



WORKSHOP AGENDA

Date: Tuesday, 4 August 2026

Time: 1.00pm

Location: Council Chambers
Waikato Regional Council
Level 1, 160 Ward Street, Hamilton

- Workshop Details:**
- Health and Safety Due Diligence Session (Public Excluded)
 - WRC Framework and Plan for Resilience to Natural Hazard Risk (Open Session)

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1 KARAKIA TIMATANGA

Whakataka te hau ki te uru
Whakataka te hau ki te tonga
Kia mākinakina ki uta
Kia mātaratara ki tai
E hī ake ana te atakura
He tio
He Huka
He hau hū
Tīhei mauri ora!

Cease o winds from the west
Cease o winds from the south
Bring calm breezes over the land
Bring calm breezes over the sea
And let the red-tipped dawn come
With a touch of frost
A sharpened air
And promise of a glorious day
Behold we live

2 WORKSHOP PAPER(S)

2.1 WAIKATO REGIONAL COUNCIL FRAMEWORK AND PLAN FOR RESILIENCE TO NATURAL HAZARD RISK

Rā | Date: 16 July 2026

Kaituhi | Author: Lisa Armstrong, Project Manager, Integrated Catchment Management

Kaituku | Authoriser: Greg Ryan, Director, Integrated Catchment Management

TE ARONGA | PURPOSE

1. The purpose of this workshop is to:
 - (a) Provide an orientation to the working drafts of the Waikato Resilience Framework - Waikato Regional Council's approach to natural hazard risk reduction and adaptation (WRF) and the Risk-based Analysis Process for Prioritisation (RRAPP).
 - (b) Provide an opportunity to ask questions of the project team and explore the content in more depth.
 - (c) Seek feedback on the working drafts from elected members prior to adoption by Council.
 - (d) Brief elected members on the next steps prior to reporting the proposed final versions to the Council on 27 August.

KŌRERO WHAKATAKI | EXECUTIVE SUMMARY

2. The Waikato Regional Council (WRC) is developing the Waikato Resilience Framework - Waikato Regional Council's approach to natural hazard risk reduction and adaptation (WRF) and a Regional Risk-based Analysis Process for Prioritisation (RRAPP).
3. The purpose of the WRF is to provide a whole-of-organisation approach (Framework - *the How*, and Plan - *the what*) for Waikato Regional Council to embed natural hazard risk reduction and adaptation considerations into our work. It focuses on pre-event risk reduction and adaptation, with a focus on communities and land use.
4. The purpose of the RRAPP is to establish a risk-based process intended to provide a transparent, evidence-informed basis for systematically identifying and rating locations for the council's investment in natural hazard risk reduction and adaptation activities.
5. Once implemented, the rated locations, alongside the supporting analysis and collated information, can be used to inform decisions on where to invest resources in hazard risk management activities across the region. It is envisaged that the final process applies to all natural hazards and will be useful for a range of Waikato organisations, not only WRC.
6. At the 22 April 2026 workshop, councillors were given an overview of the project and next steps, provided the draft content outline for the WRF, and the draft RRAPP was presented for councillor feedback.

CONTEXT AND ALIGNMENT

Why this work is needed

7. Waikato communities are already exposed to natural hazards including flooding, coastal hazards, drought, erosion and severe weather which will increase in frequency and severity over time. Council will therefore need to make more prioritised and complex decisions about where to invest, how to reduce risk, and how to support communities to adapt before events occur.
8. Waikato Regional Council already has a wide range of programmes focused on delivering flood protection, catchment management, emergency management, environmental monitoring, planning, science and regional leadership however, this work is delivered through different programmes and decision-making processes.
9. The Waikato Resilience Framework provides a way to bring these work programmes together so Council can take a more consistent, long-term and coordinated approach to reducing natural hazard risk.

Alignment with Council's strategic direction

10. The Framework aligns with Council's strategic direction by supporting stronger community wellbeing through improved resilience to climate and natural hazard risk. It provides a structure for evidence-based decision-making that will assure better partnership with iwi, territorial authorities, communities and infrastructure providers. It also supports Council's role in planning for the long term, reducing future risk and making investment decisions that consider both current and future generations.
11. The national policy and legislative context is also changing. Government direction on climate adaptation signals that councils will be expected to take a more prioritised, transparent and evidence-informed approach to spatial planning and climate-related natural hazard risk mitigation. The Framework positions Waikato Regional Council to respond proactively to these expectations and to provide better risk information for regional and local decision-making.

What the Framework and RRAPP will help Council do

12. The Framework sets out the overall approach for how Council will embed natural hazard risk reduction and adaptation into its planning, investment and operational decisions. It focuses on reducing risk before disasters occur, rather than only responding after events.
13. The RRAPP supports the Framework by providing a transparent, risk-based way to identify and prioritise locations where investment in natural hazard risk reduction and adaptation may be needed. This will help Council use evidence consistently when considering where effort and investment should be focused.
14. In practical terms, the Framework and RRAPP will help Council:
 - (a) Better understand current and future natural hazard risks,
 - (b) make clearer decisions when there is uncertainty,
 - (c) work more effectively with iwi, territorial authorities, communities and other partners,
 - (d) prioritise investment in risk reduction and adaptation, and
 - (e) support communities to become more resilient over time.

WORKSHOP FORMAT

15. This workshop has been intentionally scheduled to present working drafts of key project documents to elected members for consideration and further input, ahead of reporting the final versions to the Council on 27 August. The project team is therefore actively seeking input and insights from elected members during this session.
16. The WRF and the RRAPP are both substantial, complex pieces of work in their own rights. The workshop approach is therefore:
17. For the WRF:
 - (a) Overview of the purpose, scope and context for the work, including strategic and programme alignment,
 - (b) A walkthrough of the four Pou,
 - (c) A walkthrough of the key approaches proposed by the WRF, and the priority actions to enable these approaches.
18. For the RRAPP:
 - (a) Brief recap of the purpose, scope and context for the work, including strategic and
 - (b) programme alignment,
 - (c) Overview of key changes since the RRAPP was presented at the 22 April 2026 workshop with councillors.
19. Elected members have been provided with a copy of the draft documents with this workshop memo, the walkthrough will follow their structure. Questions and comments will be taken throughout the session and will inform the final version of the documents.

POST-WORKSHOP ACTIVITY

20. Project team members are actively seeking perspectives from elected members before the working drafts are finalised. Input can be provided through document review or by email prior to the workshop or provided at the workshop.
21. The final WRF will be reported to the Council meeting on 27 August 2026.

ĀPITIHANGA | ATTACHMENTS

1. **Working Draft (28 July 2026) – Summary of Waikato Resilience Framework - (Doc # 37971154)** [↓](#)
2. **Working draft (28 July 2026) Waikato Regional Council Framework and Plan for Resilience to Natural Hazard Risk – (Doc # 37971654)** [↓](#)
3. **Working Draft (28 July 2026) Risk-based Anakysis Process for Priotisation (RRAPP) – (Doc # 37969445)** [↓](#)

Waikato Resilience Framework (WRF)	
The WRF provides our organisation-wide approach to how we will deliver our core regional functions in relation to natural hazard risk reduction and adaptation . It guides how we work and our short, medium and long term work programmes.	
Vision	
Waikato: Empowered people shaping a healthy, prosperous place for generations to come.	
What does success look like?	
Short-medium term	Long term outcomes
1. We collaborate and connect across the council and the wider system to manage and adapt to natural hazard risk. 2. We have the expertise, and partner with others, to translate outputs into trusted information, insights and advice. 3. We invest in the data, science, models, tools and technology that enable our risk management and adaptation work. 4. We use and integrate the full range of tools available to us to manage and adapt to natural hazard risk. 5. We incorporate intergenerational, system-wide and te ao Māori perspectives and long-term public value into our decision-making processes.	1. Iwi and communities have the information, tools and support they need to make informed decisions that reduce current and future natural hazard risks. 2. People and nature adapt and thrive together in the Waikato region. 3. Prioritised investment in risk management and adaptation reduces long-term costs and enables a healthy environment, vibrant communities and a strong economy. 4. Planning and investment decisions support adaptive responses and reduce community vulnerability and risk.
Pou	Key approaches (steps, systems, processes)
Pou 1 Integrated systems and collaboration <i>Take a whole-of-system and partnership-based approach</i>	1. Embed multi-criteria decision-making across planning, investment and delivery 2. Increase integration between regional functions within the council 3. Strengthen external collaboration and coordination
Pou 2 Understanding current and future natural hazard risk <i>Build a clear, shared understanding of current and future natural hazard risk and its impacts across the Waikato region.</i>	1. Grow council-wide natural hazard, climate risk and adaptation intelligence 2. Strengthen the evidence base and tools for decision making 3. Analyse and evaluate regional natural hazard risks 4. Prepare natural hazard information for the new planning system
Pou 3 Investment and decision-making for risk reduction and adaptation <i>Prioritise investment in risk reduction and adaptation where it delivers the greatest long-term reduction in risk, while balancing affordability, levels of service and long-term financial sustainability.</i>	1. Integrate natural hazard and climate risks into long-term planning and performance 2. Develop sustainable and equitable funding arrangements for flood management 3. How we'll identify locations for investment in natural hazard risk reduction and adaptation 4. Assess resilience investments for full lifecycle value, avoided risk and wider benefits
Pou 4 Managing risk for Resilient People and Places <i>Strengthen the resilience of communities, places, infrastructure, catchments and natural systems.</i>	1. Embed adaptation planning in the delivery of core functions 2. Working with partners on community adaptation planning 3. Strengthen adaptive, risk-based asset management 4. Communicate risks and insights for action and change 5. Enable community-led action 6. Use the current reforms to improve regional risk reduction and adaptation outcomes
How we will get there	
Implementation of the WRF will be staged through existing, planned and future initiatives, with any additional investment sought through Long Term Plan processes.	

Doc# 37254340

Working Draft

Waikato Resilience Framework

Waikato Regional Council's approach to natural hazard risk reduction and adaptation.

For inside cover: Acknowledgements

- Staff across the council and the wider Waikato local government sector who contributed to the development of the WRF.
- Otago Regional Council for sharing the work and insights of their regional natural hazards prioritisation programme, which helped inform our regional risk-analysis process.
- Auckland Transport for sharing their *Climate Adaptation Framework and Action Plan*.

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Executive summary

The *Waikato Resilience Framework* (WRF) provides Waikato Regional Council's organisation-wide approach to natural hazard risk reduction and adaptation.

It responds to the growing challenges posed by flooding, drought, coastal hazards, erosion, land instability, wildfire and other natural hazards, which are increasing pressure on communities, infrastructure, the environment, and the regional economy. As the Waikato region is also home to nationally significant transport, energy, and primary production assets, the consequences of natural hazard events often extend beyond the region itself.

The WRF exists to ensure the council takes a coordinated, consistent, and forward-looking approach to resilience. It supports the vision and implementation of *Te Pae Tawhiti | Strategic Direction 2026-2036*. Natural hazard risk is managed through many council functions, including catchment management, flood protection and drainage, policy and planning, science and monitoring, infrastructure management, emergency management, and community adaptation. As risks become more complex and interrelated, these functions need to be increasingly well co-ordinated.

