in FY2022-2023 and FY2023-2024, and condition.

Table 18: Asset condition inspections completed (June 2024), by Scheme.

Scheme	Criticality	Inspected	Inspected %	Not Inspected	Not Inspected %	Total
Ashhurst Stream	High	22	100%	0	0%	22
	Low	0	0%	3	100%	3
Forest Road	High	1	100%	0	0%	1
	Low	1	25%	3	75%	4
Foxton East Drainage	High	1	100%	0	0%	1
	Low	6	55%	5	45%	11
Haunui Drainage	High	0	100%	0	0%	0
	Low	4	100%	0	0%	4
Himatangi Drainage	High	4	100%	0	0%	4
	Low	16	67%	8	33%	24
Hōkio Drainage	High	5	100%	0	0%	5
	Low	1	3%	37	97%	38
Koputaroa Drainage	High	66	100%	0	0%	66
	Low	10	20%	41	80%	51
Lower Kiwitea	High	2	100%	0	0%	2
	Low	4	3%	119	97%	123
Lower Manawatū	High	382	100%	0	0%	382
	Low	108	23%	366	77%	474
Lower Whanganui	High	43	100%	0	0%	43
	Low	12	27%	33	73%	45
Makerua Drainage	High	88	100%	0	0%	88
	Low	80	96%	3	4%	83
Makirikiri	High	22	100%	0	0%	22
	Low	0	0%	1	100%	1
Manawatū Drainage	High	115	100%	0	0%	115
	Low	65	34%	128	66%	193
Mangatainoka	High	24	100%	0	0%	24
	Low	19	5%	342	95%	361
Matarawa	High	42	100%	0	0%	42
	Low	4	44%	5	56%	9
Moutoa Drainage	High	29	100%	0	0%	29
	Low	17	32%	36	68%	53
Ōhau-Manakau	High	35	100%	0	0%	35
	Low	31	14%	186	86%	217
Pakihi	High	6	100%	0	0%	6
	Low	0	0%	0	100%	0
Pohangina-Ōroua	High	0	100%	0	0%	0
	Low	0	0%	203	100%	203
Porewa	High	81	100%	0	0%	81
	Low	0	0%	0	100%	0
Rangitīkei	High	43	100%	0	0%	43
	Low	53	33%	110	67%	163
South East Ruahine	High	40	100%	0	0%	40
	Low	46	19%	190	81%	236
Tawataia-Mangaone	High	3	100%	0	0%	3
	Low	0	0%	12	100%	12
Te Kawau Drainage	High	81	100%	0	0%	81
	Low	44	36%	79	64%	123
Tutaenui	High	57	100%	0	0%	57
	Low	1	17%	5	83%	6
Upper Manawatū Lower Mangahao	High	3	100%	0	0%	3
	Low	12	9%	121	91%	133
Upper Whanganui	High	15	100%	0	0%	15
	Low	1	3%	28	97%	29
Whirokino Drainage	High	11	100%	0	0%	11
	Low	10	59%	7	41%	17
Regional (All Schemes)	**High**	**1,221**	**100%**	**0**	**0%**	**1,221**

Scheme	Criticality	Inspected	Inspected %	Not Inspected	Not Inspected %	Total
	Low	**545**	**21%**	**2,071**	**79%**	**2,616**
	Total	**1,766**	**46%**	**2,071**	**55%**	**3,837**

5.2 Condition status

From the most recent inspection tasks (including the tasks since 2018) of the 3,837 assets, 97% have a valid condition rating score between 1 and 5. Of these, 78% are in good condition (scores 1 and 2), while 19% have defects (scores 3 to 5) (Figure 6).

From the condition status of asset types, most assets across all types are in 'Good' to 'Excellent' condition, with a smaller percentage rated as 'Poor' or 'Very Poor'. A regional map of asset condition is shown in Map 3. Stopbanks, River Edge Protection, and Floodgates show a somewhat higher number of defective assets compared to other asset types (Table 19). The defects will be followed up with further investigation and an action plan developed by the Engineering Teams (section 4.3). There are 73 assets which have not been inspected. A focus is on identifying them and prioritizing those within the current FY.

