FLOOD RISK RESILIENCE TRANCHE 3

INVESTING IN ECONOMIC RESILIENCE

Version 1.0 | 4 December 2025

Te Uru Kahika
Regional and Unitary Councils Aotearoa

A MESSAGE FROM OUR CHAIRS

Kia ora Minister,

Firstly, we wish to thank you for your understanding of and support for flood risk resilience in New Zealand. Thanks to your efforts, tens of thousands of people and hundreds of millions of dollars in economic assets are receiving better protection from the effects of flooding.

As you are aware, climate adaptation is a process rather than an outcome. We need to ensure our businesses and farms retain the flood protection they've come to rely on over the decades, and our homes and essential infrastructure can weather the storms in the decades ahead. We've begun the work with your support and assistance, yet there is more to be done.

So we are pleased to present the latest tranche of essential flood risk resilience projects, and continue the path of adaptation we've collectively mapped out. And in doing so, we are telegraphing a different sectoral approach in how we assess and prioritise projects, in line with the Government's economic direction.

Previous investments have focused on essential and long-delayed flood protection projects. As important as these have been, the sector is now moving to a cost-benefit evaluation of all projects, ensuring the Government and the nation are receiving the greatest return on investment.

The list of key projects contained in this document is a considered and prioritised pipeline of investment, where the benefits have been weighed against the costs, under the guidance of analysis by the New Zealand Institute of Economic Research (NZIER).

Under Te Uru Kahika's leadership, this represents a step-change in how Regional and Unitary Councils are thinking about flood risk resilience in the decades ahead. While we have more work to do and more analysis to conduct, you can be confident that the projects we're bringing to your attention are those that will generate the greatest economic return for our nation, protect jobs and incomes, and safeguard billions of dollars of commercial and residential assets.

We're looking forward to once again working with you and the Kānoa team to protect New Zealanders and enable them to adapt their homes and businesses and farms to a changing world.

Nāku iti noa, nā

Daran Ponter

Chair, Greater Wellington Regional Council

Dr Deon Swiggs

Chair, Canterbury Regional Council

On behalf of chairs and mayors of Regional and Unitary Councils of NZ

THE PURPOSE OF THIS DOCUMENT

Te Uru Kahika is proposing the next tranche of co-investment, supported by a new prioritisation methodology.

Flood risk resilience is key to New Zealand's economic prosperity and social wellbeing. Many hundreds of thousands of people and the core of our productive economy are exposed to the risks that come from heavy rains, swollen rivers, and infrastructure that is unable to deliver the level of protection required.

But there is also the need to work within tight fiscal constraints, which in turn means our sector needs to prioritise projects and investment. And this paper is the first substantial step on that pathway.

Considerable analysis has been completed since the Tranche 2 initiatives, and we are now presenting three alternative prioritised view of the forward pipeline, as follows:

Impact on people – the first prioritisation dimension ranks investments based on the number of people protected and the level of deprivation of the communities, which is a measure of the relative resilience of individuals and families in the face of a natural disaster.

Impact on infrastructure – the second prioritisation dimension ranks the same investments based on the degree to which they protect essential lifeline infrastructure, such as roads, electricity transmission lines, water supplies, wastewater treatment, railway lines and the like.

Impact on assets – the third prioritisation dimension assesses the investments from the perspective of the value of assets impacted by a flood event, and the cost of repairing or replacing those assets.

The purpose of this analysis is to demonstrate how project prioritisation changes depending on the perspective taken, even while the total investment envelope remains the same.

The next step in the process is to develop a composite index using all three dimensions, and to extend the economic analysis to show how each project will impact regional and national economies. We look forward to working with officials in coming months to do so, and to updating the project and investment prioritisation as the analysis progresses.

FLOODING IS A THREAT, BUT ONE THAT CAN BE MANAGED

Resilience in the face of flooding events is crucial to the economic, social, and environmental wellbeing of New Zealand.

Flooding is the most common natural hazard in New Zealand, with a major flood event occurring on average every eight months. Across the country, around 675,000 people – or 14% of the population – live in areas prone to flooding.

Floods impose an annual cost to the nation of over $160 million in direct economic damage and clean-up costs, and a much higher toll in wider economic, social, and environmental impacts. It is also one of the most avoidable hazards and can largely be mitigated through flood protection schemes that reduce the risk of flooding.

There are currently 367 flood protection schemes in place, representing a combined capital value of $2.3 billion, with $200 million in annual operational expenses to maintain current levels of service. Together, these schemes directly protect around 1.5 million hectares of land and capital across the country, including the most highly populated regions in the country.

The total value of the benefits to the nation have been estimated at $11 billion each year, with a benefit-to-cost ratio (BCR) of around 5:1.

Flooding represents a significant liability for the government through disaster response and funding via agencies such as National Emergency Management Agency.

The projected costs of climate change on storms and flood liability alone is conservatively estimated to increase Crown liability to between $231 and $261 million per year by 2050. This implies a growth rate of 5.5–5.9% per annum.