The WRF provides a common direction across all our organisation to align and co-ordinate how we will address natural hazard risk reduction and adaptation in our core functions, enabling the council to make good decisions under uncertainty and deliver long-term benefit.

It focuses on the **risk reduction and adaptation** aspects of resilience to natural hazard risk, and the approach includes:

- Taking a whole-of-system and partnership-based approach to risk reduction and adaptation.
- Building a clear, shared understanding of current and future natural hazard risk and its impacts across the Waikato region - for communities, infrastructure, natural systems and land use.
- Strengthening the resilience of communities, places, infrastructure, catchments and natural systems.
- Prioritising investment in risk reduction and adaptation where it delivers the greatest long-term reduction in risk, while balancing affordability, levels of service and long-term financial sustainability.

The WRF is an inward-facing document designed primarily for council staff, managers, executives, and elected members. It provides guidance for strategic and operational planning, investment decisions, policy development, service delivery, and organisational priorities. It also signals to partners and stakeholders how the council intends to contribute to natural hazard risk reduction and adaptation and where it will focus its efforts.

The WRF is organised in three main parts.

- **Part 1** sets the scene by explaining why an organisation-wide approach to natural hazard risk resilience is needed and how Waikato Regional Council contributes to natural hazard risk reduction and adaptation.
- **Part 2** sets out our approach, including the principles, processes, systems and tools that will guide how we embed natural hazard risk management and adaptation in our decision making, services and work programmes.
- **Part 3** sets out how we will implement the WRF.

Ultimately, the WRF aims to help achieve our council's vision. **Waikato: Empowered people shaping a healthy, prosperous place for generations to come.**

At a glance

At a glance - shaded content block down the side of the executive narrative summary: (develop content for designers when Framework finalised)

Part 1 – Setting the scene

The challenge facing Waikato

The Waikato region is exposed to a wide range of natural hazards, including flooding, drought, coastal inundation, erosion, land instability, wildfire and seismic and volcanic activity. Changes to our environment are increasing the frequency, intensity and complexity of many of these hazards, placing growing pressure on our communities, infrastructure, productive land, ecosystems, regional services and the economy.

This region's resilience to natural hazards is also of national importance. State Highway 1, the main trunk rail line, nationally important electricity transmission infrastructure, major primary production systems, key tourism destinations and ecological communities all pass through or depend on the region. Consequently, the effects of natural hazard events can extend beyond our local communities, disrupting national connectivity, supply chains, economic performance and environmental outcomes.

As natural hazard risks become increasingly complex and dynamic, the existing ways of how we work, plan and make decisions are inadequate for the responses that are necessary for the safety, prosperity and wellbeing of current and future generations.

Purpose of the framework

Waikato Regional Council plays a key role in reducing and adapting to natural hazard risk through a range of core regional functions¹, including catchment management, flood protection and drainage, regional transport, regional policy, spatial planning, science and monitoring, infrastructure planning, emergency management and the provision of information and advice on regional hazards to communities, stakeholders and partners.

The WRF provides a strategic, **organisation-wide approach to how** we will deliver these core regional functions in relation to natural hazard risk reduction and adaptation. It sets a common direction for how the council understands and reduces risk, navigates uncertainty, embeds adaptation in our work, and works with others to reduce risk and adapt across the region. It also identifies how to enable this approach and to respond to legislative reform, emerging risk information and evolving regional priorities.

The WRF will:

- guide the council's forward work programme by setting out the approaches, processes, systems and tools to reduce and adapt to natural hazard risk, and what change is necessary to embed and implement these.
- help the council to develop organisation-wide measures to track how the council is reducing and adapting to natural hazard risk across its core functions
- support the Executive Leadership Team and councillors to make informed decisions on priorities, investment, resourcing and trade-offs across the organisation over the short, medium and long term.

The WRF is an inward facing document, intended to support council staff and decision makers.

¹ See the Groups of Activities in [2024-2034 Long Term Plan](#) | [2024-2034 Te Mahere Roa](#)

However, it also provides a clear signal to partners and stakeholders about how we will contribute to natural hazard risk reduction and adaptation. Resilience to natural hazard risk is a shared responsibility across all of society, and our contribution will be more effective when it is part of coordinated action across local government, central government, iwi, lifeline utilities, industry and Waikato communities.

The WRF is a non-statutory document that provides the council with an organisation-wide approach for how we will deliver our natural hazard risk reduction and adaptation activities across the region. While it does not create new statutory obligations, it helps align and coordinate how we deliver our legislative responsibilities, statutory plans, and wider programmes of work.

Scope

The WRF focuses on the **risk reduction and adaptation** aspects of natural hazard resilience for **communities and land use**. Emergency readiness, response, and recovery are closely related but are outside the scope of the WRF.

The WRF is not focused on ecological or environmental resilience, which is addressed through the Waikato Regional Biodiversity Strategy and other mechanisms. However, natural hazard resilience for communities and land use cannot be addressed in isolation. Our planning and responses must be integrated with transition planning, environmental outcomes, sustainability principles and broader planning, investment and decision-making processes.

Contribution to strategic risk management

The WRF is consistent with and helps inform the Waikato Regional Council Risk Management Framework², which is underpinned by the *ISO 31000:2018 Risk management — Guidelines*. The WRF and its implementation will support the treatment of a number of the council's strategic and organisational risks. Strategic risks the WRF addresses include relationships, climate change, information, data and technology, governance and reform transition, financial sustainability, and giving effect to Treaty of Waitangi / Te Tiriti o Waitangi.

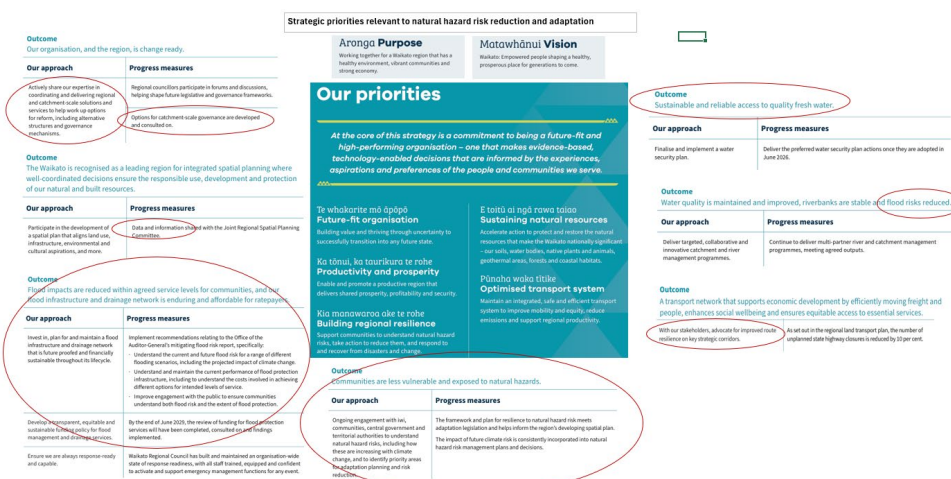
Implementing the council's vision and strategic priorities

Highlight: Matawhānui | Vision: Waikato: Empowered people shaping a healthy, prosperous place for generations to come.

Successive strategic directions have reflected our longstanding responsibilities for resilience to natural hazard risk. The WRF supports the vision and implementation of *Te Pae Tawhiti | Strategic Direction 2026-2036*, where all five strategic priorities recognise the council's role in resilience to natural hazards.

Discuss with designers how to create visual that highlights key SD connections as highlighted below:

² Waikato Regional Council Risk Management Framework <https://discovercloud.wairc.govt.nz/cs/cs/app/nodes/3375577>



Our role in natural hazard risk management

New Zealand's natural hazard management system

Our natural hazard management activities exist within New Zealand's natural hazard management system, which provides the legislative, policy, scientific and operational settings for our work. The following diagram shows the key features of New Zealand's natural hazard management system.



Diagram 1: Key features of New Zealand's natural hazard management system. Source: Ministry for the Environment presentation to the Te Uru Kahika Regional Hazards and Risk Management Special Interest Group on Implementing the National Policy Statement on Natural Hazards, 23 April 2026.

The new planning system and risk management

Many of the current reforms are designed to address how this system operates, particularly in the context of climate-related risks. The following diagram shows how the new planning system fits within risk management processes.

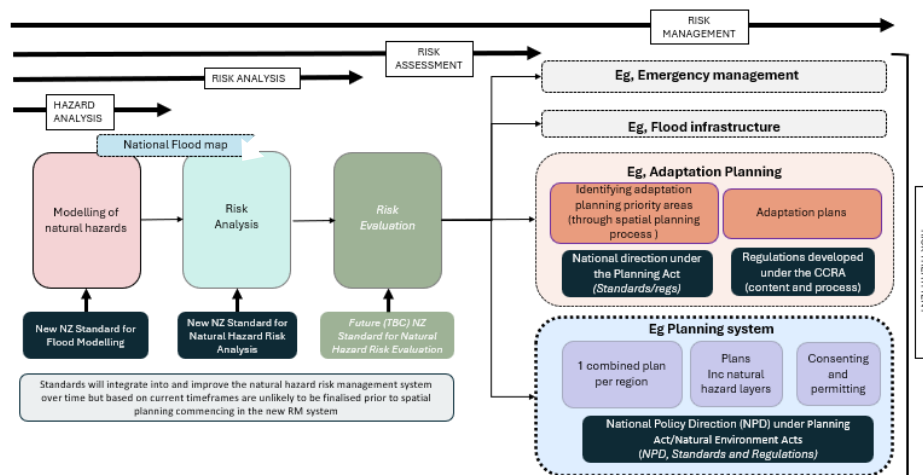


Diagram 2: How the new planning system fits within risk management processes. Source: Ministry for the Environment presentation to the Te Uru Kahika Regional Hazards and Risk Management Special Interest Group on Implementing the National Policy Statement on Natural Hazards, 23 April 2026

Legislative responsibilities and activities

Waikato Regional Council has natural hazard risk management responsibilities mandated, enabled and defined primarily through the following legislation and regional policy:

- Resource Management Act 1991
- Local Government Act 2002
- Soil Conservation and Rivers Control Act 1941, and its ownership and management of flood protection and drainage schemes
- Civil Defence and Emergency Management Act 2002
- Waikato Regional Policy Statement³ which requires us to take a guiding and collaborative role in the for natural hazard, resilience and adaptation activities in the Waikato.

While Regional Hazards and Emergency Management is a dedicated Long-Term Plan (LTP) Group of Activities, many of the council's activities contribute to natural hazard risk reduction and adaptation, even where this is not their primary focus. These include:

- river and catchment management, land drainage and flood infrastructure programmes
- policy development, spatial and adaptation planning and implementation
- regulatory processes and education
- community and primary industry advocacy and engagement
- regional land transport planning and policy
- biodiversity and biosecurity implementation
- water management and water security collaboration
- environmental monitoring, modelling and spatial analysis

³ Waikato Regional Policy Statement, [RPS-Part-3-Topics.pdf](#)

- weather data and early warning systems
- emergency preparedness and natural hazard advice
- coastal, water and soil science advice and research programmes.