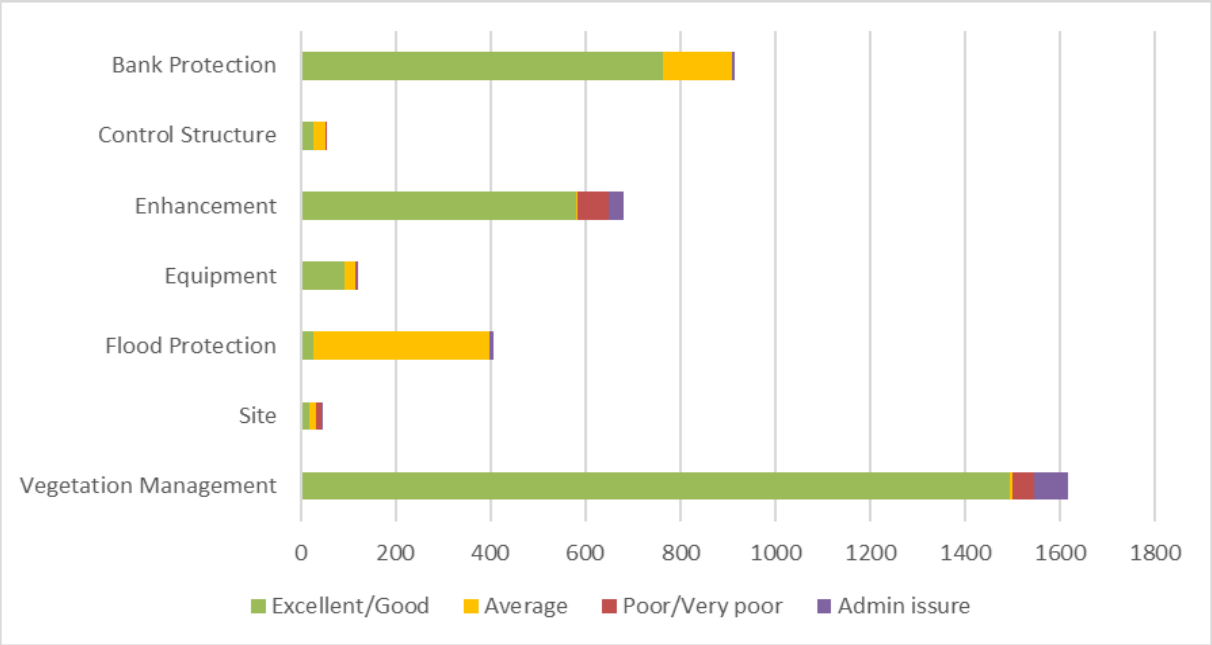


Figure 6: Condition status of asset type as at 30th June 2024

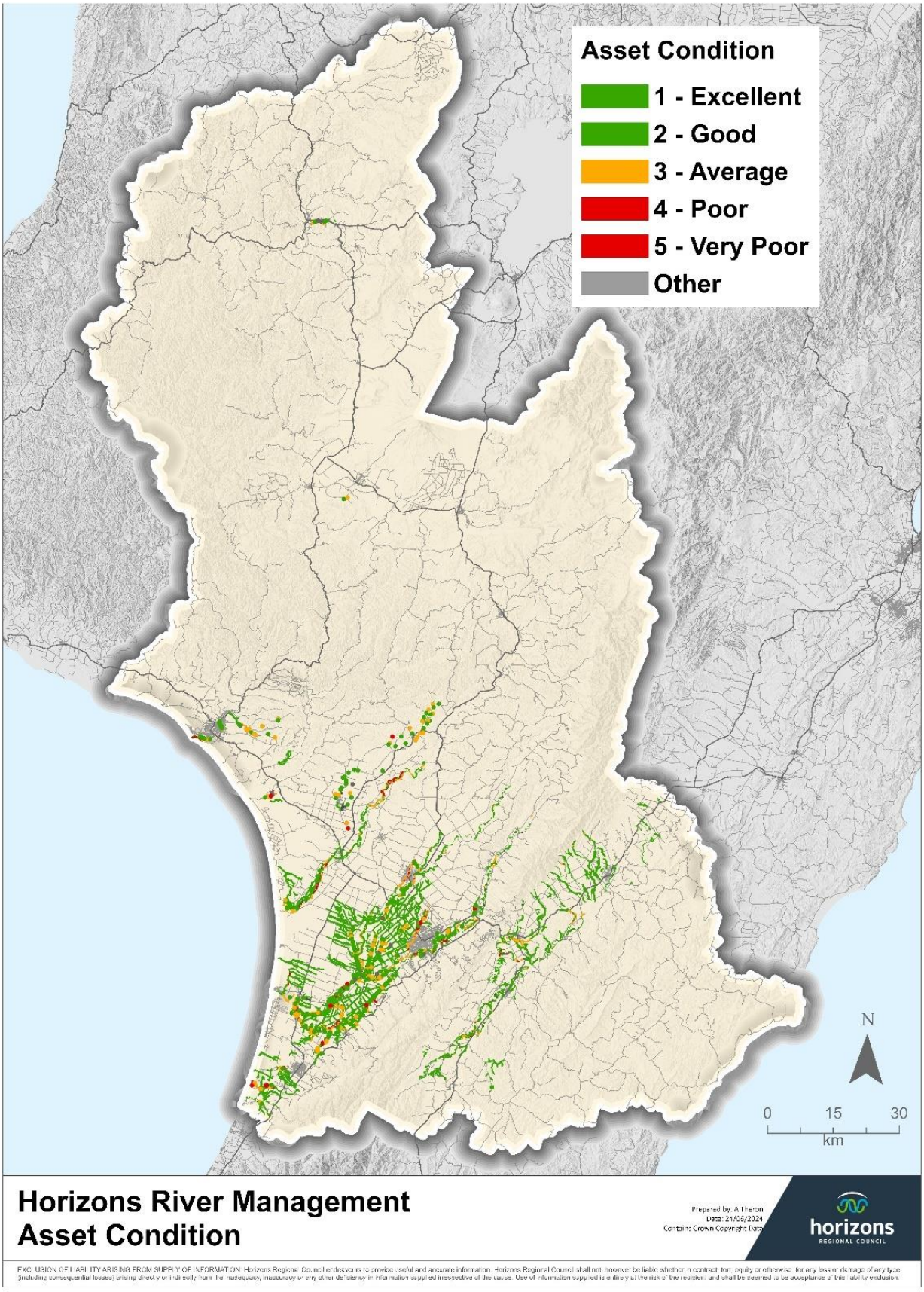
Table 19: Asset types current condition as at 30th June 2024.[1]

Asset Type	Asset sub-type	1 – Excellent	2 – Good	3 - Average	4 – Poor	5 - Very Poor	6 - Cannot Assess	(blank)	Total
Bank Protection	Erosion Protection Reserve		20	5	1				26
	Gabions		3						3
	Groyne	1	8	6		1		5	21
	Lining Engineered	5	68	26	2		1	6	108
	Lining Non-Engineered	14	102	15	6		1	10	148
	Lining Tiered			1					1
	Permeable Groyne Driven	61	51	3	2	2	4	12	135

Asset Type	Asset sub-type	1 – Excellent	2 – Good	3 - Average	4 – Poor	5 - Very Poor	6 - Cannot Assess	(blank)	Total
	Permeable Mesh Unit	31	82	7	1		1	4	126
	Planting	309	99	5				3	416
	Retaining Wall		2	2	1	1			6
	Retaining Walls MassBloc		2	2					4
	Rip Rap	91	140	28	12	1	3	1	276
	Stock Gate		7	1			1		9
	Tied Tree Work Anchored	153	245	43	12	1	5	14	473
	Tied Tree Work Layered				1				1
Control Structure	Bed Armouring	1		1					2
	Drop		2	2					4
	Grade		6	9	4		1		20
	Weir		10	12	6	2			30
Enhancement	Amenity		6	3				3	12
	Fence		3						3
	Forestry	1	15						16
	Handrail		1						1
	Knee-breakers			1					1
	Ramp							3	3
	Self Help Depot							1	1
	Walkway							1	1
Equipment	Control Auto Transformer		18	1					19
	Control Sensor		1						1
	Control Soft Starter		1						1
	Control VSD		1						1
	Mechanical Pump		41	5					46
	Screen / Filter Screen			1					1
	Structure Outlet Grill		29	16	2		1		48
	Supply Generator		1						1
Flood Protection	Detention Embankment		44	9			1		54
	Detention Inlet		4	1					5
	Detention Outlet		2	3					5
	Flood Walls		47	14	1		1	1	64
	Floodgate		13	5	2				20
	Floodgate Structure Culvert	2	286	157	17	7	22	5	496
	Floodgate Structure Other		8	2	1				11
	Flow Diversion Structure		5	1	4				10
	Guidebank		3	10			2		15

Asset Type	Asset sub-type	1 – Excellent	2 – Good	3 - Average	4 – Poor	5 - Very Poor	6 - Cannot Assess	(blank)	Total
	Portable Flood Barrier		8						8
	Property Mitigation Bund		13	2					15
	Spillway	2	48	10	2				62
	Stopbank		91	158	28	3	1		281
	Toe Drain		4	1					5
Site	Land Use Drainage Pump Station		11	11	2				24
	Pump station Land/Access		17	3					20
Vegetation Management	Drainage Channel	368	396	7	1		1	4	777
Grand Total		**1,039**	**1,964**	**589**	**108**	**18**	**46**	**73**	**3,837**

[1]Note that these assets were assessed using the previous asset condition scale.



Map 3: Map of Asset Condition as at 30 June 2024.

5.3 Operations and Maintenance

5.3.1 Maintenance Based Programme

Progress reports of maintenance work are to be submitted to Council through the Integrated Catchment Committee reports. Maintenance activity plans are also submitted to the Scheme Liaison Committee annually and are made available on the Horizons' website. The quantity of maintenance planned and the targets for Yr1 are shown in Table 20.

Table 20: Quantity of assets by Scheme, Year 1 planned maintenance and against Y1 Maintenance Target.

	Scheme		Drain (km)	Floodgate (No.)	Stopbank (km)	River edge protection (km)	Channel (km)	Amenity (No.)	Weir (No.)***	Pump station (No.)***	Flood barrier (No.)***	Dam (No.)***
1	Ashhurst Stream	Quantity of assets	6	13	3	0	6	0	9	0	5	0
		Target	0.0	3.0	0.4	0.0	0.1	0.0	NA	NA	NA	NA
		Year 1 planned	0.0	13.0	0.0	0.0	5.4	0.0	0.0	0.0	0.0	0.0
2	Forest Road	Quantity of assets	15	0	0	0	0	0	1	0	0	0
		Target	16.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
		Year 1 planned	29.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Foxton East Drainage	Quantity of assets	9	3	0	0	0	0	0	0	0	0
		Target	14.0	0.2	0.1	0.0	0.0	0.0	NA	NA	NA	NA
		Year 1 planned	17.6	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	Haunui Drainage	Quantity of assets	9	0	0	0	0	0	0	0	0	0
		Target	18.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
		Year 1 planned	19.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Himatangi Drainage	Quantity of assets	52	0	1	0	0	0	3	0	0	0
		Target	35.0	0.0	0.1	0.0	0.0	0.0	NA	NA	NA	NA
		Year 1 planned	92.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Hōkio Drainage	Quantity of assets	46	6	0	0	0	0	1	0	0	0
		Target	52.0	0.8	0.0	0.0	0.1	0.0	NA	NA	NA	NA
		Year 1 planned	24.7	4.0	0.0	0.0	7.4	0.0	0.0	0.0	0.0	0.0

	Scheme		Drain (km)	Floodgate (No.)	Stopbank (km)	River edge protection (km)	Channel (km)	Amenity (No.)	Weir (No.)***	Pump station (No.)***	Flood barrier (No.)***	Dam (No.)***
7	Kahuterawa	Quantity of assets	0	0	0	0	6	0	0	0	0	0
		Target	0.0	0.0	0.0	0.0	0.2	0.0	NA	NA	NA	NA
		Year 1 planned	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
8	Koputaroa Drainage	Quantity of assets	55	54	17	0	0	0	0	19	0	0
		Target	102.0	10.8	2.2	0.0	0.0	0.0	NA	NA	NA	NA
		Year 1 planned	104.7	33.0	12.0	0.0	0.0	0.0	0.0	46.0	0.0	0.0
9	Lower Kiwitea	Quantity of assets	0	0	1	19	16	0	0	0	0	0
		Target	0.0	0.0	0.1	4.1	0.8	0.0	NA	NA	NA	NA
		Year 1 planned	0.0	0.0	0.6	8.5	22.5	0.0	0.0	0.0	0.0	0.0
10	Lower Manawatū	Quantity of assets	32	276	323	110	167	15	4	4	35	0
		Target	64.0	50.8	62.6	31.7	8.3	1.0	NA	NA	NA	NA
		Year 1 planned	25.8	131.0	340.9	59.6	129.5	0.0	0.0	2.0	0.0	0.0
11	Lower Whanganui	Quantity of assets	0	35	4	1	18	9	0	0	0	0
		Target	0.0	3.2	0.6	0.4	0.9	0.0	NA	NA	NA	NA
		Year 1 planned	0.0	408.0	24.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0
12	Makerua Drainage	Quantity of assets	107	74	19	0	0	0	0	47	0	0
		Target	180.0	7.4	2.6	0.0	0.0	0.0	NA	NA	NA	NA
		Year 1 planned	249.6	9.0	28.6	0.0	0.0	0.0	0.0	232.0	0.0	0.0