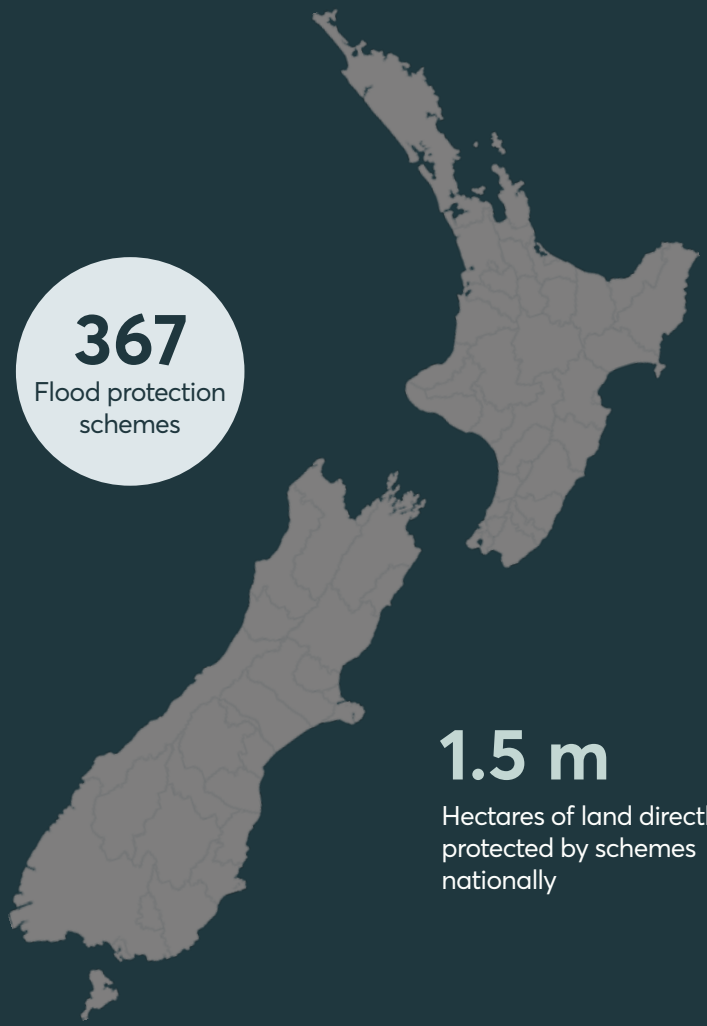
Flood risk

NO. 1 HAZARD
Floods are our most common natural hazard in New Zealand

$213 BILLION
Replacement value of for >282,000 houses in flood-prone zones

675,000 PEOPLE
1 in 7 New Zealanders living in flood-prone zones

>C$160 MILLION
Annual national cost of flooding (prior to 2023)



Cost-Benefits

$2.3 BILLION
Capital value of schemes

$11 BILLION
Annual benefits from schemes

$200 MILLION
Annual op-ex for schemes to maintain current level of service

5:1 BCR
Benefit-to-cost ratio of flood protection in New Zealand

Sources: NZIER.(2020).Investment in natural hazards mitigation; Ministry for the Environment.(2023).Community-led retreat and adaptation funding; Tonkin & Taylor.(2018).Hiding in plain sight report

THE RISKS OF FLOODING ARE GROWING

As our country has become more developed, our exposure to flood risks has grown.

Flooding poses very significant risks to lives, livelihoods, communities and the economy, as we continue to see with every major flooding event.

However, there are **three indicators or worrying trends**.

1

Existing flood protection schemes require ongoing maintenance and repair to maintain the levels of service and/or renew the asset for upcoming decades.

Firstly, any schemes need major upgrades in order to continue functioning as intended. This does not include the implementation of new schemes and initiatives to meet current and future needs.

However, flood protection schemes are primarily funded through a ratepayer base, and increasing rates to fund this necessary work is neither viable nor equitable. In the absence of alternative funding sources the affordability and continuity of flood protection schemes – so crucial to protecting our nation's assets – is under threat.

2

Assets protected by these schemes have steadily increased in value over time.

Secondly, adjacent urban development has also intensified. This means that the damage from a major flood event will incur significant economic costs, which are rising over time. Traditionally some of these costs have been recouped via insurance, although pay-outs do not cover the full extent of damage nor do they reduce the future risk of flooding.

3

Impacts of climate change are creating further risks to our flood resilience.

Third, and relatedly, the impacts of climate change are creating further risks to our flood resilience. Both the Earth Sciences NZ (formerly NIWA) and international evidence indicate an increased frequency and severity of extreme flood events, and are projected to worsen further over the decades ahead.

Together, these lines of evidence suggest materially increased risks to New Zealand's economic performance and social infrastructure in coming decades.

Mitigating these foreseeable risks through a national infrastructure approach supported by equitable funding tools will serve as the nation's first line of defence against climate change-induced flooding, with benefits for every New Zealander.

EXISTING INSURANCE APPROACHES HAVE LIMITS

Insurance withdrawal in the face of growing flood risks is a strategic challenge for New Zealand.

Increasing flood events lead to successive increases in insurance premiums as well as the partial or full withdrawal of cover by insurance companies, as already seen in parts of the United States of America (USA).

Indeed, recent research has conservatively estimated that New Zealand is likely to see very significant insurance premium hikes within the next 10 years, with more than 10,000 houses across Wellington, Auckland, Christchurch, and Dunedin potentially experiencing full insurance withdrawal by 2050. While the Insurance Council of New Zealand (ICNZ) has previously signalled their own commitment toward maintaining insurance support for high-risk communities, this is contingent on broader national-level commitments toward flood risk mitigation.

Climate change has been identified as a threat to the re/insurance industry as early as 1979, and this is now posing a strategic risk to the nation. In the context of flood risk resilience, climate change impacts the insurance markets in two ways:

- First, extreme weather events are increasing our underlying flood risk, meaning insurance companies are also increasingly taking on a greater risk, along with potentially bigger financial losses. This requires a greater reliance on reinsurance to remain solvent.
- Second, it means that flooding is no longer an unforeseeable or chance event, but is becoming a more predictable occurrence for many regions. Indeed, the ICNZ notes that certain impacts of climate change such as sea level rise are neither unforeseen nor insurable.

As a result, insurers are more attuned to climate change in their actuarial analysis and pricing. Using sophisticated catastrophe and disaster modelling tools, insurers are now shifting toward risk-based pricing where individual flood risk ratings determine premiums.

In some cases, the level of flood risk may be too high or unprofitable for re/insurers to underwrite, making insurance unaffordable and/or restricted in certain regions (partial retreat) or creating 'no-go' zones where insurance companies fully retreat from providing coverage. This appears to be more prevalent following the Auckland anniversary day floods, for instance.

International evidence suggests partial insurance retreat occurs when flood probabilities exceed the 2% Annual Exceedance Probability (AEP) threshold, and full retreat by 5%. Globally, we are already seeing insurance retreat play out in flood-prone areas such as Florida and Louisiana, in USA.

WE NEED A COORDINATED APPROACH

Taking a strategic approach to how and where and what we protect is key.

According to a 2018 Lloyd's of London report, New Zealand is the second riskiest country, after Bangladesh, in terms of expected losses from natural disasters (as a proportion of GDP). We also have one of the highest levels of insurance penetration in the world – between 96% and 98% of homes being insured – with flood risk cross-subsidised over a wide base.