Shaded box: A wide range of our regional strategies, frameworks and plans contribute to reducing and adapting to natural risk, including:

- Strategies such as
 - Waikato Regional Council's *Te Pae Tawhiti | Strategic Direction 2026-2036*, Regional Water Security Strategy and multi-stakeholder implementation plan, Infrastructure Strategy, Biodiversity Strategy, Regional Energy Strategy
- Policy and Plans such as
 - Civil Defence and Emergency Management Group Plan, Regional Asset Management Plan, *Waikato Regional Land Transport Plan 2024-2054*, Regional Catchment Management Framework, Waikato Regional Plan⁴.

Regional policy obligations

The Waikato Regional Policy statement [Waikato Regional Policy Statement](#) is a fundamental document for our natural hazard risk reduction and adaptation activities. It sets out how the council must work in relation to natural hazards and risk.

Part 3 of Waikato Regional Policy Statement contains key objectives, policies and methods in relation to hazards and risk.⁵

HAZ-M1 contains the region's risk management framework and requires regional and district plans to incorporate a risk-based approach into the management of subdivision, use and development in relation to natural hazards. It requires that natural hazard risks do not exceed **acceptable levels** and **intolerable risk** is reduced to **tolerable or acceptable levels**.

HAZ-M5 sets out the information, education and advocacy activities we **must** deliver and requires:

Wide ranging collaboration

- to support collection and analysis of natural hazard risk information
- to develop and implement public education and awareness programmes on natural hazards and their associated risks
- to promote understanding and awareness of natural hazard risk to properties.

Specific agencies we must collaborate with:

- Territorial authorities, the Ministry of Civil Defence and Emergency Management, the Waikato Civil Defence and Emergency Management Group and other agencies
- Agencies involved in the property market, including insurance companies, lending agencies and real estate agencies
- Research organisations.

Storage and provision of natural hazard risk information

Store all natural hazard risk information that is available and relevant to the Waikato region, and share this information with territorial authorities and other relevant stakeholders

Advocacy for

⁴ Under the new planning system, existing regional policy statements, regional plans, and coastal planning provisions will be consolidated into a single regional combined plan.

⁵ Waikato Regional Policy Statement, [RPS-Part-3-Topics.pdf](#)

- a proactive approach to natural hazard identification in district and regional plans;
- the use of best practice approaches, including mātauranga Māori, to natural hazard identification and management of the associated risks; and
- a strategic approach to development and redevelopment that seeks to minimise any increase in risk from natural hazards (including residual risk).

An excerpt of these provisions can be found in Appendix 1 – Knowledge hub.

Our tools and systems for natural hazard risk reduction and adaptation

We use a range of tools and systems to reduce and adapt to natural hazard risk:

Governance systems and processes for risk management and supporting planning, decision and investment prioritisation

Infrastructure and catchment management to support the management of risks via nature based solutions, natural systems and fit for purpose infrastructure interventions.

Planning and regulatory systems including spatial and adaptation planning, planning provision and technical input.

Monitoring, science and modelling to support evidence-based decision making based on robust science and data.

Community resilience and preparedness to support communities at both a property and catchment scale in managing risk via response planning (CDEM), hazard risk communication and education

Our work to date

Our responsibilities for natural hazard risk reduction and adaptation have been delivered over decades, often as part of ongoing work and multi-year programmes. A selection of initiatives and projects that have been achieved over the past 10 years or so are summarised below.

These projects also demonstrate the changing focus of the council's work programmes and the increasing demands and complexity, as we respond to new drivers, both legislative and climatic.

Table 1: Summary timeline of our work on natural hazard reduction and adaptation over the past ~10 years (excludes site specific physical works).

Year	Project
2015-2019	Launched key public-facing hazard information tools, including the Waikato Coastal Inundation Tool and Waikato Hazards Portal and published foundational climate change direction setting and impact assessment work.
2020-2024	Strengthened our natural hazard and climate resilience work through new hazard layers on the portal, publishing new or updated climate and water security strategies, improving hazard information tools, expanding telemetry sites and, contributing to adaptation planning, and embedding climate change into infrastructure, catchment and sediment-erosion management work. organisational climate risk management.
2025 +	Since 2025, we have significantly expanded our natural hazard and climate resilience work through new regional hazard and risk reports and

	community risk assessments, organisational climate risk assessment, updated flood and coastal inundation modelling and data, improved forecasting and decision-support tools, adaptation guidance, water security planning, energy strategy, and stronger use of modelling, AI and infrastructure decision-making frameworks to support long-term resilience.
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Part 2 – Our Framework

The WRF is organised around four pou, or pillars, that set out how the council will approach natural hazard risk reduction and adaptation:

- Pou 1: Integrated systems and collaboration
- Pou 2: Understanding current and future natural hazard risk
- Pou 3: Investment and decision-making for risk reduction and adaptation.
- Pou 4: Managing risk for resilient people and places.

Design note: Create diagram representing the four pou

Each pou contains the principles, systems and processes we will use and the steps we will take to implement the pou.

The pou, approaches, and principles are interconnected. While the principles and approaches have been organised within an individual pou for clarity, it is important to recognise that they are linked both within and across the different pou. The WRF should therefore be considered and applied as a whole, rather than as a collection of separate components.

What does success look like?

Over the shorter term, we'll know we are making progress as an organisation when:

1. We collaborate and connect across the council and the wider system to manage and adapt to natural hazard risk.
2. We have the expertise, and partner with others, to translate outputs into trusted information, insights and advice.
3. We invest in the data, science, models, tools and technology that enable our risk management and adaptation work.
4. We use and integrate the full range of tools available to us to manage and adapt to natural hazard risk.
5. We incorporate intergenerational, system-wide and te ao Māori perspectives and long-term public value into our decision-making processes.

Over the longer term, we'll know we are successful when these outcomes are achieved for the region:

1. Iwi and communities have the information, tools and support they need to make informed decisions that reduce current and future natural hazard risks.
2. People and nature adapt and thrive together in the Waikato region.
3. Prioritised investment in risk management and adaptation reduces long-term costs and enables a healthy environment, vibrant communities and strong economy for current and future generations.
4. Planning and investment decisions support adaptive responses and reduce community vulnerability and risk.

Pou 1: Integrated systems and collaboration

Take a whole-of-system and partnership-based approach.

Side bar: Pou 1 at a glance

Key principles

- Using our tools as an integrated system
- Integrate Te Ao Māori and mātauranga Māori
- Multi-hazard approach
- Ki uta, ki tai – from mountains to sea
- Co-ordinated action to address climate risk

Key approaches (steps, systems, processes)

- Embed multi-criteria decision-making across planning, investment and delivery.
- Increase integration between regional functions within the council.
- Strengthen external collaboration and coordination

Introduction

Natural hazard risk reduction and adaptation depend on systems that work together. Pou 1 focuses on strengthening integration across the council's functions, tools, decisions and partnerships so that risk is managed in a coordinated, consistent and enduring way.

Climate change is increasing the frequency, severity and complexity of many hazards, with impacts felt across catchments, communities, ecosystems and infrastructure networks. Responding effectively requires a whole-of-system approach that connects governance, planning, investment, science, infrastructure, catchment management, regulatory functions and community action. It also requires strong collaboration with iwi, territorial authorities, central government, lifeline utilities, communities and other partners.

By working across boundaries and using the full range of available tools, the council can make better decisions, reduce duplication, manage trade-offs and support long-term resilience across the Waikato region.

Key principles

Using our council tools as an integrated system

Natural hazard risks across the Waikato region are increasing. Climate change is amplifying existing hazards, financial resources are constrained, and the consequences of disruption are becoming more widespread and interconnected.

Managing natural hazard risk effectively requires us to use the full range of our regional functions, powers, assets and partnerships in a coordinated way. Operating as an integrated system enables better decisions, stronger resilience, as well as more effective investment.

Te Ao Māori and mātauranga Māori integration

Te ao Māori and mātauranga Māori provide a systems-based understanding of the world, recognising people, whenua, wai, ecosystems, infrastructure and future generations as interconnected and interdependent parts of a wider living system. Combining these perspectives with scientific, technical and local knowledge supports integrated and holistic decision-making.

Ki uta, ki tai – from the mountains to the sea

Ki uta ki tai recognises the interconnectedness of land, water, people, ecosystems and infrastructure across the whole catchment. Natural hazards do not respect human-created boundaries, and decisions about land use, water management, infrastructure and environmental stewardship can have impacts both upstream and downstream. For example, land use and management decisions in Matamata-Piako can influence river flows, water quality and flood risk in downstream Hauraki. A **ki uta ki tai** approach supports integrated, catchment-wide decision-making that considers cumulative effects, cross-boundary impacts and long-term resilience.

Graphic if space: showing water connection from the mountains to the sea (see Rick for example from the regional flood model).

Co-ordinated action to address climate risk

Consistent with a *ki uta ki tai* perspective, addressing climate risk requires coordinated action across local, regional and national agencies, iwi, communities, infrastructure providers and other partners. By working together, we can deliver more integrated and resilient responses to natural hazard and climate risk.

Key approaches

Embed multi-criteria decision-making across planning, investment and delivery

To recognise the systemic and compounding nature of natural hazard risk, a systems-based approach to decision-making is essential. Community resilience, natural-system resilience, sustainability, adaptation and emissions reduction are mutually dependent outcomes.

For example, a decision that protects people or land but degrades natural systems may increase long-term risk. Likewise, a decision that reduces emissions but places infrastructure in hazard-prone locations may create maladaptation. Resilient decisions are those that deliver benefits without shifting risk, cost, or consequences to other communities, places or future generations.

To support enduring outcomes, we will assess options across multiple dimensions, including:

- reducing risk to people, places, infrastructure and services
- the resilience of rivers, wetlands, floodplains, soils, coastal systems and biodiversity
- cultural values, mātauranga Māori and iwi/hapū aspirations
- water quality, water availability and catchment health
- emissions reduction and transition impacts
- lifecycle costs, avoided costs and long-term affordability
- intergenerational equity and maintaining future adaptation choices
- the risk of maladaptation and the transfer of risk to other places, communities or future generations.

Side bar

New Zealand's resource management reforms present an important opportunity to strengthen natural hazard risk management through a more integrated, system-wide approach. This extends beyond protecting communities to enhancing the resilience of natural systems as well. The proposed Planning Bill and Natural Environment Bill both give greater prominence to climate change and natural hazards. In particular, the Natural Environment Bill incorporates climate change and natural hazards into environmental limits, requiring consideration of how natural systems will respond to future climate-related pressures and disturbances. Together, these reforms support a more holistic approach to resilience, recognising the interdependence of communities, infrastructure and the

natural environment when responding to current and future hazards.