	Scheme		Drain (km)	Floodgate (No.)	Stopbank (km)	River edge protection (km)	Channel (km)	Amenity (No.)	Weir (No.)***	Pump station (No.)***	Flood barrier (No.)***	Dam (No.)***
13	Makirikiri	Quantity of assets	0	15	6	0	3	0	0	0	0	4
		Target	0.0	3.0	0.8	0.0	0.0	0.0	NA	NA	NA	NA
		Year 1 planned	1.9	14.0	0.8	0.0	11.9	0.0	0.0	0.0	0.0	4.0
14	Manawatū Drainage	Quantity of assets	281	107	34	0	0	0	0	11	0	0
		Target	388.0	21.0	4.5	0.0	0.0	0.0	NA	NA	NA	NA
		Year 1 planned	588.6	42.0	47.5	0.0	0.0	0.0	0.0	18.0	0.0	0.0
15	Mangatainoka	Quantity of assets	50	0	6	157	0	0	18	0	0	0
		Target	99.0	0.0	0.8	46.6	0.7	0.0	0.0	NA	NA	NA
		Year 1 planned	96.5	0.0	0.0	4.0	87.3	0.0	1.0	0.0	0.0	0.0
16	Matarawa	Quantity of assets	7	16	4	0	0	2	0	0	0	21
		Target	14.0	3.2	0.6	0.0	0.0	0.0	NA	NA	NA	NA
		Year 1 planned	15.8	64.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.7
17	Moutoa Drainage	Quantity of assets	67	31	0	0	0	0	0	25	0	0
		Target	127.0	6.2	0.0	0.0	0.0	0.0	NA	NA	NA	NA
		Year 1 planned	155.2	2.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0
18	Ohakune	Quantity of assets	0	0	0	0	12	0	0	0	0	0
		Target	0.0	0.0	0.0	0.0	0.6	0.0	NA	NA	NA	NA
		Year 1 planned	0.0	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0

	Scheme		Drain (km)	Floodgate (No.)	Stopbank (km)	River edge protection (km)	Channel (km)	Amenity (No.)	Weir (No.)***	Pump station (No.)***	Flood barrier (No.)***	Dam (No.)***
19	Ōhau-Manakau	Quantity of assets	47	27	13	17	37	0	0	0	0	0
		Target	66.0	5.4	1.7	3.8	1.1	0.0	NA	NA	NA	NA
		Year 1 planned	102.6	24.0	0.0	8.7	9.5	0.0	0.0	0.0	0.0	0.0
20	Pakihi	Quantity of assets	0	0	0	0	0	0	0	0	0	6
		Target	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA
		Year 1 planned	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
21	Pohangina-Ōroua	Quantity of assets	7	0	0	70	68	0	0	0	0	0
		Target	13.0	0.0	0.0	19.6	2.2	0.0	NA	NA	NA	NA
		Year 1 planned	7.5	0.0	0.0	15.8	120.7	0.0	0.0	0.0	0.0	0.0
22	Porewa	Quantity of assets	0	0	0	0	0	0	0	0	0	81
		Target	0.0	0.0	0.0	0.0	27.0	0.0	NA	NA	NA	NA
		Year 1 planned	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	188.0
23	Rangitīkei	Quantity of assets	20	21	22	43	64	4	0	0	6	0
		Target	44.0	4.2	2.0	9.8	2.0	1.0	NA	NA	NA	NA
		Year 1 planned	40.6	252.0	20.6	23.6	45.7	0.0	0.0	0.0	0.0	0.0
24	Ruapehu	Quantity of assets	0	0	0	0	13	0	0	0	0	0
		Target	0.0	0.0	0.0	0.0	0.7	0.0	NA	NA	NA	NA
		Year 1 planned	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0

	Scheme		Drain (km)	Floodgate (No.)	Stopbank (km)	River edge protection (km)	Channel (km)	Amenity (No.)	Weir (No.)***	Pump station (No.)***	Flood barrier (No.)***	Dam (No.)***
25	South East Ruahine	Quantity of assets	93	1	16	66	199	22	26	0	0	0
		Target	187.0	0.0	0.0	6.7	2.4	0.0	NA	NA	NA	NA
		Year 1 planned	143.3	0.0	0.0	4.9	19.9	0.0	0.0	0.0	0.0	0.0
26	Tararua	Quantity of assets	0	0	0	0	60	0	0	0	0	0
		Target	0.0	0.0	0.0	0.0	3.0	0.0	NA	NA	NA	NA
		Year 1 planned	0.0	0.0	0.0	1.7	10.6	0.0	0.0	0.0	0.0	0.0
27	Tawataia-Mangaone	Quantity of assets	15	0	0	0	21	0	0	0	0	3
		Target	8.0	0.0	0.0	0.0	0.2	0.0	NA	NA	NA	NA
		Year 1 planned	14.9	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	2.0
28	Te Kawau Drainage	Quantity of assets	183	53	33	0	0	0	0	8	0	0
		Target	208.0	10.2	4.4	0.0	0.0	0.0	NA	NA	NA	NA
		Year 1 planned	397.8	14.0	1.9	0.0	0.0	0.0	0.0	40.0	0.0	0.0
29	Turakina	Quantity of assets	0	0	0	0	8	0	0	0	0	0
		Target	0.0	0.0	0.0	0.0	0.4	0.0	NA	NA	NA	NA
		Year 1 planned	0.0	0.0	0.0	0.0	26.0	0.0	0.0	0.0	0.0	0.0
30	Tutaenui	Quantity of assets	12	0	0	0	27	0	0	0	0	56
		Target	2.0	0.0	0.1	0.0	0.3	0.0	0.0	NA	NA	18.0
		Year 1 planned	22.0	0.0	0.0	0.0	3.2	0.0	2.0	0.0	0.0	120.0

	Scheme		Drain (km)	Floodgate (No.)	Stopbank (km)	River edge protection (km)	Channel (km)	Amenity (No.)	Weir (No.)***	Pump station (No.)***	Flood barrier (No.)***	Dam (No.)***
31	Upper Manawatū Lower Mangahao	Quantity of assets	19	0	2	119	53	0	0	0	0	0
		Target	11.0	0.0	0.2	23.6	0.5	0.0	NA	NA	NA	NA
		Year 1 planned	36.3	0.0	0.0	3.4	1.7	0.0	0.0	0.0	0.0	0.0
32	Upper Whanganui	Quantity of assets	1	16	4	3	11	0	0	0	0	0
		Target	1.2	3.0	0.5	1.0	4.0	0.0	NA	NA	NA	NA
		Year 1 planned	0.0	168.0	10.2	3.3	2.4	0.0	0.0	0.0	0.0	0.0
33	Whangaehu-Mangawhero	Quantity of assets	0	0	0	0	7	0	0	0	0	0
		Target	0.0	0.0	0.0	0.0	0.4	0.0	NA	NA	NA	NA
		Year 1 planned	0.0	0.0	0.0	0.0	14.6	0.0	0.0	0.0	0.0	0.0
34	Whirokino Drainage	Quantity of assets	11	7	2	0	0	0	0	3	0	0
		Target	22.0	1.2	0.3	0.0	0.0	0.0	NA	1.0	NA	NA
		Year 1 planned	21.5	4.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0

5.3.2 Repairs programme

Repair work has historically been managed reactively based on asset condition inspections or public reports. Defects are identified through these inspections, specifically for assets with condition scores of 3, 4, and 5. Defect reports were sent to Area Engineers from AMIS every two weeks, and repairs were assessed and carried out as needed. However, only a few repair activities have been recorded in the system, and defect information has not been updated accordingly, resulting in a large number of open defects. A plan to address this is being developed using the risk scores from the assessment in Table 17 to create a risk register (Table 21) to guide the prioritisation of defect repairs (see details in Section 4.3). After repairs are completed, the asset's condition rating will be updated to reflect this, ensuring that it accurately reflects the current status of the asset.