However, in late 2021 Tower Insurance shifted toward an individual risk based system for flood protection, with approximately 10% of its customer base seeing an increase in premiums. Based on early indications we can expect the local insurance market to follow suit, especially since most insurance companies in New Zealand are internationally based.

Other companies such as IAG have also signalled the impending impact of climate change on risk, while calling for urgent collaborative flood risk prevention and reduction. These changes are likely to have implications for insurance availability and affordability, and central government is already considering options for home flood insurance as outlined in the National Adaptation Plan.

ICNZ has also set out its views on the need for an urgent, proactive, and coordinated approach to flood risk mitigation and adaptation in New Zealand. ICNZ has emphasised that the time for acting is now, while insurance is still largely accessible across the country, rather than relying on affordability issues as the trigger for action.

More recently IAG has echoed these sentiments and put forward a three-step plan for flood risk reduction, including:

- Improved mapping of flood prone locations
- Implementing national policy to stop development in flood prone locations
- Developing a business case for a national programme of investment in flood protection based on priority locations identified in step 1.

Thus, there is growing impetus from the insurance industry for more proactive risk reduction and adaptation in the lead up to its eventual shift toward risk-based pricing, alongside consistent signalling that the industry is committed to being part of the solution.

However, it is apparent that no-one – neither the Government, Councils, or homeowners – can rely solely on insurance to make communities whole after a major disaster.

THE NECESSITY FOR CO-INVESTMENT

The strategic importance of flood protection is the rationale for a shared investment approach.

Flood risk resilience is multidimensional. As well as protecting assets and infrastructure, it allows businesses and communities to flourish, with resultant economic and social benefits to the entire country.

Businesses and communities bear the immediate impacts from flooding, and it's fair and equitable that they contribute to the infrastructure that reduces their risks. This occurs through general and targeted rates, and has formed the backbone of investment in flood risk resilience over the last 40 years.

But as Cyclone Gabrielle showed, the Crown is also heavily impacted by flooding. The immediate costs of emergency response and disaster recovery can run into the hundreds of millions of dollars, and the wider fiscal impacts – from social supports to longer term recovery costs and lower taxation revenues – can easily climb beyond $1 billion for a single event.

Even though a major disaster occurs in a specific region, the economic and social impacts are felt throughout the country. Given our small and tightly-coupled economy, business and asset losses spread through supply chains quickly, dragging down national economic performance. And the fiscal costs associated with emergency response and longer-term recovery – in everything from benefit support to infrastructure repairs – are shared across all taxpayers.

Co-investment in flood risk resilience is therefore a prudent mechanism for the Crown to reduce its fiscal exposure to major disasters; it is a pragmatic investment in prevention instead of response. And as analysis from New Zealand Institute of Economic Research (NZIER) and international benchmarks show, $1 of prevention generally saves around $4 of recovery.

As has been the case with previous tranches of investment, Te Uru Kahika is proposing a 60%/40% split between the Government and communities, to reflect both the level of financial exposure to disasters and the ability to fund the protective measures.

Stead Street Pump
Photo credit: Environment Southland Regional Council

ASSESSING PROJECTS VIA ECONOMIC IMPACT

The economic value of the assets we're protecting is the foundation for prioritising projects.

Being resilient from flood risks begins with a simple principle: we prioritise the places where damage would be most costly, disruptive, and difficult to recover from. Understanding the economic value of the assets at risk – homes, businesses, land, lifelines, critical infrastructure – provides a robust, transparent basis for deciding where funding will have the greatest impact.

Our national consequence-based flood-risk assessment must quantify not only where flooding occurs, but what the economic and fiscal impacts are if action is not taken. This analysis provides a clear, defensible basis for prioritising investment by showing the full scale of loss – direct, indirect, and system-wide.

Our approach to doing this is as follows:

1. We apply flood modelling over geographic areas using calibrated local and regional models. Where this does not exist, we will use the newly-released National Flood Model from Earth Sciences NZ. These identify exactly who and what will be impacted – such as residential homes, businesses, agriculture, and infrastructure.

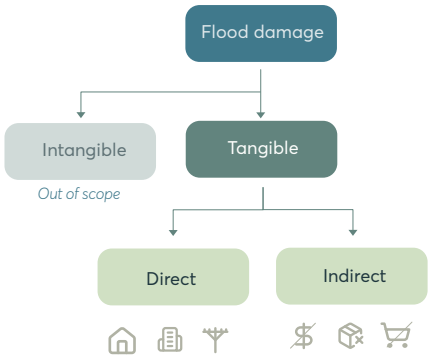
   The value of those assets within the flood footprint is then quantified to allow

   - ✓ Direct economic impact of a flood event on the assets within the flood area (i.e. cost of repair / replacement)
   - ✓ Direct economic impact of a flood event on businesses and farms within the flood area in revenue terms
   - ✓ Indirect impact on the regional economy and national economy
   - ✓ Fiscal impact of a flood event on the Government

2. From this, we now have a complete national picture of economic impacts from flooding. This evidence supports transparent prioritisation of projects across the country, based on BCR, to demonstrate where mitigation delivers the greatest economic and fiscal return.

In broad strokes, the modelling identifies where the water goes, who and what it impacts, and the likely economic value from preventing these impacts.

While flood losses include all economic and social damages caused by flooding, this analysis focuses on the tangible (physical and measurable) losses, rather than intangible effects such as emotional, psychological, and social impacts.



Immediate physical damage caused by contact with flood waters (i.e. damage to buildings, infrastructure, assets)

Secondary economic effects that arise from disruption such as lost production, interrupted services, or wider economic ripple effects – which can be as large as the direct economic impacts

RISKSCAPE: OUR NATIONAL PLATFORM

Te Uru Kahika is using the Riskscape platform developed by Earth Sciences NZ to provide a national toolset.