Breakout: Case study: Whangamarino Action Plan

Increase integration between regional functions within the council

Whole-of-system integration helps planning and decisions account for multiple hazard types, infrastructure limitations, catchment processes, sediment and flood dynamics, nature-based interventions, growth planning and upstream/downstream interactions. It also improves collaboration and reduces duplication of effort.

Strengthen co-ordination and cross-discipline collaboration across council functions

Effectively managing natural hazard risk and adaptation requires close integration across the council's natural hazards, climate change, catchment management, infrastructure, environmental management and planning functions.

While teams and sections already work together closely across the council on a range of projects and initiatives, cross-disciplinary collaboration and co-ordination are a key tool to increase integration. Existing mechanisms such as the Resilience and Adaptation Advisory Group are one such way to help achieve this, with a key focus on strengthening co-ordination and cross-discipline collaboration across council functions.

Increase integration between spatial/growth planning and infrastructure and catchment planning

Opportunities for closer integration include strengthening the relationship between spatial and growth planning, infrastructure and catchment planning, recognising that the performance and limitations of infrastructure and catchment management activities can influence land use opportunities and constraints.

Implement the Infrastructure Strategy to better support river and catchment assets

While the strategy identifies river and catchment management assets as being in scope, it provides limited direction on their long-term management. We need to better support the planning, maintenance and renewal of river and catchment management assets, including rock groynes, weirs, erosion control structures and green infrastructure such as fencing and planting. This will include making better use of existing IT systems to improve catchment asset information, lifecycle management and investment decision-making.

Evolve drainage services to support water management

Drought is an increasing climate risk, but our drainage services are primarily focused on managing excess water. Transitioning from a drainage-focused approach to integrated water management will enable a more balanced and resilient response to flooding, drought, water security and future water storage needs.

Transition to whole-of-catchment performance assessments

Current assessments focus primarily on the performance of flood protection infrastructure. However, this infrastructure operates within a broader flood risk management system that includes river and catchment management activities, nature-based solutions, and emergency management arrangements, for example, stopbank breach/overtopping evacuation plans.

By evaluating the performance and resilience of components within an entire catchment system, we'll also consider residual risk, the effectiveness of complementary risk reduction measures, and areas where formal flood protection infrastructure is not in place. This approach will enable the

assessment of triggers and thresholds for a catchment (see Pou 4). There is also an opportunity to incorporate other non-hazard thresholds, such as water quality and biodiversity.

A whole-of-catchment approach will support better decision making by accounting for catchment processes, sediment and flood dynamics, nature-based interventions, growth and land use planning, and upstream and downstream interactions.

Increase the scale and uptake of nature-based solutions

These solutions offer a multi-faceted opportunity to reduce natural hazard risk across the Waikato region's landscapes, while advancing the restoration and protection of catchment systems.

Solutions such as wetland restoration, river naturalisation, floodplain reconnection, riparian planting, detention systems, constructed wetlands, upstream reforestation and animal pest control, and pole planting on hill country can complement, and in some cases replace traditional hard infrastructure solutions by:

- increasing infiltration and storage capacity across rural headwaters (for example, the Waipā hill country) and lowland flood-prone areas (for example, Whangamarino Wetland)
- attenuating peak flows, which slows and reduces runoff
- stabilising land and controlling sediment and erosion impacts on lower river systems.
- reducing pressure on engineered infrastructure
- mitigating downstream flood risks
- providing water retention in drought
- delivering shade in heat.

Nature-based solutions can also deliver a wide-range of co-benefits, including cultural, water quality, climate adaptation, biodiversity, amenity, recreation, economic, and water security outcomes. These co-benefits reinforce the value of nature-based solutions as integrated responses to natural hazard risk. They not only reduce exposure and vulnerability to hazards, but enhance community wellbeing, biodiversity and the long-term health of our waterways.

Recognising their ability to address multiple risks and deliver multiple outcomes, increasing the scale and uptake of nature-based solutions is a key approach of the WRF. The council's *Regional Catchment Management Framework* provides the vehicle to achieve this.

Highlight: *"Hard infrastructure might sit idle for years because it's designed for rare events. Nature-based solutions can work every day."*

- Staff reflection

Strengthen external collaboration and co-ordination

Responsibility for managing natural hazard risks is distributed across multiple organisations and legislative frameworks, with roles varying depending on the hazard and what is exposed.⁶ As a result, achieving resilience requires strong partnerships, shared understanding and coordinated action across agencies and sectors. Irrespective of broader national reforms simplifying the regulatory landscape, collaboration remains one of the most important tools for achieving integrated, region-wide resilience. Nationally, there is much to gain by working collaboratively with our colleagues across local government, the regional sector and central government, while joint

⁶ The complexity of our operating environment was recently recognised in a review of the state of New Zealand's regulatory systems: <https://www.regulation.govt.nz/assets/Publication-Documents/The-state-of-New-Zealands-regulatory-systems.pdf>, Ministry for Regulation, May 2026, ISBN 978-1-991372-14-7 (Online)⁷ [Chapter Zero New Zealand](#) | [IoD NZ](#)

governance and partnership arrangements with iwi provide an important mechanism for bringing together different knowledge systems, values and perspectives.

Focus external collaboration effort where it can have the greatest impact on regional resilience outcomes

Reducing natural hazard risk requires coordinated action and collaboration across many organisations and decision makers, at locally, regionally and nationally. Purposeful co-ordination is necessary to ensure the right people across the council are working where we can have the greatest impact on risk reduction and adaptation outcomes. Clear definition of where Waikato Regional Council will lead, influence or align with territorial authorities, iwi and hapū, CDEM, lifeline utilities, central government and sector groups will support a focused and prioritised approach to external collaboration.

Strengthen our understanding and application of te ao Māori in a risk reduction and adaptation setting

Integrating te ao Māori into our risk reduction and adaptation activities is essential for developing solutions that are sustainable, place-based, and resilient over the long term. Iwi bring valuable mātauranga Māori, deep connections to whenua and wai, and an intergenerational perspective that considers outcomes over 100 years or more. By strengthening our understanding of and engagement with iwi, we can better address complex environmental challenges, make more informed decisions, and give effect to Te Mana o te Wai, ensuring the health and wellbeing of our water bodies, communities, and future generations.

Improve strategic alignment and planning between CDEM and council

Risk reduction, emergency management and climate adaptation are closely connected, yet strategic planning between Waikato Regional Council and CDEM can be better aligned and occur earlier in the planning process. A key action is to strengthen coordination between the council and CDEM by aligning strategic planning cycles and developing a shared work programme across risk reduction, readiness, response, recovery, flood risk management and adaptation planning.

Earlier and more integrated planning will reduce duplication, improve identification of interdependencies, and strengthen community resilience. It will result in a more strategic partnership with shared priorities, clear roles and coordinated delivery.

Pou 2: Understanding current and future natural hazard risk

Build a clear, shared understanding of current and future natural hazard risk and its impacts across the Waikato region.

Side bar: Pou 2 at a glance

Key principles

- Beyond extreme weather events
- Use quantitative and qualitative information
- Future risk is a lens to test shorter-term decisions
- Address priority risks in the National Climate Change Risk Assessment

Key approaches (steps, systems, processes)

- Grow council-wide natural hazard, climate risk and adaptation intelligence
- Strengthen the evidence base and tools for decision making
- Analyse and evaluate regional natural hazard risks
- Prepare natural hazard information for the new planning system

Introduction

Understanding current and future natural hazard risk is the foundation for effective risk reduction and adaptation. Pou 2 focuses on strengthening the council's evidence base, tools, capability and processes so we can identify changing hazards, understand exposure and vulnerability, and translate complex information into clear insights for decision-making. Climate change is reshaping the risks facing the Waikato region, increasing uncertainty and challenging past assumptions about land use, infrastructure, communities and natural systems. Historical records remain important, but they are no longer sufficient on their own. Data, technology, modelling, monitoring systems and digital tools are critical enablers, helping us bring together multiple knowledge sources, detect change, test scenarios and make information accessible. By combining these with mātauranga Māori, local knowledge and expert judgement, the council can better understand where risks are emerging, how they may change over time, and where action should be prioritised.

Key principles

Multi-hazard approach

Natural hazard risk reduction and adaptation solutions should take a multi-hazard approach that considers the full range of climate and natural hazards affecting the region, rather than focusing on individual hazards in isolation.

While responding to climate change is a pressing need, our focus cannot be limited to the most visible consequences, such as floods, storms and other extreme weather events. To build long-term resilience, we must also understand, plan and prepare for:

- the impacts of geologic hazards, including earthquakes, landslides and volcanic activity
- the interactions between geology, hydrology and climate-driven hazards, such as the combination of vertical land movement (including from peat subsidence) with sea level rise, and saline intrusion into groundwater.
- the increasing and future impacts of other climate exacerbated hazards such as wildfire, drought, temperature increases and fewer frosts
- the rapid cycling of extreme conditions, such as prolonged periods of drought being followed by intense rainfall and flooding
- the cascading and compounding nature of hazards and risk.

Using quantitative and qualitative information

Good decision making depends on good information.

However, high-quality, location-specific quantitative data and information will not always be available for every hazard or every asset, community or value at risk. In these situations, informed expert judgement, evidence-based assumptions and consistent assessment approaches are essential. We already know enough to act – waiting for certainty may mean we lose the opportunity to act.

Understanding risk requires more than a single dataset, model, or assessment. It is built by bringing together multiple sources of information and knowledge, each providing a different perspective on how hazards may affect our region now and in the future. Scientific research, environmental monitoring, hazard and climate modelling, mātauranga Māori, local knowledge, community experience, historic event observations and technical expertise all contribute to a stronger understanding of risk.

These information sources help us identify changing hazards, understand exposure, vulnerability and risk, test future scenarios, and make informed decisions about where and how to invest in resilience.

Understand cascading and interconnected risk

We must also understand how risks interact and cascade across systems. Looking beyond individual assets or activities helps us identify where risks are connected, where actions can deliver multiple benefits, and where coordinated intervention has the opportunity to mitigate multiple risks.

Key approaches

Grow council-wide natural hazard, climate risk and adaptation intelligence

Resilience to natural hazard risk starts with strengthening our ability to understand, anticipate and respond to a changing risk environment.

Build capability to understand risk and adaptation planning

As natural hazard risks become increasingly complex and interconnected, the council needs the expertise, tools and systems to identify emerging risks, understand their implications, and make informed decisions in the face of uncertainty. A key enabler of the WRF is to build the capability needed to turn the Framework into action, with an immediate focus on increasing climate risk and adaptation planning capability across relevant council functions. With the growing need for climate risk, adaptation planning and DMDU expertise across multiple sectors, we will need deliberate workforce and partnership planning and capability building.

Mature the organisational climate change risk assessment

This risk assessment is a key tool for understanding climate related risks to the council's people and assets and to the services we provide to the region. Establishing this process was a key first step in building organisational risk intelligence, but deliberate effort is required to ensure it continues and matures as an effective tool for managing current and future climate risks.