Table 21: Existing defects in critical assets (Jun 2024), proposed risk register (shaded in blue).

Scheme	Number of high Critical assets	Number of critical assets with Defects (condition 3-5)	% of high critical assets with defects	Number of assets	Number of assets with Defects (condition 3-5)	% of assets with defects	Number of defects			
							Risk Low	Risk Medium	Risk High	Risk Very High
Ashhurst Stream	22	8	36%	25	8	32%				
Forest Road	1	1	100%	5	1	20%				
Foxton East Drainage	1	1	100%	12	1	8%				
Haunui Drainage	0	0	0%	4	0	0%				
Himatangi Drainage	4	4	100%	28	4	14%				
Hōkio Drainage	5	3	60%	43	4	9%				
Koputaroa Drainage	66	36	55%	117	36	31%				
Lower Kiwitea	2	1	50%	125	5	4%				
Lower Manawatū	382	159	42%	856	243	28%				
Lower Whanganui	43	12	28%	88	18	20%				
Makerua Drainage	88	31	35%	171	31	18%				
Makirikiri	22	14	64%	23	14	61%				
Manawatū Drainage	115	58	50%	308	58	19%				
Mangatainoka	24	19	79%	385	35	9%				
Matarawa	42	21	50%	51	23	45%				
Moutoa Drainage	29	7	24%	82	8	10%				
Ōhau-Manakau	35	23	66%	252	31	12%				
Pakihi	6	1	17%	6	1	17%				
Pohangina-Oroua	0	0	0%	203	11	5%				
Porewa	81	29	36%	81	29	36%				
Rangitīkei	43	11	26%	206	49	24%				
South East Ruahine	40	21	53%	276	39	14%				

Scheme	Number of high Critical assets	Number of critical assets with Defects (condition 3-5)	% of high critical assets with defects	Number of assets	Number of assets with Defects (condition 3-5)	% of assets with defects	Number of defects			
							Risk Low	Risk Medium	Risk High	Risk Very High
Tawataia-Mangaone	3	0	0%	15	0	0%				
Te Kawau Drainage	81	34	42%	204	35	17%				
Tutaenui	57	8	14%	63	8	13%				
Upper Manawatū Lower Mangahao	3	1	33%	136	9	7%				
Upper Whanganui	15	6	40%	44	10	23%				
Whirokino Drainage	11	4	36%	28	4	14%				
Grand Total	1221	513	42%	3837	715	19%				

At the end of each financial year, a report will be generated detailing unaddressed defects, including their associated risk and estimated cost for each Scheme; providing essential information to guide future budgeting and resource allocation.

5.3.3 Renewal programme

Summary of future renewal costs

Forecast renewal costs are projected to increase over time, with inflation, changes in LoS, or if the asset register increases; this is an area which needs further development as identified in the Infrastructure Strategy.

Future development

Forecasted renewals budgets are not sufficient to cover the lifecycle costs of the River Management Infrastructure assets and most Schemes do not contain a renewal budget. This is due to historic practices and budget constraints. In year 1 of the LTP, budget has been put in place for condition assessments of critical network assets and the implementation of a maintenance based programme, from this, an informed renewals programme will be put in place and asset lifecycle dates will also be reassessed to reflect a more realistic useful life of assets. A renewal programme is currently in the development phase in our AMIS and will enable us to plan, budget and allocate costs more accurately than is done currently.

5.3.4 How we treat management costs

Scheme management costs are currently bundled together. This includes the costs of running the Schemes, which are not works-cost (repairs, maintenance and capex) such as staff, asset management, hydrology, rates expenses, depreciation, and insurance. An extra administration charge for the contribution from the Schemes to Corporate overheads is applied as an additional budget line item.

Section 6: Funding

Horizons' funding policy for river and drainage works is set out in the Funding and Financial Policies section of Council's Long-term Plan. In summary, Funding comes from Rates, Loans, other capital works funding (incl. Govt) and Other Revenue.

6.1 Loans and Reserves

Approximately half of the Rivers Management Schemes utilise loans to fund repairs and maintenance activity. As at June 2024, these loans totalled $42.812 million across the 18 river Schemes (Table 22).

The River and Drainage Schemes have two main types of reserves – the emergency reserves and the renewal reserves (Table 22). Emergency 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. Renewal reserves are for the purpose of renewing assets.

Table 22: Scheme values (June 2024).

	Schemes	Asset value ($)	Loan value ($)	Scheme Emergency Reserve ($)	Scheme Renewal Reserve ($)
1	Ashhurst Stream	1,155,980	-	65,789	1,942
2	Forest Road	552,460	-	6,191	3,893
3	Foxton East Drainage	775,390	247,180	791,825	4,547
4	Haunui Drainage	349,962	-	16,825	-
5	Himatangi Drainage	482,904	-	5,019	3,104
6	Hōkio Drainage	637,482	328,967	77,907	3,399
7	Kahuterawa	NA	-	7,582	-
8	Koputaroa Drainage	19,587,962	532,902	229,081	154,108
9	Lower Kiwitea	6,385,984	33,268	404,704	-
10	Lower Manawatū	693,930,357	31,901,681	3,905,479	17,780
11	Lower Whanganui	13,346,086	5,450,962	1,109,319	-6,810
12	Makerua Drainage	18,735,810	117,942	192,253	157,486
13	Makirikiri	4,321,092	-	34,223	45,060
14	Manawatū Drainage	60,764,839	667,035	56,510	245,158
15	Mangatainoka	41,363,612	-	1,564,050	-22,922
16	Matarawa	5,948,612	50,990	87,183	30,844
17	Moutoa Drainage	9,775,055	107,856	132,863	6,413
18	Ohakune	NA	-	85,055	-
19	Ōhau-Manakau	26,353,835	239,980	521,348	179,527
20	Pakihi	2,451,304	-	14,020	1,276
21	Pohangina-Ōroua	12,850,674	470,238	174,235	-28,901
22	Porewa	10,583,431	-	21,581	27,792
23	Rangitīkei	131,479,998	3,730,135	1,029,156	-
24	Ruapehu	NA	-	100,763	-
25	South East Ruahine	67,127,746	498,970	508,177	59,146
26	Tararua	NA	-	44,415	-
27	Tawataia-Mangaone	675,518	-	27,555	8,614
28	Te Kawau Drainage	18,634,122	-	81,044	118,154
29	Turakina	NA	-	76,402	-
30	Tutaenui	5,083,508	126,060	20,422	6,630
31	Upper Manawatū Lower Mangahao	27,292,781	47,502	362,268	711

	Schemes	Asset value ($)	Loan value ($)	Scheme Emergency Reserve ($)	Scheme Renewal Reserve ($)
32	Upper Whanganui	15,946,489	5,763	314,390	-
33	Whangaehu-Mangawhero	NA	66,792	70,510	-
34	Whirokino Drainage	1,296,979	10,845	15,556	8,566
Total		**1,197,889,972**	**44,635,068**	**12,153,700**	**1,025,517**

6.2 Budget

As detailed in the Infrastructure Strategy, the combined operational expenditure (loan costs, depreciation costs, insurance costs and other costs) for all rivers management Schemes is projected to increase significantly over the 30 years, largely driven by forecast increases in insurance. Capital budgets are projected to peak in year 1 (FY2024-25) and reduce over the first 7 years to renewals only in year 8. Loans are projected to be fully paid off by year 28. Figure 8 below shows these cost projections over the next 30 years.