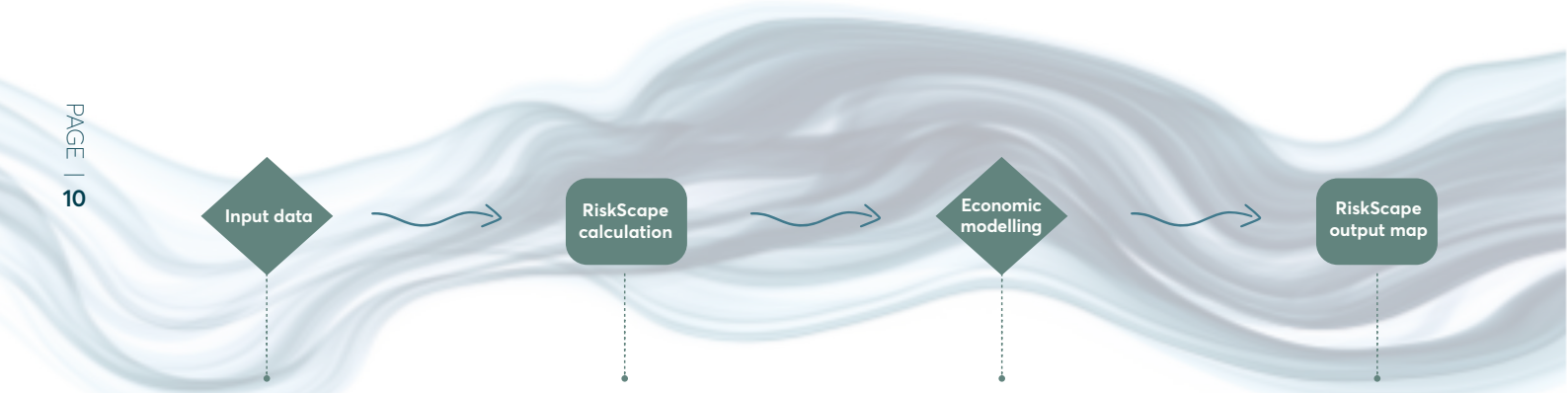
Around the world, governments and major institutions are moving towards impact-based, consequence-driven modelling when it comes to climate-risk and flood-risk assessments. This is exactly what RiskScape does – the evidence-based tool Te Uru Kahika is using to prioritise targeted investment decisions for this tranche of projects.

RiskScape is a nationally developed, impact-based risk modelling tool developed by Earth Sciences NZ to assess risk to people, buildings, and infrastructure from natural hazards such as flooding.

This tool allows us to integrate flood hazard data with detailed information about buildings, businesses, farms, infrastructure, and community assets, so we can calculate the real costs of flood events in a consistent and accurate way across the country.

This approach reflects modern international best practice: moving beyond static flood maps to understanding who and what is affected, by how much, and the economic and fiscal impacts. It enables us to quantify both the direct damage caused by floodwaters and the wider indirect impacts on the regional and national economy.

Using RiskScape, we systematically identify the assets exposed to flooding, assess the damage they would sustain under defined scenarios, and translate those losses into economic and fiscal terms. This provides the evidence needed to compare options, prioritise projects, and demonstrate where mitigation delivers the greatest return on investment.



Input data into RiskScape includes, but not limited to:

- Flooding scenario (with and without scheme changes
- Geographical areas
- Assets' value
- Zoning data

Where the modelling happens.

This is where input data are aligned and reshaped spatially.

Basically, this tells us what is damaged, how badly it's damaged, repair/replacement cost for each asset.

The output of the modelling is the impact map, which tells us the direct damage on the assets caused by the flood.

From here, we calculate direct physical asset damage to direct economic impact, and indirect economic impact.

This is fed back into RiskScape.

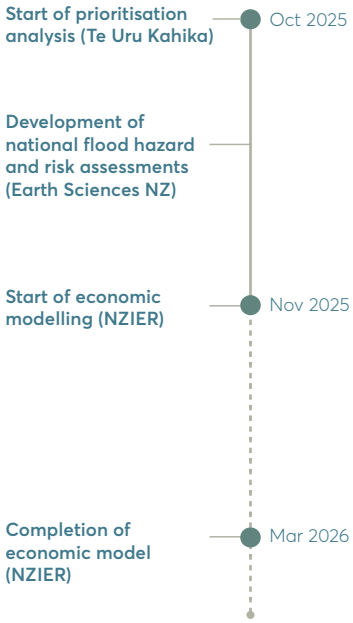
RiskScape outputs table, maps, and summaries that quantify and visualise:

- Asset-level impacts
- Total economic loss
- Indirect economic effects
- Fiscal exposure
- Scenario-by-scenario difference

These outputs will be used to compare against areas with schemes located.

THE STATE OF THE MODELLING

Our initial analysis has prioritised $370.6m of projects with a BCR of 4:1 or higher.



Development of the nationally consistent and prioritised list of projects is underway, and the initial Riskscape analysis has resulted in the list of priority projects on the following pages. This comprises 30 projects with a total value of $370.6m, with a proposed Crown co-investment of $222.37m.

The Earth Sciences NZ developed national flood inundation hazard and risk assessment forms the foundation for this initial work, and the key flood exposure data was released in October 2025. This has been incorporated into the national Riskscape model being used by Te Uru Kahika, and informs the initial prioritisation of the projects. Another round of analysis is being undertaken using local and regional flood hazard modelling to regin the initial results. Further analysis is also underway by NZIER to link the exposure data to national and regional economic impacts, which will allow us to refine the BCRs and evaluate the impacts on different sectors.

This analysis is progressing and is scheduled to be completed in March 2026. The work will allow us to confirm and – if necessary – reprioritise the listed projects, as well as giving you more visibility of the precise impacts of each investment. As a result, you will be able to reorder the project list, based on more nuanced data.

Our analysis to date has, however, confirmed the 30 projects and the $370.6m investment envelope. Based on standard methodologies, the high-level BCR for all these projects is 4:1 or greater, providing confidence that the investment rationale is robust.

Once the economic modelling is complete in March 2026, we will confirm specific BCRs for each project, and update the listing accordingly.

Beyond this point, Te Uru Kaihika will continue refining the national model in conjunction with Earth Sciences NZ, in order to provide a high-quality predictive tool for Regional and Unitary Councils and their communities. The purpose is to enable Councils and communities to make informed decisions about what to protect and how, who should equitably share the costs based on the benefits they receive, and where different approaches – such as managed retreat – might offer a better return on investment for stakeholders.