Use climate scenario analysis as a tool

Climate scenario analysis complements climate change risk assessments by testing how risks, opportunities and decisions may change under different plausible futures. Climate scenario analysis is most valuable when used as a tool for exploring uncertainty, not trying to eliminate it. Climate scenarios help us ask, "what if?" and to prepare for a range of outcomes — even while the exact future remains unknown.

Side note: A range of agencies recognise climate risk as a crucial governance issue, including the New Zealand Institute of Directors⁷, the External Reporting Board⁸ and the⁹ To support good decision-making by councils, *Local Government Sector Climate Scenarios* have been developed and are hosted by New Zealand Local Government Funding Agency. **These scenarios present science-based, plausible but challenging futures that can be used as a practical tool to help local government navigate uncertainty, stress-test decisions, and build long-term resilience.**

We'll use climate scenario analysis, together with our organisational climate change risk assessment, as critical organisational tools to understand our specific climate related risks and opportunities and test whether existing plans and proposed decisions are resilient under different futures.

⁷ [Chapter Zero New Zealand | IoD NZ](#)

⁸ External Reporting Board, Aotearoa New Zealand Climate Standard 1, Climate-related Disclosures (NZ CS 1 xrb.govt.nz/dmsdocument/4770/, ISBN 978-1-99-100527-4

⁹ [Sustainability | New Zealand Local Government Funding Agency](#)

Highlight/breakout/bubble:**In practice:**

- **Risk assessment = identify, evaluate and prioritise the risks.**
- **Scenario analysis = test whether today's plans remain effective under different futures.**
- **Dynamic adaptive planning pathways (DAPP) = decide what to do and when as those futures unfold.**

Strengthen the evidence base and tools for decision-making**Co-ordinate resilience data improvement**

The council is already improving its data management and governance through valuable initiatives and projects delivered through our *Enterprise Data Strategy* and the *Data Information Governance Group*.

However, further collaboration and co-ordination is required on the specific domain of resilience data. In recent years, there has been a vast increase in the pace of development of resilience data internationally, nationally and regionally. Taking a strategic, co-ordinated organisation-wide approach to resilience data requires focused effort.

Resilience data includes natural hazard data, telemetry, climate projections, asset/element data (eg water conveyance asset attributes, floor levels for building footprints, critical infrastructure, bridge heights, infrastructure monitoring and satellite imagery). It is a key foundation to enable us to deliver our core services.

To ensure we can meet the current and future needs of our core functions, we must co-ordinate and collaborate on resilience data across **the council** and also **regionally, nationally, and internationally** to understand:

- what data already exists and whether it is accessible and fit for purpose
- where critical information gaps exist and what data will be required to understand emerging and future risks
- what new data is being developed, the purposes it will be suitable for, and when it will become available
- who is organisational 'owner and manager' of different data
- what the key data is needed to undertake effective natural hazard and climate change risk assessments
- where investment in data collection, research, and modelling should be prioritised
- the capability, capacity, and specialist expertise required to manage data and modelling, and to translate modelling outputs into decision-ready insights.

Not all data necessary for regional decision-making needs to be collected or managed by the council. Central government agencies, territorial authorities, research institutes, utilities, emergency management agencies, insurers and other sector partners are often better placed to develop, manage or improve certain datasets. With multiple institutions working on new resilience datasets, knowing what data is available or planned and being able to influence this, is a growing strategic need if the council wishes to optimise the data it chooses to invest in.

Enable fit for purpose information technology to support core functions and innovation

Our investments in information technology infrastructure and services, geospatial systems, modelling and analytical tools enable many of our core functions.

Continued investment in digital technologies, data systems and analytical tools will help us meet future information needs and support effective decision-making across the organisation.

Understanding current and future organisational data, modelling and technology requirements is a critical first step in planning the investments needed to support effective risk management and informed decision-making.

Embed catchment-scale modelling insights in council-wide decision-making

Breakout:

Monitoring provides information on current and historic conditions, trends, and impacts, helping us understand how systems are changing and validating predictive models. Our telemetry sites provide real-time information to support flood forecasting, emergency response and early warning systems, while also supplying essential data for regional flood modelling and national forecasting systems such as those used by MetService.

Modelling provides insights into **current** hazards and risks and how they may change over time by combining historic data, current observations, and future projections to support informed decision-making.

Advances in hydraulic, hydrological and related modelling are significantly improving our understanding of Waikato catchment systems.

Our investment in water resource modelling through the 2024-34 Long Term Plan represents a major step forward in strengthening the region's natural hazard evidence base and decision-making capability. By combining real data about rainfall, land surfaces, soils and water flow, the model simulates how water moves through the landscape under a range of conditions, including climate change scenarios. The model is now a major regional asset with benefits that can be realised beyond flood management, enabling better planning, stronger adaptation pathways, clearer investment cases and improved operational decisions.

Catchment-scale water resource modelling can provide data and insights for:

- how different interventions, such as land use change and nature based solutions, can increase or reduce the extent of flooding
- performance assessments of our flood schemes, including the limitations of the infrastructure
- identifying current and future locations suitable for potential wetland restoration and refugia for native species
- improving the regional flood hazard layer of our Regional Hazards Portal
- providing more comprehensive flood information on Land Information Memoranda (LIM)
- informing developers and consultants of flood risks affecting individual land parcels and development proposals
- supporting land use planning, zoning decisions, and resource consenting processes
- informing implementation of the Waikato Regional Policy Statement
- identifying current and future land use constraints and opportunities for the regional spatial plan
- the identification of priority locations for adaptation planning by spatial plan committees and councils as part of the process of creating regional spatial plans under the Planning Act, once it is in force
- assessing exposure and flood risk across communities, catchments and the wider region
- strengthening community response planning, including evacuation protocols
- improving flood forecasting before and during weather events

- identifying where further monitoring and/or research is needed.

With Phase 2 of the model available shortly, key next steps are to:

- ensure that the insights it provides are fully utilised across the council
- embed it as an enduring decision-support tool
- communicate with partners, stakeholders and potential users about how the model can assist their own work.

We'll also continue to progress its further development and refinement and engage with communities to calibrate the model results.

Analyse and evaluate regional natural hazard risks

The risk profile of a particular location, community or asset can change for a number of reasons, from increasing development to increasing hazard intensity. Assumptions may also exist around the extent of hazard risk management in place, and/or its suitability in a changing climate.

To support the delivery of core functions, we need to understand:

- current and future hazard exposure and risk across the region
- the vulnerability of particular locations, communities or assets. For example, the limitations and extent of flood defence infrastructure.
- residual risk and how it may change
- how the suitability of existing hazard risk management approaches may change over time
- how risk will change if land use, demography or the economy changes
- where adaptation planning, risk reduction activities or development should be prioritised
- how different tools (e.g. infrastructure, early warning systems, community preparedness, land use) operate together for resilience in specific locations

The following tools and processes are key steps to enable the council to analyse and evaluate natural hazard risk.

Carry out spatial assessments of exposure and risk

A spatial understanding of the region's exposure to natural hazards is a key foundation for prioritising and decision-making. A key tool for this is an exposure assessment, which assesses the exposure of elements such as roads, people, buildings, critical infrastructure and marae to in-scope natural hazards, both now and in the future with climate change. An exposure assessment differs from a risk assessment, as it does not consider vulnerability of the exposed elements.

With the region-wide water resource model and coastal inundation modelling now available, we are in a good position to progress our first regional exposure assessment. An exposure assessment can:

- provide region-wide exposure analysis to quantify spatially the exposure of elements to particular hazards now and in the future with climate change.
- assist with identifying "priority locations for adaptation planning" in regional spatial plans.
- help inform evidence-based prioritisation of the council and territorial authority investment of resources in hazard management and adaptation, including where a detailed risk assessment may be required.

As more detail becomes available on the planning system reforms, we will seek to confirm future roles and responsibilities for natural hazard risk assessment.

Apply our Regional Risk-based Analysis Process for Prioritisation

A key step in our natural hazard risk management approach is to consistently understand and analyse natural hazard risk across the region.

To support this analysis, we will apply our Regional Risk-based Analysis Process for Prioritisation (RRAPP, see Pou 4 for further detail on how this informs investment decisions). The process supports investment decision-making by combining an exposure assessment with practical expert-led judgement about urgency and consequence to identify, compare and rate locations across the region.

Know our priority climate risks and align with national priority risks

Climate risk assessments are not just about identifying hazards and vulnerabilities. They are a tool for prioritising action, directing resources, and supporting adaptation planning through a structured and evidence-based understanding of risk. They help inform decisions about where, when and how to intervene to reduce risk and build resilience.

Individually, the approaches set out in this Pou improve our understanding of climate risks. However, a critical step is to bring this knowledge together in a clear set of priority climate risks for the council that inform planning and decision-making (see also Pou 3). One possible framework to help prioritise climate risks for adaptation investment and action follows below.

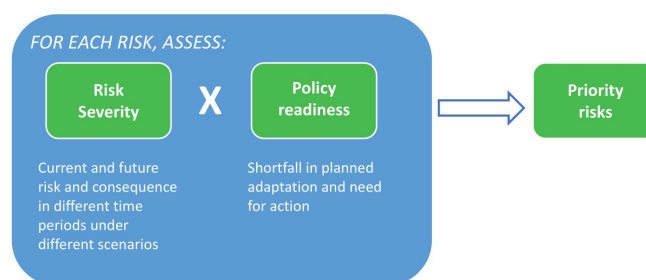


Diagram X, approach to support risk prioritisation¹⁰

We also need to align with the evidence-based national climate risk priorities in New Zealand's National Climate Change Risk Assessment (NCCRA). The second NCCRA was released in May 2026 by the Climate Change Commission. It identifies the country's 10 priority risks where focused and coordinated action can make the biggest difference for people, places and ways of life. These risks are already seriously affecting people, or will soon, and will take time to prepare for, and they are risks where acting soon can have the biggest influence on many other risks.

We must understand how these NCCRA priority risks translate to our local context and ensure they are reflected in the council's risk management, planning and decision-making processes. To do so will help inform our choices and align effort regionally and nationally.

Prepare natural hazard information for the new planning system

The planning system reforms are major opportunity to shape where and how growth occurs. Managing natural hazard risk better is one driver for the reforms and is intended to deliver reduced

¹⁰ Climate Change Commission. 2025. Webinar: National Climate Change Risk Assessment call for evidence - Academics and researchers. <https://www.youtube.com/watch?v=jShoXA9pp68> [accessed 11 April 2025].

future exposure, stronger land-use decisions and better alignment between planning, infrastructure and adaptation.

A key step for reform readiness is to ensure that appropriate natural hazard information is built into spatial choices from the start. At present there is a varying natural hazard data held and used by territorial authorities across the region. Not enough is currently known as to what information the new planning system will require, but it is flagged as a key piece of work that will likely require focus, effort and co-ordination.

Pou 3 –Investment and decision-making for risk reduction and adaptation

Prioritise investment in risk reduction and adaptation where it delivers the greatest long-term reduction in risk, while balancing affordability, levels of service and long-term financial sustainability.