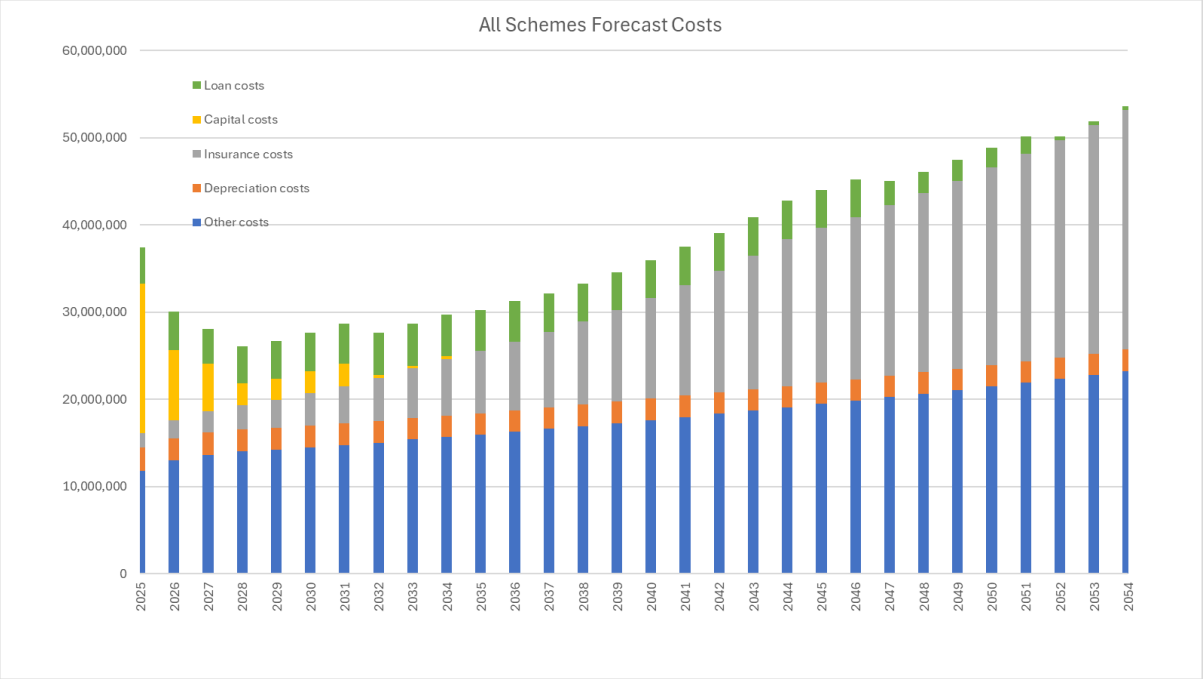


Figure 8: Planned expenditure ($) over the 30 years of the LTP.

Asset lifecycle management activities include costs for asset creation, maintenance, repair, renewal and disposal. These Operational & Capital activities are budgeted at $28.895M in FY2024-2025. Table 23 shows the balance between expenditure and income for FY 2024-2025.

Scheme budgets are funded by a mix of rates and cofounding (e.g. from Central Government, Territorial Authorities and landowners) and other income e.g. income from leases.

Table 23: Expenditure and income for FY2024-25.

Schemes	Funding			Expenditure					
	Rates	Other income	Total	Maintenance	Repair	Renewal	New Capital	Other costs*	Total
Ashhurst Stream	$26,572	$0	$26,572	$10,098	$6,810	$0	$0	$9,664	$26,572
Forest Road	$26,334	$0	$26,334	$6,250	$8,363	$0	$0	$11,721	$26,334
Foxton East Drainage	$50,839	$1,782,493	$1,833,332	$19,162	$6,307	$0	$1,756,967	$50,896	$1,833,332
Haunui Drainage	$24,030	$0	$24,030	$6,250	$8,363	$0	$0	$9,417	$24,030
Himatangi Drainage	$30,816	$0	$30,816	$15,577	$3,381	$0	$0	$11,858	$30,816
Hōkio Drainage	$99,706	$40,000	$139,706	$44,547	$23,635	$0	$0	$71,524	$139,706
Kahuterawa	$19,318	$0	$19,318	$7,688	$4,636	$0	$0	$6,994	$19,318
Koputaroa Drainage	$323,459	$260,200	$583,659	$158,130	$75,846	$34,835	$100,000	$214,848	$583,659
Lower Kiwitea	$162,030	$0	$162,030	$78,828	$34,655	$0	$0	$48,547	$162,030
Lower Manawatū	$6,760,525	$10,041,287	$16,801,812	$1,360,111	$830,389	$0	$8,725,679	$5,885,633	$16,801,812
Lower Whanganui	$910,051	$4,523,300	$5,433,351	$82,093	$48,974	$0	$4,522,163	$780,121	$5,433,351
Makerua Drainage	$780,793	$762,500	$1,543,293	$332,041	$143,013	$65,000	$787,500	$215,739	$1,543,293
Makirikiri	$35,568	$0	$35,568	$9,852	$8,696	$0	$0	$17,020	$35,568
Manawatū Drainage	$1,125,995	$0	$1,125,995	$509,233	$163,173	$85,306	$0	$368,283	$1,125,995
Mangatainoka	$633,174	$4,544	$637,718	$360,467	$0	$0	$0	$277,251	$637,718
Matarawa	$140,565	$0	$140,565	$5,000	$30,307	$0	$0	$105,258	$140,565
Moutoa Drainage	$469,555	$337,500	$807,055	$203,997	$77,576	$84,194		$441,288	$807,055
Ohakune	$77,014	$0	$77,014	$30,750	$23,400	$0	$0	$22,864	$77,014
Ōhau-Manakau	$492,150	$0	$492,150	$128,474	$96,950	$0	$0	$266,726	$492,150
Pakihi	$18,259	$0	$18,259	$1,400	$2,864	$0	$0	$13,995	$18,259
Pohangina-Ōroua	$538,529	$80,100	$618,629	$260,233	$91,408	$0	$0	$266,988	$618,629
Porewa	$126,488	$2,350	$128,838	$49,300	$19,911	$0	$0	$59,627	$128,838
Rangitīkei	$1,186,554	$779,505	$1,966,059	$222,501	$253,332	$0	$565,018	$925,208	$1,966,059

Schemes	Funding			Expenditure					
	Rates	**Other income**	**Total**	**Maintenance**	**Repair**	**Renewal**	**New Capital**	**Other costs***	**Total**
Ruapehu	$259,473	$120,000	$379,473	$303,312	$25,350	$0	$0	$50,811	$379,473
South East Ruahine	$656,571	$0	$656,571	$281,703	$0	$0	$0	$374,868	$656,571
Tararua	$365,155	$0	$365,155	$153,750	$117,000	$0	$0	$94,405	$365,155
Tawataia-Mangaone	$30,398	$0	$30,398	$19,494	$3,613			$7,291	$30,398
Te Kawau Drainage	$356,163	$0	$356,163	$134,603	$66,319	$27,700	$0	$127,541	$356,163
Turakina	$59,442	$0	$59,442	$20,500	$15,600	$0	$0	$23,342	$59,442
Tutaenui	$125,732	$0	$125,732	$32,987	$19,070	$0	$0	$73,675	$125,732
Upper Manawatū Lower Mangahao	$347,716	$0	$347,716	$194,402	$0	$0	$0	$153,314	$347,716
Upper Whanganui	$140,581	$19,758	$160,339	$33,175	$29,552			$97,612	$160,339
Whangaehu-Mangawhero	$120,563	$0	$120,563	$17,937	$13,650	$0	$0	$88,976	$120,563
Whirokino Drainage	$54,458	$0	$54,458	$22,110	$16,546	$0	$0	$15,802	$54,458
Total	**$16,574,576**	**$18,753,537**	**$35,328,113**	**$5,115,955**	**$2,268,689**	**$297,035**	**$16,457,326**	**$11,189,108**	**$35,328,113**

*includes operational – Loan servicing, Insurance, Standing charges, Personnel, Internal costs, Reserves.

6.3 Insurance

Insurance plays a crucial role in managing risks associated with river management assets. While flood events are a primary concern, other events, such as earthquakes, can also pose significant risks to these assets.

To effectively mitigate these risks, the River Management Assets are covered through a multi-faceted insurance strategy that includes:

1. Government Partnership: A 60:40 (Central Government : Horizons) insurance ratio with the New Zealand Government through the Civil Defence Emergency Management (CDEM) framework.
2. Policy Coverage: Insurance policies held by Horizons Regional Council through the Mutual Liability and Risk Management Scheme (MWLASS[2]).
3. Self-Insurance: A self-insurance approach to manage additional risks and gaps.

This comprehensive approach ensures robust coverage and effective risk management for river management assets.

Horizons Regional Council's insurance for river management assets is organised through two primary policies under the Mutual Liability and Risk Management Scheme (MWLASS):

- Material Damage Policy (MDBI): This policy covers above-ground and built assets, including pump stations, control building and electrics at Moutoa Sluicegates and Makino Diversion structure plus portable flood barriers.
- Infrastructure Policy: This policy provides coverage for below-ground assets.

The insurance is structured as part of a pooled arrangement with other councils, with a total maximum coverage of $300 million for all claims related to a single event. However, Horizons Regional Council's individual claim limit for any single event is capped at $100 million, and may be less than this if the overall damage exceeds $300 million for all claims per event. Additionally, there is a deductible of $3 million applicable before a claim can be made. This deductible reflects the risk management strategy aligned with a 1-in-50-year event scenario.