We look forward to keeping you informed as this work progresses, and as the results begin to feed into the national adaptation planning.

THE 85 PROPOSED NATIONAL PROJECTS

North Island

46 projects

$630m investment

Northland Regional Council

1. Flow capacity improvements at Donald Road $1.7m
2. Tauranga Bay
3. Whangarei Urban Flood Strategy
4. Dargaville Urban Stopbank Upgrade and Channel Works
5. Kerikeri River Spillways
6. Kerikeri Waipapa channel Capacity Improvement
7. Awanui Coastal Stopbanks
8. Awanui Coastal Stopbank Managed Retreat
9. Dargaville Urban Stopbank Upgrade abd
10. Kerikeri K3A Dam

Waikato Regional Council

1. Lower Piako Stopbanks - Phase 2 $25m
2. Smartification of Pump Stations in the Waihou & Piako $3.9m
3. Wharekawa Coast Flood Resilience $1.5m
4. Thames Valley Diversion Channel Planting - Phase 2 $2.8m
5. Mangatawhiri Compartment 2 Pump Station $10.4m
6. Ohinemuri Berm Stability $2.1m
7. Motukaraka Catchment Flood Protection Solution $52m

Bay of Plenty Regional Council

1. Waioweka-Otara Rivers Scheme, Wharf floodwall and stopbank upgrades $2.2m
2. Rangitāiki-Tarawera Rivers Stopbank strengthening (Fonterra and 26 Eastbank Road, Tarawera River Stopbank Upgrades Stage 2) $6.2m
3. Waioweka- Otara Rivers Scheme, Duke Street Pump Station $3.5m
4. Rotorua Streams - Puarenga Stream left bank stopbank upgrade, Ngongotahā Stream lower and Waingaehe stopbank upgrades $3.5m
5. Telemetry Radio Network Upgrade $0.5m

Taranaki Regional Council

1. Waiwhakaiho FPS: Rimu Street to Devon Road protection improvements $3m

Gisborne District Council

1. Te Karaka Stopbank Upgrades $35m

Hawke's Bay Regional Council

1. Wairoa River Mouth Groyne - Permanent Opening. $20m
2. Waitangi / Ngaruroro Confluence - Channel Capacity Improvements $10m
3. Ngaruroro channel stabilisation works XS 11-16 L/R $4m
4. New Brookfields Pumpstation $13m
5. Upper Tukituki Scheme - Lowering of grade line (gravel) $4m

Horizons Regional Council

1. Reid Line Spillway $15m
2. Rangiotu Floodgates $5.2m
3. Palmerston North Flood Resilience Upgrade - Phase 1 $5m
4. Bulls/Marton flood investigation and design $2m

Greater Wellington Regional Council

1. Te Wai Takamori o Te Awa Kairangi - stage 1 $50m
2. Moonshine stopbank upgrade $6.5m
3. Waipoua Urban Reach stopbank upgrade $30m
4. Donalds Creek retention dam upgrade $3m
5. Waiohine Stopbanks $5m
6. Woollen Mills Corner Programme $20m
7. Pinehaven channel capacity increase $8m
8. Kennedy-Good Programme $6.3m
9. Ava Rail Bridge Programme $3.5m
10. Norbert to Gemstone channel capacity increase $5m
11. Rathkeale stopbank upgrade $1m
12. Manor Park stopbank upgrade $2m
13. Te Wai Takamori o Te Awa Kairangi stage 2 $205m

South Island

39 projects

$343.7m investment

Nelson City Council

1. Saltwater Creek Pump Station $4.8m

Tasman District Council

1. Tapawera Township Stopbank Assumption and Refurbishment $3m
2. Lower Motueka Stopbank Upgrades $22.5m

West Coast Regional Council

1. Carter Beach Westport Flood Resilience Programme $6.7m
2. Snodgrass Westport Flood Resilience Programme $3.3m
3. Eastons & North End Westport Flood Resilience Project $9.3m
4. Organs Island Westport Flood Resilience Programme $4m
5. Hokitika Stopbank Construction Stage 2 (Kaniere) $8.7m
6. Greymouth Small Catchments Programme $3.5m
7. Buller Flood Resilience Programme $3.4m
8. Carters Beach Coastal Bund Westport Resilience Project $1.7m
9. Taramakau River Breakout Risk Mitigation at Taramakau and Inchbonnie $2.1m

Environment Southland

1. Invercargill City Flood Resilience Stage 1 $5.8m
2. Tuatapere Domain Bank $0.2m
3. Mataura Flood Resilience Stage 2 $19.5m
4. Oreti Flood Resilience Stage 1 $5.3m
5. Aparima Flood Resilience Stage 1 $5.3m
6. Willow Clearance & Floodbank Reinstatement $1.7m
7. FloodReady Southland $2m

Marlborough District Council

1. Spring Creek Pumpstation $9m
2. Taylor Dam Revitalisation $12m
3. Wairau Valley Township Southern Tributaries Flood Protection Scheme $9m
4. Renwick Lower Terrace Flood Protection $9m

Otago Regional Council

1. Riverside Road Spillway Resilience Improvements $5m
2. Lake Ascog Pump Station - Pump Renewals $1m
3. Henley Pump Station Replacement $1m
4. Middlemarch Flood Resilience $5.5m
5. Silver Stream Long-term Capacity Improvement $25m
6. Roxburgh Flood Resilience $20m
7. Lindsay Creek (North Dunedin) Flood Resilience $43m

Canterbury Regional Council (Environment Canterbury)

1. Ashley Rakahuri Secondary Stopbank $15m
2. Structure upgrades/adaptation programme #3 $36.5m
3. Regionwide Stopbank Retreat Programme $5.4m
4. Waitarakao/Washdyke/Seadown stage 2 $10m
5. Rangitata Flood Resilience #3 $10m
6. Little River Wairewa Catchment Resilience - Stage 1 $4m
7. Regionwide Floodway Clearance Programme $5.6m
8. Regionwide Flood Vegetation Programme $4.6m

SHORTLISTED PRIORITY PROJECTS

The projects initially identified (previous page) were then shortlisted. The table below, and the following page show 30 projects that are ready to go across the regions.