Side bar: Pou 3 at a glance

Key principles

- Apply a long-term risk perspective to decision-making
- Sustainable and equitable funding arrangements for resilience investment
- Assess full life-cycle value

Key approaches (steps, systems, processes)

- Integrate natural hazard and climate risks into long-term planning and performance
- Develop sustainable and equitable funding arrangements for resilience investment
- How we'll identify locations for investment in natural hazard risk reduction and adaptation
- Assess resilience investments for full lifecycle value, avoided risk and wider benefits

Introduction

Natural hazards and climate change are reshaping the risks faced by communities, infrastructure, the environment, and the regional economy. Managing these challenges requires decisions that look beyond immediate needs and consider the long-term consequences, costs, and opportunities associated with risk reduction and adaptation. As climate pressures increase and expectations for resilience grow, the council must ensure that its planning, investment, and funding decisions are informed by a clear understanding of current and future risks.

Finance is both an enabler and a constraint in this work. It enables the council to deliver services, maintain infrastructure, and invest in projects that improve community wellbeing by providing the funding, planning, and financial insights needed to support informed decision-making and long-term outcomes. At the same time, the council must operate within limits of affordability, available funding, and long-term financial sustainability. This requires balancing competing priorities and making choices about where resources can deliver the greatest benefit.

Pou 3 provides approaches for making resilient, evidence-based decisions. It recognises finance as both an enabler and a constraint, while supporting the integration of natural hazard and climate risks into long-term planning, sustainable and equitable funding arrangements, targeted investment in resilience, and assessment of projects based on their full lifecycle value. Together, they support proactive, financially responsible actions that deliver enduring risk reduction and adaptation outcomes for current and future generations.

Side bar/breakout

Prioritising investment in proactive risk reduction and adaptation makes economic and social sense, even though the benefits may be long term and in the form of avoided costs.

Recent analysis of New Zealand's public natural-hazard spending found that since 2010, around **97 per cent** of central government spending has gone to response and recovery, compared with only **3 per cent** on risk reduction and resilience — a ratio of roughly **32:1**.¹¹ The common international benchmark is that **\$1 invested in risk reduction can reduce response and recovery spending by about \$4**.¹²

Key principles

Apply a long-term risk perspective to decision-making

The council will use a long-term risk and resilience lens to investment and planning decisions. Short-term responses that focus on immediate needs without considering future risk and a range of plausible future conditions can create unintended consequences, increase long-term costs, and result in maladaptation.

Sustainable and equitable funding arrangements for flood management

The council will ensure that its funding arrangements remain efficient, equitable, and affordable as asset costs, climate pressures, and land use patterns change, and ensure that other sources of funding outside general and targeted rates are understood and utilised where appropriate.

Assess full life-cycle value

The council will assess resilience investments on their full lifecycle value, avoided risk and wider benefits.

Key approaches

Integrate natural hazard and climate risks into long-term planning and performance

Knowing the anticipated financial impacts of natural hazard and climate change risk is fundamental to robust financial planning. That's why it's a key requirement of the XRB's climate-related disclosures regime. Although the council is not subject to that regime, the good practice principles driving the requirement apply equally to us. Having a good handle on the council's anticipated financial impacts enable us to:

- make adequate financial provision for current and future costs
- ensure the adequacy of our insurances
- provide sufficient disaster reserves.

Robust and well-developed anticipated financial impacts are underpinned by good risk and climate scenario analysis and climate scenario thinking. We'll use climate scenario planning and risk assessments to inform our long-term financial planning, including assumptions, funding, insurance, reserves and investment decisions. Alongside adequacy of insurance, affordability and ongoing availability of insurance cover will be considered recognising that insurance market responses can be an early indicator of increasing climate and natural hazard risk.

As our organisational maturity in adaptation planning grows, and as community adaptation plans are put in place across the region, we'll also need to ensure adaptation pathways are clearly reflected

¹¹ [Sapere Research Group](#). (2025). *Natural hazards-related public spending in New Zealand: Tracking costs over time by the nature of spending*.

¹² [Sapere Research Group](#). (2025). *Natural hazards-related public spending in New Zealand: Tracking costs over time by the nature of spending*.

within the Infrastructure Strategy, Financial Strategy and Long Term Plan, including the timing of investment, funding requirements, affordability impacts and decision triggers. To underpin our long term planning, the performance measures for our Groups of Activities in our Long Term Plans will need to embed natural hazard risk reduction and adaptation within them.

Develop sustainable and equitable funding arrangements for resilience investment

Flood management is a key tool for achieving resilience in the Waikato and is both an engineering and funding challenge. Climate variability, ageing assets, rising costs and broader expectations for environmental, adaptation and cultural outcomes are increasing pressure on infrastructure and the targeted-rate model that supports it. This makes it important to develop funding arrangements that are sustainable, affordable and equitable in how costs, benefits and decision-making are shared.

The last in-depth systemic review of the funding system for flood management was Project Watershed, which was completed nearly 20 years ago, and a review of funding mechanisms for essential infrastructure is currently underway. As part of this project, the council will develop principles for allocating adaptation costs between beneficiaries, ratepayers, asset owners, communities and external funding partners to ensure funding responsibilities are transparent, equitable and understood before investment decisions are made.

This work is timely given the CCRA 2002 Amendment Bill requirement that adaptation plans identify who will pay for adaptation. By requiring plans to state how costs will be met before an event, central government is shifting responsibility for adaptation decisions and costs to local authorities, property owners, and communities.

The implications for decision-makers are significant. Councils must now reflect adaptation plans in long-term planning and financial strategies, meaning costs can no longer be treated as unquantified risks. While territorial authorities adopt community adaptation plans, implementation will often rely on regional council functions, and trigger-based responses may effectively commit future budgets.

If the Crown does not fund retreat or protection measures, costs will fall on rates, targeted rates, user charges, or reduced service levels. While difficult, these decisions are better made through proactive community adaptation planning than in the aftermath of a hazard event.

How we'll identify locations for investment in natural hazard risk reduction and adaptation

With financial and resource constraints, we need to prioritise where and how we invest time and money on natural hazard risk reduction and adaptation. Robust evidence-based analysis is necessary to know our priorities for investment in risk reduction – both to inform our own investments and to seek central government investment in regional resilience. We will use our Regional Risk-based Analysis Process for Prioritisation (RRAPP) to help inform these investment decisions.

The RRAPP provides a structured, consistent evidence-based approach for identifying where to focus resilience effort and investment. The process supports investment decision-making by combining available hazard evidence with practical expert-led judgement about urgency and consequence to identify and compare locations across the region. The RRPP also considers enabling factors - social, political, economic and cultural - that may enable risk management processes to improve collaboration, engagement, efficiency and practicality in the council's adaptation and hazard mitigation work programme.

Assess resilience investments for full lifecycle value, avoided risk and wider benefits

Resilience investments need to be assessed on their full lifecycle value, avoided risk and wider benefits. Traditional cost assessments can undervalue the avoided damage, avoided disruption and wider co-benefits that proactive investment can prevent. Shifting the focus from upfront cost to whole-of-life value helps limited funding and capacity be directed to the projects that deliver the greatest risk reduction benefits and long-term public value. It also supports more transparent, evidence-based decisions, stronger business cases, clearer trade-off advice and better recognition of co-benefits such as community wellbeing, environmental outcomes and service continuity.

Pou 4 – Managing risk for Resilient People and Places

Strengthen the resilience of communities, places, infrastructure, catchments and natural systems.

Side bar: Pou 4 at a glance

Key principles

- Use DMDU and DAPP approaches to manage uncertainty
- Defined roles and responsibilities for working with partners on community adaptation planning

Key approaches (steps, systems, processes)

- Embed adaptation planning in the delivery of core functions
- Working with partners on community adaptation planning
- Strengthen adaptive, risk-based asset management
- Communicate risks and insights for action and change
- Enable community-led action
- Use the current reforms to improve regional risk reduction and adaptation outcomes

Introduction

Pou 4 focuses on turning risk understanding into practical action that strengthens the resilience of people, places, infrastructure, catchments and natural systems. The council brings important strengths to this work, including a regional and landscape-scale perspective, flood and drainage infrastructure delivery, catchment management, science, monitoring, modelling, hazard information and experience working with partners on adaptation planning.

Managing risk requires more than knowing where hazards and risks exist - it requires coordinated decisions about land use, infrastructure, investment, communication, community action and long-term adaptation pathways. By embedding adaptive planning into core functions and working with iwi, territorial authorities, communities, infrastructure providers and central government, the council can help reduce exposure and vulnerability, avoid creating new risk, and support resilient places that can adapt as conditions change.

Breakout/highlight: “Enough is already known about the changes Aotearoa New Zealand will face over the coming decades to put the country in a good position to prepare for those impacts.”¹³
2026 National Climate Change Risk Assessment for Aotearoa New Zealand

¹³ He Pou a Rangi Climate Change Commission, Full Assessment – 2026 national Climate Change Risk Assessment, April 2026, ISBN: 978-0-473-78415-7 (Online), p12

This pou contains reference to a number of terms and concepts, such as adaptation planning, Decision Making under Deep Uncertainty (DMDU), Protect, Avoid, Retreat, Accommodate (PARA) and Dynamic Adaptive Policy Pathways (DAPP). More information on these can be found in the Appendix 1 – Knowledge hub.

Key principles

Use DMDU and DAPP approaches to manage uncertainty

Climate change requires responses far beyond traditional hazard management. We will use decision making under deep uncertainty (DMDU) approaches, such as DAPP in our work to ensure we make good decisions when the future is uncertain.

Adaptation planning for all core functions

We will carry out adaptation planning for all core functions. Adaptation planning is needed for all of the council's functions, not only the assets, services and systems that directly support community resilience. While this Framework has a community and land-use focus, adaptation planning *must* extend beyond people to include the region's ecosystems and species, which have value in their own right but also play a key role in community resilience.

Consider interacting and compounding stressors in adaptation planning

Irrespective of scale or purpose, all types of adaptation planning need to consider the broader context of interacting and compounding stressors.

Use climate scenario analysis to test planning an decision-making

Challenging ourselves to remember that climate change introduces new levels of uncertainty is important. This means we will:

- Avoid relying on a single scenario or assuming one future is the "most likely."
- Use climate scenarios to test plans across a range of conditions and timeframes.
- Focus on building adaptability and resilience to a range of climate scenarios into each decision.

Key approaches

Embed adaptation planning in the delivery of core functions

Adaptation planning involves more than traditional preparedness for climate variation, natural hazards and disaster events. It requires developing a comprehensive understanding of how a changing climate will affect the Waikato region's environment, communities and economy, and actively working to reduce our exposure and vulnerability to climate risks and to capture any new opportunities.

Successful adaptation is a proactive and long-term process. It can take many forms, including changing the way we do business, constructing better infrastructure, building resilient communities, and eliminating stressors on our biodiversity and critical ecosystem services.

Successful adaptation also requires that we monitor and evaluate performance so we can learn from experience, adopt actions that provide the most benefit, and adjust plans as required.