In 2015, at the valuation of $372M, the $100M insurance coverage sublimit represented 27% of the asset value. Over time, the value of the assets has grown substantially. The $100M sublimit represents approx. 8% of the current provisional asset value of $1,198M. A report by AON (Horizons insurance provider) called 'Horizons Regional Council: Earthquake Loss Analysis for Infrastructure Assets final report (November 2023)' noted that the post-disaster earthquake loss expectancy[3], given median shaking scenarios, for an event with a 500-year average recurrence interval (ARI) was $247.6M, and for a 1,000-year ARI was $327.2M. Adjusting for the subsequent change in value of the infrastructure assets (21% increase, provisional), the estimated post-disaster loss expectancy for a median shaking scenario becomes $299.6M (500-year ARI) and $395.9M (1,000-year ARI). Horizons identified through its Long-term Plan and Infrastructure Strategy the key issue of the financial implications of natural hazard events. Council consulted on the issue of insurance through the Long-term Plan and resolved to maintain the current amounts of cover for insurance.

[2] Manawatū Whanganui Local Area Shared Services

[3] Various limitations and disclaimers for the estimates were given; see the report in full for details. Post disaster loss expectancy was provided by the report in a range: a 500-year ARI shaking scenario ranged from optimistic post disaster loss expectancy of $144M to pessimistic $344.6M; 1,000-year ARI shaking scenario ranged from $231.2M to $425.9M.

Table 24 lists the asset types and their current insurance status, which applies to assets in the main flood protection Schemes but not assets in those classed as erosion control Schemes (Lower Kiwitea, Pohangina-Ōroua, South Eastern Ruahine, Upper Manawatū-Lower Mangahao) or minor drainage Schemes (Forest Road, Haunui, Himatangi, Hōkio). Table 25 shows latest asset valuations (as at 2023) and the number of assets insured.

Table 24: MWLASS Insurance setting.

Asset types	Asset sub types	Insured
Bank Protection	Erosion Protection Reserve	N
	Gabions	Infrastructure
	Groyne	Infrastructure
	Lining Engineered	Infrastructure
	Lining Non-Engineered	Infrastructure
	Lining Tiered	Infrastructure
	Permeable Groyne Driven	N
	Permeable Mesh Unit	Infrastructure
	Planting	N
	Retaining Wall	Infrastructure
	Retaining Walls MassBloc	Infrastructure
	Rip Rap	Infrastructure
	Stock Gate	N
	Tied Tree Work Anchored	N
	Tied Tree Work Layered	N
Control Structure	Bed Armouring	Infrastructure
	Drop	Infrastructure
	Grade	Infrastructure
	Weir	Infrastructure*
Enhancement	Amenity	N
	Handrail	N
	Knee-breakers	N
	Ramp	N
	Self Help Depot	N
	Walkway	N
Equipment	Control Auto Transformer	MDBI
	Control Sensor	MDBI
	Control Soft Starter	MDBI
	Control VSD	MDBI
	Mechanical Pump	MDBI
	Screen / Filter Screen	MDBI
	Structure Outlet Grill	Infrastructure
	Supply Generator	MDBI
Flood Protection	Detention Embankment	Infrastructure
	Detention Inlet	Infrastructure
	Detention Outlet	Infrastructure
	Flood Walls	Infrastructure

Asset types	Asset sub types	Insured
	Floodgate	Infrastructure
	Floodgate Structure Culvert	Infrastructure
	Floodgate Structure Other	Infrastructure
	Flow Diversion Structure	MDBI/Infrastructure
	Guidebank	Infrastructure
	Portable Flood Barrier	MDBI
	Property Mitigation Bund	Infrastructure
	Spillway	Infrastructure
	Stopbank	Infrastructure
	Toe Drain	Infrastructure
Site	Land Use Drainage Pump Station	MDBI
	Pump station Land/Access	N
Vegetation Management	Drainage Channel	N

Table 25: Horizons Asset Valuations and number of assets insured.

Scheme	Number of assets 2023	Number of assets 2024	Asset value 2023 ($)	Asset value 2024 ($)	Number of insured assets 2023	Number of insured assets 2024	Value of insured assets 2023 ($)	Value of insured assets 2024 ($)	% of assets insured 2023	% of assets insured 2024	% of asset value insured 2023	% of asset value insured 2024
Ashhurst Stream	24	25	593,431	1,155,980	21	22	449,437	1,006,342	88%	88%	0%	87%
Forest Road	5	5	531,496	552,460	0	0	-	-	0%	0%	0%	0%
Foxton East Drainage	12	14	122,034	775,390	3	4	76,999	772,784	25%	29%	63%	100%
Haunui Drainage	4	4	336,216	349,962	0	0	-	-	0%	0%	0%	0%
Himatangi Drainage	28	28	442,068	482,904	0	0	-	-	0%	0%	0%	0%
Hōkio Drainage	41	43	657,973	637,482	0	0	-	-	0%	0%	0%	0%
Koputaroa Drainage	126	124	16,932,492	19,587,962	73	71	15,864,513	18,475,983	58%	57%	94%	94%
Lower Kiwitea	106	115	4,232,013	6,385,984	0	0	-	-	0%	0%	0%	0%
Lower Manawatū	847	851	571,048,740	693,930,357	636	634	560,254,399	677,524,480	75%	75%	98%	98%
Lower Whanganui	63	83	9,527,822	13,346,086	56	74	9,263,017	12,044,998	89%	89%	97%	90%
Makerua Drainage	209	207	17,508,252	18,735,810	114	111	15,453,907	16,571,467	55%	54%	88%	88%
Makirikiri	25	23	3,698,730	4,321,092	25	23	3,698,730	4,321,092	100%	100%	100%	100%
Manawatū Drainage	309	312	53,676,210	60,764,839	117	119	37,032,642	43,135,210	38%	38%	69%	71%
Mangatainoka	384	385	22,175,146	41,363,612	123	123	12,894,534	22,665,088	32%	32%	58%	55%
Matarawa	51	51	5,533,038	5,948,612	44	44	4,905,973	5,294,845	86%	86%	89%	89%
Moutoa Drainage	92	92	9,049,216	9,775,055	34	34	6,778,968	7,410,386	37%	37%	75%	76%
Ōhau-Manakau	241	241	22,613,049	26,353,835	123	123	19,572,147	21,976,227	51%	51%	87%	83%
Pakihi	6	6	2,389,344	2,451,304	6	6	2,389,344	2,451,304	100%	100%	100%	100%
Pohangina-Ōroua	200	199	12,391,340	12,850,674	0	0	-	-	0%	0%	0%	0%
Porewa	81	81	10,318,411	10,583,431	81	81	10,318,411	10,583,431	100%	100%	100%	100%
Rangitīkei	186	191	142,395,839	131,479,998	114	115	84,543,843	84,601,523	61%	60%	59%	64%
South East Ruahine	271	276	36,650,118	67,127,746	1	0	36,963	-	0%	0%	0%	0%
Tawataia-Mangaone	14	14	643,934	675,518	3	3	396,627	418,099	21%	21%	62%	62%
Te Kawau Drainage	205	206	15,697,627	18,634,122	81	81	13,363,085	16,130,143	40%	39%	85%	87%

Scheme	Number of assets 2023	Number of assets 2024	Asset value 2023 ($)	Asset value 2024 ($)	Number of insured assets 2023	Number of insured assets 2024	Value of insured assets 2023 ($)	Value of insured assets 2024 ($)	% of assets insured 2023	% of assets insured 2024	% of asset value insured 2023	% of asset value insured 2024
Tutaenui	62	63	4,805,091	5,083,508	58	58	4,674,202	4,802,735	94%	92%	97%	94%
Upper Manawatū Lower Mangahao	133	134	16,600,879	27,292,781	0	0	-	-	0%	0%	0%	0%
Upper Whanganui	41	42	8,367,945	15,946,489	27	28	8,231,124	15,832,642	66%	67%	98%	99%
Whirokino Drainage	28	29	1,095,081	1,296,979	13	14	989,486	1,185,925	46%	48%	90%	91%
Total	**3,794**	**3,844**	**990,033,535**	**1,197,889,973**	**1753**	**1768**	**811,188,351**	**967,204,704**				

The actual amount insured (Table 26) is higher than replacement value 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. As well as the insured assets' replacement value, reinstatement cost also includes professional fees, demolition costs, debris removal and inflationary provision. Inflationary provision is excluded for equipment.

Table 26: Insured sum.

	Policy cover	2023-2024 Total Reinstatement Cost	2024-2025 Total Reinstatement Cost
Infrastructural Asset Insurance Policy	For below-ground built infrastructure including stopbanks.	$1,029,380,656	$1,183,957,593
Material Damage (All Risks) Insurance Policy	For above-ground built infrastructure including buildings and equipment.	$24,720,015	$27,058,224

The ownership of the insured assets typically lies with Horizons. However, there are a few assets which are excluded from revaluation but included on the insurance schedule as instructed (Table 27). It is noted that during 2024-25 insurance for the South and North Moles have been requested to be cancelled and a refund sought for the period not covered.