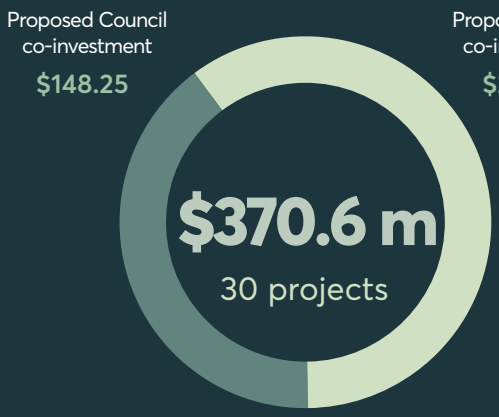
Council	Project	Total cost ($m)	Crown ($m)	Council ($m)
Northland Regional Council	Donald Road Capacity Improvements	$ 1.70	$ 1.02	$ 0.68
Waikato Regional Council	Lower Piako Stopbanks - Phase 2	$ 25.00	$ 15.00	$ 10.00
	Smartification of Pump Stations in the Waihou & Piako	$ 3.90	$ 2.34	$ 1.56
	Wharekawa Coast Flood Resilience	$ 1.50	$ 0.90	$ 0.60
Bay of Plenty Regional Council	Waioweka - Otara Rivers Scheme, Wharf floodwall and stopbank upgrades	$ 2.20	$ 1.32	$ 0.88
	Rangitāiki-Tarawera Rivers Stopbank strengthening	$ 6.20	$ 3.72	$ 2.48
	Waioweka- Otara Rivers Scheme, Duke Street Pump Station	$ 3.50	$ 2.10	$ 1.40
Gisborne District Council	Te Karaka Stopbank Upgrades	$ 35.00	$ 19.20	$ 15.80
Taranaki Regional Council	Waiwhakaiho FPS: Rimu Street to Devon Road protection improvements	$ 3.00	$ 1.80	$ 1.20
Horizons Regional Council	Reid Line Spillway	$ 15.00	$ 9.00	$ 6.00
	Rangioutu Floodgates	$ 5.20	$ 3.12	$ 2.08
Hawke's Bay Regional Council	Waitangi / Ngaruroro Confluence - Channel Capacity Improvements	$ 10.00	$ 6.00	$ 4.00
	Wairoa River Mouth	$ 20.00	$ 12.00	$ 8.00
Greater Wellington Regional Council	Te Wai Takamori o Te Awa Kairangi stage 1	$ 50.00	$ 30.00	$ 20.00
	Moonshine stopbank upgrade	$ 6.50	$ 3.90	$ 2.60
	Waipoua Urban Reach stopbank upgrade	$ 30.00	$ 18.00	$ 12.00
Nelson City Council	Saltwater Creek Pump Station	$ 4.80	$ 2.88	$ 1.92
Tasman District Council	Tapawera Township Stopbank Assumption and Refurbishment	$ 3.00	$ 1.80	$ 1.20
	Motueka Stopbank Upgrades	$ 20.00	$ 12.00	$ 8.00
Marlborough District Council	Taylor Dam Revitalisation	$ 12.00	$ 7.20	$ 4.80
Canterbury Regional Council (Environment Canterbury)	Ashley Rakahuri Secondary Stopbank	$ 15.00	$ 9.00	$ 6.00
	Structure upgrades/adaptation programme #3	$ 36.53	$ 21.92	$ 14.61
West Coast Regional Council	Westport Flood Resilience Programme	$ 25.05	$ 15.03	$ 10.02
	Greymouth Small Catchments Programme	$ 3.46	$ 2.08	$ 1.38
	Hokitika Stopbank Construction Stage 2 (Kaniere)	$ 8.72	$ 5.22	$ 3.48
Otago Regional Council	Riverside Road Spillway Resilience Improvements	$ 5.00	$ 3.00	$ 2.00
	Lake Ascog Pump Station - Pump Renewals	$ 1.00	$ 0.60	$ 0.40
Environment Southland	Invercargill City Flood Resilience Stage 1	$ 5.77	$ 3.46	$ 2.31
	Tuatapere Domain Bank	$ 0.25	$ 0.15	$ 0.10
	Mataura Flood Resilience Stage 2	$ 19.55	$ 11.73	$ 7.82
		$ 370.62	$ 222.37	$ 148.25

ANALYSING THE PRIORITY PROJECTS

Te Uru Kahika analysed the areas where the flood schemes are located nationally within RiskScape – the results are summarised in this page.

The next step of the analysis explored the data to determine which projects to prioritise based on three factors: people, cost, and location.

The subsequent pages rank the projects from highest to lowest priority based on three different assessment criteria.



215,401
Total people affected by the flood schemes

with a replacement cost of
$67.89 billion

3064 km
roads

221 km
railway lines

124 km
transmission lines

2116 km
wastewater pipes

3449 km
water supply pipes

1447 km
stormwater pipes

	Area (km²)	Capital value ($b)	Improvement value ($b)	Land value ($b)
Built-up area or infrastructure	87.62	70.19	33.90	40.28
Water	4.84	2.68	1.15	1.52
Productive land	867.97	32.89	14.76	18.11
Total	960.44	109.73	49.82	59.92

PERSPECTIVES AND PRIORITISATION

Following regional prioritisation, we have assessed the projects from three different perspectives.

Each region uses a mix of social, economic and infrastructure protection factors to prioritise its flood risk resilience investments, in consultation with communities via the statutory Long Term Plan process. This prioritisation approach makes up the listing on the previous page.

To fully assess the impacts and priorities, we have looked at the project listing from three different perspectives:

Impact on people – the first prioritisation dimension ranks investments based on the number of people protected and the level of deprivation of the communities, which is a measure of the relative resilience of individuals and families in the face of a natural disaster.

Impact on infrastructure – the second prioritisation dimension ranks the same investments based on the degree to which they protect essential lifeline infrastructure, such as roads, electricity transmission lines, water supplies, wastewater treatment, railway lines and the like.

Impact on assets – the third prioritisation dimension assesses the investments from the perspective of the value of assets impacted by a flood event, and the cost of repairing or replacing those assets.