Together with the integrated systems, multi-criteria decision-making and prioritisation approaches in this Framework, the use of DMDU and DAPP adaptive approaches will help the council navigate uncertainty by stress-testing options, mapping alternative futures, and using "signals and triggers" to adjust actions before thresholds are crossed. In the context of climate change adaptation, this

means that decisions are flexible and avoid locking in unsustainable strategies or large transition costs which fall on future generations.¹⁴ In short, DMDU and DAPP approaches help the council invest wisely for both current and future generations.

Integrate adaptation planning into existing planning frameworks

We have a wide range of existing strategies, policies and plans in place to support planning for our core functions, from catchment management plans, zone plans, business contingency plans, asset management plans to the Regional Land Transport Plan, our Infrastructure Strategy, our Long Term Plan, the Waikato Regional Policy Statement and the Waikato Regional Plan. Many of these already highlight climate change as a key issue.

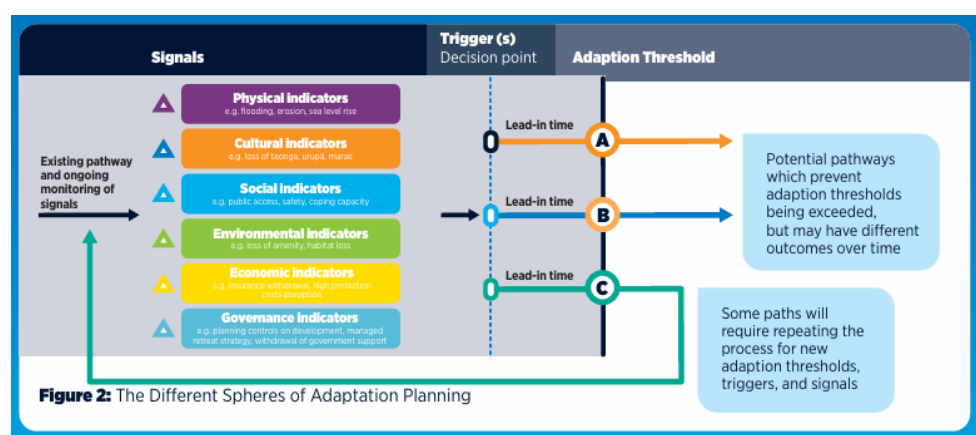
A key next step is therefore to integrate adaptation planning, using DAPP as a key tool, into these existing planning frameworks, as well as in new ones created through the current planning system and local government reforms.

Develop signals, triggers and thresholds (STATs) for assets, services and systems

A key part of adaptation planning is the setting of signals, triggers and thresholds. After setting a threshold, the identification of signals and triggers enables the council to monitor when it is approaching the adaptive limits of assets, services and systems, and must prepare to move to a new pathway. This gives decision-makers sufficient warning about the need to change their planning and pathways.

Setting signals, triggers and thresholds for assets, systems and services is a key next step in maturing the council's climate risk management practices. Many organisations are working through the challenges of identifying and implementing STATs as they respond to climate risk - this is also an opportunity for collaboration and co-ordination.

Figure 2 below shows how STATs fit within adaptation planning.



Break out box/highlight: Multiple ways of knowing

¹⁴ [A Decade of Dynamic Adaptive Decision-making tools in New Zealand - Practice applications, lessons learned and next steps - Resilience to Nature's Challenges](#) p2.

For adaptation planning to be a systemic risk response, it must consider multiple types of knowledge. Social and cultural indicators should also be used wherever appropriate, integrating inclusive worldviews and understanding in decision-making.

Develop intergenerational integrated adaptation pathways for catchments

All parts of the region will need to plan for how to adapt to changing climatic conditions, irrespective of community adaptation projects being underway.

Many of our core functions are place-based and oriented around catchments. One option to support adaptation planning for a catchment is to develop, and monitor, an intergenerational integrated adaptation pathway for each catchment. Such an adaptation pathway would show how the management of flood and drainage infrastructure, water quality and quantity, environmental outcomes, land use and nature-based solutions will change over time as thresholds are reached.

These pathways could form part of existing operational catchment management or zone plans, or whatever form they take in the future. Such an approach would bring together the range of thresholds for a catchment that would require a change in management approach if reached. Seeing objective and/or agreed thresholds, trigger and signals set out for a catchment across a range of core functions (not just a single asset or single function) would enable better planning and clearer conversations about future levels of service and the trade-offs that may be required.

It would also enable potential recovery actions to be identified before an event occurs to ensure post event actions (such as rebuilding or restoration) reduce future risk rather than recreate it.

The pathways would also be deliberately intergenerational, looking beyond typical timeframes used in local government planning to reflect the time scales that natural and indigenous systems operate within.

As this is a new approach, a pilot to test it is a key first step.

Establish processes for determining risk tolerance and risk tolerance thresholds for land use

Risk tolerance and risk tolerance thresholds form a key part of risk treatment for land use, which involves selecting and implementing strategies to manage the potential impacts from natural hazards on current and future land use. This process requires careful consideration of risk tolerance – for example, the level of risk that central government, the council or a community is willing to accept.

Risk tolerance is our willingness to bear a risk. It is classified as ‘acceptable,’ ‘tolerable,’ or ‘intolerable’ risk levels, but recognises that not all risk needs to be reduced. Understanding risk tolerance helps us decide a risk threshold to manage the potential impacts of a hazard on the things we value (such as our health, environment, economy, and buildings and infrastructure).

Risk tolerance thresholds are a fundamental part of adaptation planning to provide clear delineation between ‘acceptable,’ ‘tolerable,’ or ‘intolerable’ levels of risk. A risk tolerance threshold is used to identify when a different adaptation pathway is required. Risk thresholds need to be determined at asset, community, catchment and regional scale. Signals and triggers are used to allow adequate time to transition from one adaptation pathway to another.

Metrics for thresholds can be qualitative, quantitative, or both. Regardless, metrics need to be measurable, rely on information that is available, and the approach clearly documented. Descriptive criteria can be useful to ensure that the intent of the threshold is clearly understood.

Together they are used to put risk-based policies into practice. There are many challenges with setting risk tolerance thresholds, such as deciding which life metrics to use, scalability and reconciling varying risk tolerances. Additionally, risk tolerance (and thresholds) may change over time and when considered against the cost of risk treatment. It is important to have a clear process for determining and reviewing risk tolerance and risk tolerance thresholds, so that there is an agreed approach to putting risk-based policies into practice.

The Natural Hazard Commission has identified the lack of clear national guidance as a critical gap¹⁵ and the Waikato Regional Policy Statement, which provides our regional risk management framework, does not set out processes for how to determine what is tolerable and intolerable, nor agreed metrics. If the planning system reforms do not provide direction on these, a priority piece of work will need to be the development of regional policy on how to set risk tolerance and risk tolerance thresholds for land use.

Identify how and when to support partners on community adaptation projects

Community adaptation planning is already underway across the Waikato region. It is a resource intensive and ongoing commitment involving multiple stakeholders. After adoption, a community adaptation plan requires funding and implementation of interventions and ongoing monitoring of risk and signals and triggers for the agreed pathways and periodic review of thresholds.

The council must play a key role in adaptation planning, irrespective of the legislative framework, given region-wide implications of decisions, the catchment-scale nature of hazards, the core functions we deliver or manage in each location and our role in implementing solutions. Flood and drainage infrastructure and key resource management aspects such as water availability and quality, biodiversity, catchment management, and soil conservation are key considerations in scoping a community adaptation project, the development of options and implementation. We hold key hazard and geospatial information that is necessary for multiple stages of community adaptation planning. And our rating and funding policies play a key role in how options will be paid for.

What do the adaptation planning amendments to the CCRA 2002 mean for us?

The proposed amendments to the CCRA 2002 put in place key changes, which will have resourcing and financial implications for the council. Adaptation planning is moving from discretionary good practice to statutory obligation, with set deadlines for completion.

Planned legislative amendments to the Climate Change Response Act 2002 (CCRA 2002) are intended to require local government to adopt community adaptation plans within 5 years for those locations identified as 'priority 1' locations in regional spatial plans and to adopt plans for 'priority 2' locations in the following five years.

Territorial authorities will be required to lead the preparation of adaptation plans and adopt them. Regional councils, and other agencies, will be required to give effect to them, and reflect the agreed adaptation pathways in our own planning.

Although such plans are to be led by territorial authorities, the council will need to carefully plan its resourcing to contribute to these mandatory adaptation plans.

¹⁵ [Risk Tolerance Methodology 2025](#), pp3, 6, 16.

Use transparent and consistent processes for our involvement in community adaptation planning

With resourcing and investment constraints, the council is only able to contribute to a small number of adaptation plan processes at one time. The WRF provides two key mechanisms to determine how and when the council will be involved in community adaptation planning:

- The Regional Risk-based Analysis Process for Prioritisation (RRAPP) discussed in Pou 2. The RRAPP produces a set of rated Waikato locations, using hazard exposure and other factors, to support council decisions on where to prioritise investment in natural hazard management and adaptation and to develop a pipeline of council flood risk management projects.
- The principles set out in Appendix 2. The principles set out clear parameters to guide staff on how, which guide how the council will work with partners on community adaptation projects.

Both the RRAPP and the principles in Appendix 2 will need to be reviewed as the new planning system is implemented and when adaptation planning amendments to the Climate Change Response Act 2002 (CCRA 2002), and supporting regulations, are passed.

Develop a pipeline of flood risk management and community adaptation projects

Managing flood risk is a core function of the council, delivered primarily through flood and drainage infrastructure and services and catchment management. It requires significant capital and operational investment. Community adaptation projects will develop adaptation pathways, where flood mitigation options will likely play a central role, with a wide range of possible responses (see PARA examples earlier in Appendix 1).

When the proposed CCRA 2002 amendment is passed, we will have a high level timeline available for “priority 1” and “priority 2” locations for adaptation planning, which must be completed over a 5 and 10 year period. Agreed adaptation pathways must then be implemented via existing local government tools and processes, such as the Long Term Plan, Infrastructure Strategy and catchment management. In light of this relationship, we need to ensure that our programme of work for flood risk management projects is aligned and co-ordinated with the planned timing of community adaptation projects.

To achieve this, we will seek to develop a pipeline of regional flood risk management projects and community adaptation projects. This pipeline moves the council from project-by-project planning to a planned pipeline of regional flood risk management and community adaptation investment, and can deliver multiple benefits:

- We will know where we should pause the council’s asset planning and investment to enable a community adaptation project to be completed.
- We will know where community adaptation projects are not planned and can plan for flood risk management projects and associated community engagement for these locations without duplicating effort. In essence, any location with flood management in place is already in an adaptation process, even if not formally described as such.
- Clearer sequencing and alignment of work programmes.
- Enables resource planning for our own work programmes and for community adaptation projects.
- Assists other infrastructure providers and stakeholders to understand the sequencing of work across the region.