Table 27: Non-HRC assets insured.

AssetID	Asset Description	Owner	Instruction to insure	Reinstatement Cost 2023-2024	Reinstatement Cost 2024-2025
43707	North Mole & Revetment	Whanganui District Council	Removed from insured list following Council instruction 30/10/2024	$61,545,851	NA
71388	South Mole	Whanganui District Council	Removed from insured list following Council instruction 30/10/2024	$19,754,194	NA
43669	Tunnel Hill Flood Egress Structure	Tunnel Hill	Minutes of the thirteenth meeting of the tenth triennium of the Catchment Operations Committee held at 9.02am on Wednesday 14 November 2018	$203,666	$205,279
75936	Tunnel Hill, Bed Control Wetland	Tunnel Hill		0	$8,740
75932	Tunnel Hill Weir 2	Tunnel Hill		0	$9,288
75934	Tunnel Hill, Bed Control Tunnel	Tunnel Hill		0	$9,288
75935	Tunnel Hill, Bed Control 1	Tunnel Hill		0	$5,805
75929	Tunnel Hill Flume	Tunnel Hill		0	$29,026
75931	Tunnel Hill Weir 3	Tunnel Hill		0	$10,217
75933	Tunnel Hill Weir 1	Tunnel Hill		0	$8,824
75930	Tunnel Hill Weir 4 & 12.5m concrete spillway	Tunnel Hill		0	$19,738

6.4 Emergency Reserves

Emergency Reserves are held within each Scheme account to:

- Meet costs of un-programmed but urgent works, including flood damage to uninsured assets;
- Enable a rapid commencement of flood damage repairs that may ultimately be funded from other sources; and
- Fund the deductible applicable in respect of an insurance claim.

The recommended target level of reserves for individual Schemes is indicated in Table 28 below.

Schemes have been encouraged to increase contributions to their reserve funds in order to achieve the target levels as soon as possible. The total emergency reserves currently amount to 63% of the target, a significant increase from 38% in 2017 (the data from the previous AMP).

Table 28: Scheme Reserve Balance and Target.

Schemes	Reserve Target 50 year event	Scheme Reserve Balance at 30 June 2017	Scheme Emergency Reserve balance at 30 June 2024
Ashhurst Stream	$ 6,000	$ 14,477	$ 65,789
Forest Road	$ 12,000	$ 1,028	$ 6,191
Foxton East Drainage	$ 1,400	$ 8,543	$ 791,825
Haunui Drainage	$ 7,900	-	$ 16,825
Himatangi Drainage	$ 8,000	$ 8,074	$ 5,019
Hōkio Drainage	$ 11,500	$ 13,910	$ 77,907
Kahuterawa	-	-	$ 7,582
Koputaroa Drainage	$ 105,000	$ 109,366	$ 229,081
Lower Kiwitea	$ 520,000	$ 215,962	$ 404,704
Lower Manawatū	$ 4,260,000	$ 2,360,866	$ 3,905,479
Lower Whanganui	$ 74,000	$ 266,630	$ 1,109,319
Makerua Drainage	$ 99,000	$ 143,483	$ 192,253
Makirikiri	$ 23,000	$ 32,509	$ 34,223
Manawatū Drainage	$ 570,000	$ 109,975	$ 56,510
Mangatainoka	$ 1,270,000	$ 1,005,698	$ 1,564,050
Matarawa	$ 22,000	$ 24,988	$ 87,183
Moutoa Drainage	$ 57,000	$ 80,164	$ 132,863
Ohakune			$ 85,055
Ōhau-Manakau	$ 419,000	$ 185,782	$ 521,348
Pakihi	$ 1,600	$ 3,545	$ 14,020
Pohangina-Ōroua	$ 1,140,000	$ 460,926	$ 174,235
Porewa	$ 16,700	$ 45,785	$ 21,581
Rangitīkei	$ 5,770,000	$ 960,786	$ 1,029,156
Ruapehu			$ 100,763
South East Ruahine	$ 3,260,000	$ 494,243	$ 508,177
Tararua			$ 44,415
Tawataia-Mangaone	$ 6,400	$ 8,719	$ 27,555
Te Kawau Drainage	$ 128,000	$ 136,372	$ 81,044
Turakina	-	$ 5,605	$ 76,402
Tutaenui	$ 6,700	$ 36,967	$ 20,422
Upper Manawatū Lower Mangahao	$ 1,350,000	$ 487,510	$ 362,268
Upper Whanganui	$ 124,000	$ 305,374	$ 314,390
Whangaehu-Mangawhero	-	$ 36,990	$ 70,510
Whirokino Drainage	$ 9,800	$ 16,365	$ 15,556
Totals	$ 19,279,000	$ 7,580,642	$ 12,153,700

6.5 Renewal Reserves

In 2021, a review of the level of reserves to be held by individual Schemes concluded that the desired level is that which would fund the cost of damage that is reasonably expected to be incurred in a 2% AEP (50-year) flood event.

Assumptions made in reaching this conclusion were:

- It is most unlikely that an event exceeding 2% Annual Exceedance Probability (AEP) will qualify for assistance under the Recovery Plan. Uninsured damage, in particular, would then need to be totally funded from reserves.
- While it is most likely that there would be sufficient damage to insured assets in a 5% to 2% (20-year to 50-year) flood to trigger an insurance claim, it is unlikely that such an event would impact uniformly across all the Schemes. Accordingly, the insurance deductible would need to be shared by a portion of the 20 Schemes that employ insured assets. For that reason, the portion of reserves held for the purpose of funding deductibles needs to be greater than would be the case if flood damage was uniformly spread across all Schemes in proportion to their respective insured asset values.

The recommended target level of reserves for individual Schemes is currently under review to allow for the increase of replacement value in all infrastructure assets. It should be noted that these targets are for the repair of flood damage only.

Section 7: Plan improvement and maturity

7.1 Data Reliability

Horizons River Management Operations is the main user of the asset management information system (AMIS). This is the primary database for all information relevant to the Rivers Management assets.

Effective asset management planning relies on having access to accurate and reliable asset information, including age, condition, criticality, risk and financial valuation. The outputs from the asset management planning process include renewals forecasts, maintenance plans, and risk management strategies such as the transfer of liability to 3rd parties through insurance.

The reliability of asset data can be categorised from highly reliable to unknown, as shown in Table 29.

Table 29: Data reliability matrix.

Confidence Grade	Description
A. 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%.
B. Reliable	Data based on sound records, procedures, investigations, and analysis is documented properly but has minor shortcomings. For example, some data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate ± 10%.
C. 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 with accuracy estimated ± 25%.
D. 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%.

Confidence Grade	Description
E. Unknown	None or very little data held.

The overall data reliability for all Rivers Management assets was internally assessed as Grade D (very uncertain) in the Infrastructure Strategy in November 2023. Significant work has been undertaken to both improve and maintain the reliability of Rivers Management asset data since, with the expectation that this data would be at Grade B by July 2025. Table 30 below summarizes the current status of the asset management data components, self-assessed confidence grade.

The activities outlined in the data improvement plan in Table 31 are intended to improve the quality and completeness of asset data in AMIS, to lift this to Grade B. This data is required to provide the necessary information for Rivers Management to manage assets throughout their lifecycle, balancing required Levels of Service against fitness for purpose, condition, risk, and available funding.

Table 30: Asset management data assessment.