The results are contained in the tables on the following pages. The methodology to develop the rankings is as follows:

- The RiskScape analysis has been used to assess the potential impacts in each catchment and generate relevant data, such as the number of people affected, the amount of infrastructure and the value of assets
- The impacts have been normalised, and assigned indicative weightings, then combined into a multi-criteria analysis that is used to esablish the rankings.

At this stage the rankings are intended as informative only. Te Uru Kahika will continue working with the sector and officials to refine the data and the approach, and the results will be used to further prioritise the projects in the months ahead.

Some Councils' datasets are still being processed, resulting in gaps in the tables – for example, Wharekawa Coast Flood Resilience (Waikato Regional Council) and Structure upgrades/adaptation programme #3 (Canterbury Regional Council).

PERSPECTIVE 1: POPULATION

The ranking is based on the size of the population, the level of deprivation using NZDEP, and the area of land protected. The weighting of the three factors produces a multicriteria analysis, from which the ranking is derived.

Council	Project	NZDEP	Population	Area (km^2)	MCA score	Ranking
Waikato Regional Council	Waihou Piako Scheme Part 2	8	17368	99.01	0.784	**1**
Bay of Plenty Regional Council	Waioweka- Otara Rivers Scheme, Wharf floodwall and stopbank upgrades + Duke Street Pump Station	10	5496	46.45	0.755	**2**
Bay of Plenty Regional Council	Rangitāiki-Tarawera Rivers Stopbank strengthening	8	12026	276.17	0.748	**3**
Waikato Regional Council	Smartification of Pump Stations in the Waihou & Piako	8	6433	168.65	0.710	**4**
Greater Wellington Regional Council	Waipoua Urban Reach Stopbank Upgrade	9	6013	4.37	0.659	**5**
Hawke's Bay Regional Council	Wairoa River Mouth Groyne- Permanent Opening	10	2886	5.66	0.607	**6**
Canterbury Regional Council	Ashley Rakahuri Secondary Stopbank	4	31233	78.23	0.585	**7**
Horizons Regional Council	Reid Line Spillway	6	15968	10.38	0.585	**8**
Otago Regional Council	Riverside Road Spillway Resilience Improvements	4	14720	124.21	0.555	**9**
West Coast Regional Council	Westport Flood Resilience Programme	8	5197	7.92	0.548	**10**
Greater Wellington Regional Council	Te Wai Takamori o Te Awa Kairangi - stage 1	1	57984	18.08	0.541	**11**
Tasman District Council	Motueka Stopbank Upgrades	7	60645	13.79	0.540	**12**
Gisborne District Council	Te Karaka Stopbank Upgrades	10	438	1.29	0.511	**13**
Marlborough Regional Council	Taylor Dam Revitalisation	7	6501	3.74	0.503	**14**
Environment Southland	Invercargill City Flood Resilience Stage 1	6	5113	13.95	0.459	**15**
Waikato Regional Council	Lower Piako Stopbanks - Phase 2	7	1337	28.66	0.451	**16**
Environment Southland	Mataura Flood Resilience Stage 2	7	4631	9.66	0.444	**17**
Otago Regional Council	Donald Road Channel Capacity improvements	10	224	0.07	0.444	**18**
Greater Wellington Regional Council	Moonshine stopbank upgrade	1	12634	7.12	0.407	**19**
West Coast Regional Council	Greymouth Small Catchments Programme	8	550	0.41	0.400	**20**
Hawke's Bay Regional Council	Waitangi / Ngaruroro Confluence - Channel Capacity Improvements	5	1648	20.61	0.370	**21**
West Coast Regional Council	Hokitika Stopbank Construction Stage 2 (Kaniere)	8	78	0.14	0.289	**22**
Hawke's Bay Regional Council	New Brookfields Pumpstation	5	490	9.01	0.274	**23**
Environment Southland	Tuatapere Domain Bank	7	112	0.55	0.259	**24**
Nelson District Council	Saltwater Creek Pump Station	8	17	0.13	0.252	**25**
Horizons Regional Council	Rangiotu Floodgates	5	90	11.03	0.222	**26**
Tasman District Council	Tapawera Township Stopbank Assumption and Refurbishment	7	45	1.10	0.207	**27**
Taranaki Regional Council	Waiwhakaiho FPS: Rimu Street to Devon Road protection improvements	5	101	0.08	0.126	**28**

PERSPECTIVE 2: INFRASTRUCTURE

The ranking is based on the length of roading, rail, electricity transmission lines, water, stormwater and wastewater protected by each project. The weighting of the factors produces a multicriteria analysis, from which the ranking is derived.

Council	Project	Roads (km²)	Rail (km²)	Power (km²)	Water (km²)	Storm-water (km²)	Waste-water (km²)	MCA score	Ranking
Bay of Plenty Regional Council	Rangitāiki-Tarawera Rivers Stopbank strengthening	446.31	56.51	74.09	382.82	41.40	92.90	0.87	**1**
Otago Regional Council	Riverside Road Spillway Resilience Improvements	268.31	23.37	2.34	816.70	183.72	316.96	0.87	**2**
Greater Wellington	Te Wai Takamori o Te Awa Kairangi - stage 1	293.05	47.50	1.03	588.40	369.26	359.58	0.85	**3**
Waikato Regional Council	Waihou Piako Scheme Part 2	291.24	0.08	2.44	354.72	161.64	177.60	0.78	**4**
Waikato Regional Council	Smartification of Pump Stations in the Waihou & Piako	523.02	7.83	10.67	284.71	33.96	45.21	0.71	**5**
West Coast Regional Council	Westport Flood Resilience Programme	66.29	8.33	3.11	92.08	56.14	88.92	0.69	**6**
Horizons Regional Council	Reid Line Spillway	94.95	7.59		184.02	113.97	145.52	0.68	**7**
Environment Southland	Mataura Flood Resilience Stage 2	77.19	11.84	1.40	93.53	54.29	86.03	0.65	**8**
Environment Southland	Invercargill City Flood Resilience Stage 1	66.08	18.05		84.38	95.53	75.52	0.60	**9**
Greater Wellington	Moonshine stopbank upgrade	73.83	1.67	0.23	116.00	47.70	81.94	0.55	**10**
Canterbury Regional Council	Ashley Rakahuri Secondary Stopbank	398.30	14.65	23.19	59.55	3.44	325.16	0.54	**11**
Bay of Plenty	Waioweka- Otara Rivers Scheme, Wharf floodwall and stopbank upgrades + Duke Street Pump Station	123.78			83.24	53.78	33.96	0.51	**12**
Tasman District Council	Motueka Stopbank Upgrades	50.76			38.40	55.82	74.22	0.44	**13**
Marlborough Regional Council	Taylor Dam Revitalisation	37.46	1.09		71.90	38.83	58.58	0.40	**14**
Hawke's Bay Regional Council	Waitangi / Ngaruroro Confluence - Channel Capacity Improvements	51.36	6.60	2.27	6.89	10.73	24.56	0.38	**15**
Greater Wellington	Waipoua Urban Reach Stopbank Upgrade	40.61	5.30	0.27	47.68	25.63	49.50	0.38	**16**
Hawke's Bay Regional Council	Wairoa River Mouth Groyne-Permanent Opening	38.80	5.85		49.30	41.39	22.70	0.37	**17**
Waikato Regional Council	Lower Piako Stopbanks - Phase 2	60.39			68.41	9.90	11.60	0.35	**18**
Hawke's Bay Regional Council	New Brookfields Pumpstation	20.63	4.40		0.82	28.82	17.95	0.24	**19**
Gisborne District Council	Te Karaka Stopbank Upgrades	7.53			7.36	3.47	6.60	0.20	**20**
Nelson District Council	Saltwater Creek Pump Station	3.38			4.91	12.22	11.13	0.19	**21**
Environment Southland	Tuatapere Domain Bank	4.21			8.05	0.99	3.70	0.16	**22**
Horizons Regional Council	Rangiotu Floodgates	16.45		3.44				0.15	**23**
West Coast Regional Council	Hokitika Stopbank Construction Stage 2 (Kaniere)	1.82			1.74	0.92	2.38	0.10	**24**
Northland Regional Council	Donald Road Channel Capacity improvements	0.53			1.22	1.54	1.23	0.08	**25**
Tasman District Council	Tapawera Township Stopbank Assumption and Refurbishment	1.75			0.70	1.69	0.53	0.05	**26**
West Coast Regional Council	Greymouth Small Catchments Programme	6.17						0.04	**27**
Taranaki Regional Council	Waiwhakaiho FPS: Rimu Street to Devon Road protection improvements	0.23			1.01	0.53	1.01	0.03	**28**

PERSPECTIVE 3: ASSETS

The ranking is based on the number of buildings, the replacement value, and the capital value of the assets. The weighting of the three factors produces a multicriteria analysis, from which the ranking is derived.

Council	Project	Buildings (n)	Replacement value ($b)	Capital Value ($b)	MCA score	Ranking
Greater Wellington Regional Council	Te Wai Takamori o Te Awa Kairangi - stage 1	30,764	17.80	24.25	1.00	**1**
Canterbury Regional Council	Ashley Rakahuri Secondary Stopbank	18,823	8.21	16.01	0.96	**2**
Waikato Regional Council	Waihou Piako Scheme Part 2	15,907	5.20	6.09	0.90	**3**
Bay of Plenty	Rangitāiki-Tarawera Rivers Stopbank strengthening	13,079	4.72	13.04	0.90	**4**
Otago Regional Council	Riverside Road Spillway Resilience Improvements	12,191	4.62	8.86	0.86	**5**
Horizons Regional Council	Reid Line Spillway	10,463	4.08	6.68	0.82	**6**
Waikato Regional Council	Smartification of Pump Stations in the Waihou & Piako	10,561	3.26	3.09	0.76	**7**
Greater Wellington Regional Council	Moonshine stopbank upgrade	7,937	2.40	6.14	0.74	**8**
Environment Southland	Invercargill City Flood Resilience Stage 1	4,079	2.47	3.84	0.70	**9**
Marlborough Regional Council	Taylor Dam Revitalisation	5,194	2.17	3.46	0.67	**10**
Environment Southland	Mataura Flood Resilience Stage 2	4,838	2.22	1.63	0.63	**11**
Greater Wellington Regional Council	Waipoua Urban Reach Stopbank upgrade	4,735	1.90	2.55	0.59	**12**
Tasman District Council	Motueka Stopbank Upgrades	4,888	1.65	3.17	0.58	**13**
West Coast Regional Council	Westport Flood Resilience Programme	5,110	1.68	1.26	0.57	**14**
Bay of Plenty	Waioweka- Otara Rivers Scheme, Wharf floodwall and stopbank upgrades + Duke Street Pump Station	4,486	1.52	3.42	0.54	**15**
Hawke's Bay Regional Council	Waitangi / Ngaruroro Confluence - Channel Capacity Improvements	1,946	1.39	2.91	0.48	**16**
Hawke's Bay Regional Council	Wairoa River Mouth Groyne-Permanent Opening	2,412	0.71	0.69	0.42	**17**
Waikato Regional Council	Lower Piako Stopbanks - Phase 2	1,751	0.50	0.42	0.37	**18**
Hawke's Bay Regional Council	New Brookfields Pumpstation	517	0.49	0.87	0.36	**19**
Nelson District Council	Saltwater Creek Pump Station	167	0.42	0.50	0.30	**20**
West Coast Regional Council	Greymouth Small Catchments Programme	605	0.12	0.09	0.25	**21**
Gisborne District Council	Te Karaka Stopbank Upgrades	491	0.1	0.14	0.22	**22**
Horizons Regional Council	Rangiotu Floodgates	134	0.05	0.20	0.14	**23**
Northland Regional Council	Donald Road Channel Capacity improvements	149	0.6	0.07	0.14	**24**
Taranaki Regional Council	Waiwhakaiho FPS: Rimu Street to Devon Road protection improvements	92	0.06	0.06	0.12	**25**
Tasman District Council	Tapawera Township Stopbank Assumption and Refurbishment	120	0.05	0.09	0.08	**26**
Environment Southland	Tuatapere Domain Bank	161	0.04	0.05	0.06	**27**
West Coast Regional Council	Hokitika Stopbank Construction Stage 2 (Kaniere)	130	0.04	0.04	0.01	**28**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