Data component	Status	Confidence Grade	Data improvement plan
Asset condition ratings for high-criticality assets	Inspection Data for these assets has been improved due to a focus on data collection during the 2023-24 year, while limited operation activities have been recorded in AMIS.	B. Reliable	Repair program to be developed to allow repair works to be planned, scheduled, and actioned for critical assets.
Asset condition ratings for low-criticality assets	Over 2022-23, very few inspections of these assets were recorded in AMIS (less than 5%). In 2023-2024, 21% of these assets have been inspected in line with target of inspecting all these assets on a rolling 5-year basis.	C. Uncertain	Asset status to be verified with maintenance program and repair program.
Consistency between the data in AMIS and geospatial files	82% (as at Feb 2024) of the Rivers Management asset database matches HRC geospatial data. This correlation is a key indicator of data accuracy in AMIS.	C. Uncertain	Continuously review AMIS data against geospatial data to identify and correct any mismatches.
Accuracy of Asset attributes	Asset attributes include information such as age, dimensions and condition. Some of these attributes are blank, and others have only been partially completed (e.g., only 20% of assets have an installation date). Other attributes, such as physical dimensions, have not been consistently measured.	C. Uncertain	Complete and consistent design data is to be collected for all assets. Asset status, locations and attributes to be verified with inspection.
Maintenance record	The Maintenance-based program plans the first year (2024-2025) regular maintenance works to be scheduled and actioned across all asset types.	C. Uncertain	Maintenance tracking app to be implemented. Second year Maintenance to be planned.
Completeness of the asset register	There are known inconsistencies in updating AMIS when assets are added or disposed. Some assets have not been recorded in the system, e.g. river channel assets.	C. Uncertain	Lost & Found process to be improved. Routine verification to be undertaken to reconcile physical assets in the field against records in the AMIS database and the Fixed Asset Register.
The revaluation	The accuracy of revaluations can be compromised by incomplete core data in AMIS, as described above. The process for asset revaluation was reviewed in June 2024. This review identified areas for improving data management to increase the accuracy of the revaluation.	B. Reliable	General improvements to data accuracy in AMIS, as described above, will support more accurate revaluations.

Table 31: Data Improvement Project.

No.	Items	Feb 2024	End of Year 2024	Target FY2025
1	AMIS vs GIS – Spatial Representation	82%	88%	95%

No.	Items	Feb 2024	End of Year 2024	Target FY2025
2	Attributes for Valuation	97%	99%	100%
3	High-Criticality Assets with 0 Value	7%	0%	0%
4	Installation Dates	8%	27%	30%
5	Write off not-existing Assets	0	41	50
6	Historical pending assets	112	54	20
	Data reliability	D. Very Uncertain	C. Uncertain	B. Reliable

7.2 Asset Management Maturity

The Maturity of Rivers Management Infrastructure Asset Management practice is reviewed using Asset Management Maturity Assessment Tool which is in line with the auditing framework recommended in International Infrastructure Management Manual (IIMM), identifying current state, desired future state, and improvement plans to achieve required outcomes. The scope of the asset management maturity assessment includes the reliability and accuracy of the asset database, suitability of the asset management information system to maintain and manage assets, available resourcing, system improvements and data maturity. The improvement actions to meet the maturity level are shown in Table 32.

Table 32: Asset Management Maturity Assessment.

		Maturity Levels	Improvement actions
Understanding and Defining Requirements			
1	Analysing the Strategic Direction	Infrastructure Strategy analyse its strategic environment and identify the Challenges over the next 30 years for its river management, flood protection, and drainage infrastructure.	
2	Levels of Service Framework	The appropriate level of service has been determined. Ongoing Flood Vulnerability Project provides updated assessments of the level of service.	
3	Demand Forecasting and Management	Future demand is shown in long-term planning documents.	
4	Asset Condition and Performance	Asset criticality categorises inspections into high and low. Dedicated Inspection officers achieve the inspection targets. New maintenance-based program is guiding the maintenance work more efficiently.	Technology to apply.
5	The Strategic Asset Management Plan	The HRC Asset Management Strategic Policy and Strategic Asset Management Plan (SAMP) inform the Long-term Plan and Infrastructure Strategy.	
Developing Asset Management Lifecycle Strategies			
6	Managing Risk and Resilience	Asset criticality and insurance have been set.	Risk register for all asset portfolios to be developed.
7	Operational Planning	A transition from a reactive to proactive maintenance-based approach. New maintenance-based program is in place.	Maintenance records to be updated. Repair program to be developed to guide the repairs.
8	Capital Works Planning	Delivery of the capital programme has been identified as a key issue for the Infrastructure Strategy.	A full renewal programme that will notify the Teams on upcoming renewals and will drive future planning.

		Maturity Levels	Improvement actions
9	Asset Financial Planning and Management	Assets revalued annually. Move away from a Scheme-based approach and start to use one rate per asset type. Financial budgets are prepared in LTP and Annual Plan.	Asset-related financial data are aligned to maintenance/repair programs and forecasting processes.
10	AM Plans (for the Asset Portfolio and Assets)	The current Rivers Management Infrastructure Asset Management Plan is a baseline document that will continue to be refined and improved through a process of ongoing improvement.	To be refreshed annually.
Asset Management Enablers			
11	AM People and Leaders	Ownership and support of Infrastructure Asset Management by management and improving awareness of AMP across CO.	Regular AM coordination processes is to be established. An internal AM communications / training plan to be implemented.
12	Asset Data and Information	See 'data Reliability'.	Data improvement plan.
13	Asset Management Information Systems (AMIS)	AMIS is our primary database for all asset-related information. Processes such as revaluation, insurance, capitalisation, renewals, and condition inspection are done through AMIS, and reports are readily available.	Maintenance data is to be recorded in fieldmap app. integration of these systems will be required.
14	AM Process Management	Critical AM processes are in practice, including revaluation, capitalisation, Lost & Found, and condition grade updates.	Asset data management procedures to be updated and documented in asset management Manual.
15	Outsourcing and Procurement	Service delivery and procurement practices clearly documented (internal and external), generally following historic approaches.	
16	Continual Improvement	Maturity is defined for AM functions.	A formal audit and review framework is to be established.

7.3 Future shape of Infrastructure Strategy and AMP

The identification of asset requirements dictates the standards of performance, condition and capacity and the consequential funding requirements. It requires knowledge of existing asset performance and performance targets to identify the gaps in asset performance. The next steps resulting from this AMP to improve asset management practices are:

- Recognition that the AMP is a “live” document and shall be reviewed and updated on an ongoing basis;
- Continually improve knowledge and detailed asset information, including ongoing asset condition assessment and further collection of appropriate metadata on assets;
- Obtaining feedback from our stakeholders, customers and the wider community. Adjusting asset management direction and Levels of Service, if necessary, to align with HRC strategic intent, Infrastructure Strategy and Long-term Plan;
- Review demand projections on an ongoing basis consistent with Council’s Infrastructure Strategy in order to inform future OPEX and CAPEX budgets;
- Ongoing development of the AMIS asset information system and collection and analysis of data to meet all asset management needs;
- Capital renewal and development of project plans;

- Prioritise renewal programmes and better manage risks and costs in achieving the desired outcomes; and
- Tracking and reporting data improvement progress.

The Infrastructure Strategy was a point in time and is the strategy document; the intention is to simplify the Infrastructure Strategy and have this AMP updating more frequently, along with an Operations Manual. The intention is that the AMP is a living document and adapts with practice improvements in the management of stages of the asset lifecycle; improvement actions are identified in Table 33 below.

Table 33: Improvement Programme.

AM projects	Current state - 2024	Future state – June 2025	Improvement actions	Responsible	Performance measure
Data cleanse	Ongoing data cleanse program, Critical assets mapped, missing dimensions has been updated	Critical assets dimensions confirmed	• Review infrastructure asset; quantities/dimensions in AMIS using as-built drawings, aerial photographs overlaying of alignments and on-site investigation; • GIS and AMIS alignment; and • Asset status review to identify wrong status.	Asset and Area Engineers, Design, Survey	Inspection done on all critical assets and 20% non-critical assets.
Renewal	No renewal process in AMIS	Renewal program in planning	• Review the In-Service Assets and identify the installation dates; and • Develop renewal procedure.	Asset information and Area Engineers	Critical assets renewal forecast report.
Condition rating	Defects not updated	Critical assets defects to be updated	• Standardise condition scoring; and • Asset category and inspection process is to be updated to meet the maintenance philosophy.	Catchment Operation	EOY defect report reflects the actual asset condition.
Repair program	No risk register	Critical assets identified risk grade	• Asset risk identification process is to be developed.	Catchment Operation	Defect report with risk info to guide repair/renewal works priority.
Maintenance	Maintenance work is not recorded in system	Y1 planned maintenance work is to be recorded in the Fieldmap app	• Maintenance based program is developed on Fieldmap app.	Catchment Operation	EOY maintenance report records the planned and completed works.
Process	Critical AM processes are in practice	Asset management Manual under development	• Y1: Field works processes, to capture data of jobs; • Y2: AMIS data management processes; and • Y3: Finance process, e.g. revaluation.	Asset information	Asset management Manual to be published in Huia

Table 34: The trio of documents.

Infrastructure Strategy	Asset Management Plan	Operations Manual
The Strategy document which sets the direction.	Turns the Infrastructure Strategy into an implementation plan.	How the day to day operations is done for implementing the AMP. Environmental Compliance and regulatory matters needs to be fit into here.