Strengthen adaptive, risk-based asset management

The Infrastructure Strategy and Regional Asset Management Plan already propose a risk-based approach to asset management for those assets it covers. With the organisation-wide direction provided by the WRF, there is an opportunity to strengthen adaptive, risk-based asset management for all of the council's assets. Key approaches are to:

- Identify critical assets. In the case of flood infrastructure, update criticality criteria to be based on risk to life and regional significance, then update existing criticality assessments.
- Develop and monitor signals, triggers and thresholds for the management of each asset type.
- Ensure we hold necessary asset information to assess and monitor natural hazard risk to assets.
- Understand the vulnerabilities of assets and the feasibility/limitations of upgrades.
- Develop adaptation pathways for assets, reflecting PARA response options (see PARA content in Appendix 1). The 2024/34 Infrastructure Strategy has begun alignment with PARA, as seen in its maintain/optimize/adapt/transform/retreat pathways and recognises the need for transformational responses. The development of adaptation pathways is a key next step for implementation.
- Place-based resilience planning - where assets are managed as part of a wider system. For flood infrastructure, asset management must take place as part of a wider system of risk management responses.

This approach embeds a strategic asset management approach across all of the council's assets and moves the council from asset-by-asset thinking to place-based resilience planning. It also recognises financial constraints and enables the council to de-prioritise low criticality assets. The use of signals, triggers and thresholds for asset management is best practice and enables proactive planning and investment.

Communicate risk and insights for action and change

As an organisation we hold a vast *kete* (basket) of data and knowledge, and our growing hazard and risk understanding adds to that. However, as recognised in the *building resilience* priority of *Te Pae Tawhiti | Strategic Direction 2026-2036*, knowing this information is not enough. We need to proactively communicate these insights well and create accessible decision-support tools. Doing so enables everyone – the council, partners, iwi, hapū and whanau, communities and individuals – to make better decisions, informed by credible, trusted information.

The effort and skillsets necessary to achieve this are significant. Science, risk and behaviour change communication requires specialist skillsets. The increasing need to translate technical natural hazard information into easy to use maps and spatial products, places further demand on our spatial information section, who provide key support for this. Technical experts must provide input into communication and decision-support tool, and strategic, planned communication campaigns require co-ordination.

Develop and deliver a proactive communication and education programme for hazard and risk information

Enhance information provision to a more deliberate, resourced communications and education programme that actively delivers risk information at key decision points, including pre-event, land purchase, land use/zoning change and the release of new hazard layers.

Enable community-led action

Community-led risk reduction and adaptation can be a practical way to build durable, locally supported resilience. It can:

- support earlier action to progress preparedness, risk reduction and local adaptation conversations before a formal council-led adaptation plan is possible.
- strengthen social resilience by building relationships, capability, preparedness and mutual support networks, which are critical before, during and after natural hazard events.
- reduce pressure on councils – seed funding, guidance and technical support can enable communities to begin adaptation planning where councils do not yet have capacity to lead a full process.

Support practical land-use transition/adaptation pathways

Support practical land-use transition/adaptation pathways to reduce risk while working for landowners, iwi and hapū, industry and communities.

Provide mechanisms for community-led adaptation

The council and territorial authorities are unlikely to be able to work with all communities and groups who may wish to develop an adaptation plan. At present, a community adaptation grant fund does not exist to provide seed funding to communities and groups to progress their own adaptation planning. Similar funds exist for other purposes (eg Environmental Initiatives Fund, Natura Heritage Fund), which enable community groups to deliver outcomes where the council does not have the resource to deliver the outcomes itself.

When the uncertainty around the future structure of local government is resolved, we will consider opportunities for the establishment of a community adaptation grant fund. In the meantime, we'll continue our work to make hazard information, adaptation guidance and decision-support tools accessible and publicly available.

Use the current reforms to improve risk reduction and adaptation outcomes

Highlight: Tomorrow's risk is built today

There is no such thing as a natural disaster. Hazards – earthquakes, floods, cyclones – are natural. Disasters are not. Disasters happen when hazards affect people and systems that are exposed and vulnerable. This is often the outcome of development choices.

The new planning system and reforms to simplify local government provide a once-in-a-generation opportunity to embed natural hazard risk reduction and adaptation best practice into the Waikato's future strategic, planning and operational systems.

From a natural hazard risk reduction and adaptation perspective, there are key matters for consideration in the reforms. These are included in Appendix 3 – Considerations for reform. The opportunity includes shaping the Combined Plan, new spatial planning governance arrangements and future local government institutional structures so they support integrated, system-wide natural hazard resilience across the region. An immediate focus is to be well prepared for these reforms.

Much detail is yet to be finalised, but two known actions are:

Implement changes to existing regional operational planning/management frameworks

As well as a new Combined Plan, regional operational planning and management frameworks, including regional and catchment-based plans, will need to evolve in response to the changing legislation. We will need to identify and implement the changes required to existing operational

planning frameworks (eg zone, catchment plans) to achieve resilience outcomes in the new legislative operating environment.

Implement regional policy changes to address issues

To the extent permitted by the new planning system, the reforms provide an opportunity to address natural hazard and risk reduction and adaptation issues in our current policy settings. A key piece of work will be to identify and implement the regional policy changes which are required to address known issues and improve natural hazard resilience outcomes.

Part 3 –How we will get there

The steps, systems and processes set out in the WRF are implemented through a range of initiatives. Some are already in place, underway or planned because they are funded through the current Long Term Plan. Others are ongoing in nature, are about how we work, or will form part of multi-year work programmes.

A staged approach to implementation, and implementation planning, will be necessary. Additional investment will be considered through Long Term Plan and Annual Plan processes.

Appendices

Appendix 1 – Knowledge hub

Climate Change Adaptation Guideline for the Waikato Region

Our [Climate Change Adaptation Guideline for the Waikato Region](#) is a technical guide which offers the latest policy guidance, scientific information, and frameworks to help the Waikato region prepare for climate impacts and promote a coordinated approach. It includes guidance on climate risks for Māori and working with our iwi partners.

Part 3 of the Waikato Regional Policy Statement –key excerpts

[Waikato Regional Policy Statement-RPS-Part-3-Topics](#)

HAZ-M1 — Risk management framework

Regional and district plans shall incorporate a risk-based approach into the management of subdivision, use and development in relation to natural hazards. This should be in accordance with relevant standards, strategies and plans, and ensure that:

1. new development is managed so that natural hazard risks do not exceed acceptable levels;
2. intolerable risk is reduced to tolerable or acceptable levels
3. the creation of new intolerable risk is avoided;
4. any intolerable risk as a result of existing use and development is as low as reasonably achievable; and
5. where intolerable risk remains, the risks will be managed until an acceptable level is achieved.

HAZ-M5 — Information, education and advocacy

Waikato Regional Council will

1. collaborate with:

- a. territorial authorities to support the collection and analysis of natural hazard risk information;
 - b. territorial authorities, the Ministry of Civil Defence and Emergency Management, the Waikato Civil Defence and Emergency Management Group and other agencies to develop and implement public education and awareness programmes on natural hazards and their associated risks;
 - c. agencies involved in the property market, including insurance companies, lending agencies and real estate agencies to promote understanding and awareness of natural hazard risk to properties; and
 - d. research organisations; and
2. store all natural hazard risk information that is available and relevant to the Waikato region, and share this information with territorial authorities and other relevant stakeholders; and
3. advocate for:
 - a. a proactive approach to natural hazard identification in district and regional plans;
 - b. the use of best practice approaches, including mātauranga Māori, to natural hazard identification and management of the associated risks; and
 - c. a strategic approach to development (including redevelopment) that seeks that any increase in risk from natural hazards (including residual risk) is minimised.

List of tools and systems for natural hazard and climate risk reduction and adaptation

Governance systems and processes:

- Governance processes for support planning, decisions and investment.
- Decision-making frameworks and assessment criteria.
- Organisational, programme and project-based risk and issue management.
- Long-term financial planning, including assumptions, funding mechanisms, insurance, reserves and investment decisions.
- Long Term Plan outcomes, levels of service and performance measures.

Infrastructure and catchment management to support the management of risks via nature based solutions, natural systems and fit for purpose infrastructure interventions:

- flood protection and drainage infrastructure such as stopbanks, pump stations, floodgates, telemetry networks and tide gauges
- catchment management, river management and erosion control programmes
- wetlands, forests and other nature-based solutions that improve resilience while delivering biodiversity, water quality and carbon benefits
- ki uta ki tai approaches that recognise the connections between land, water, ecosystems and communities.

Planning and regulatory systems:

- Regional policy and planning frameworks
- Resource consent applications and conditions for managing natural resources and land use.
- Spatial planning and land-use controls.
- Community adaptation planning.
- Natural hazard provisions in plans and consent processes.
- Technical guidance and regulatory requirements.
- Compliance and enforcement activities that support risk reduction outcomes.

Monitoring, science and modelling to support evidence-based decision making based on robust science and data:

- weather forecasting and flood forecasting systems
- monitoring networks and telemetry
- hazard and climate risk modelling
- environmental monitoring and trend analysis
- understanding changing risk profiles over time

Supporting community resilience and preparedness at property and catchment scale:

- response planning (CDEM)
- hazards risk communication and public education
- access to natural hazard and risk information, for example, we have the Regional Hazards Portal, Coastal Inundation Tool, and Flood Room on our council website.
- provision of property-specific or general natural hazard information on request.

Climate change risk assessment and climate scenario analysis

Climate change risk assessment and climate scenario analysis are different but complementary tools to manage risk and test our planning and decision-making under uncertainty. The table below describes the differences.

Climate Change Risk Assessment	Climate Scenario Analysis
Identifies and assesses climate-related risks and opportunities .	Explores different plausible futures and how those futures could affect objectives, services, assets and decisions.
Answers " What are our risks? "	Answers " What if this future occurs? "
Focuses on likelihood, consequence, vulnerability, exposure, and risk prioritisation.	Focuses on uncertainty and stress-testing plans and decisions under different future conditions.
Produces a risk register, priorities, controls, and treatment actions.	Produces insights about resilience, strategic options, triggers, adaptation pathways, and robustness of plans.
Usually based on current information plus projected climate impacts.	Uses multiple plausible narratives (physical and transition futures).
Helps determine where action is needed.	Helps determine whether proposed actions remain effective across different futures.

Together, both tools can be used to inform areas such as:

- **Infrastructure planning** can be staged using adaptive pathways. For example, choosing to re-establish wetlands now, with future investment in hard infrastructure if rainfall intensity increases beyond certain thresholds or if land use changes (eg intensification/development).
- **Transitional Impacts** such as changes in national climate policy, economic activity or evolving expectations around low-emissions living. Councils may need to plan for increased uptake of electric vehicles, changing building standards, or the economic implications of decarbonisation pathways aligned with Aotearoa New Zealand's emissions budgets and the Zero Carbon Act.
- **Land use and spatial strategies** can incorporate scenario insights to guide development away from high-risk zones, such as low-lying coastal areas or regions prone to wildfire, relocating communities, while also identifying zones that can meet additional future housing demand and changing community needs.
- **Public health and emergency preparedness** can consider demographic changes and potential shifts in transport modes to ensure public transport is equipped to support with emergency response or evacuations if private vehicle ownership declines.
- **Financial planning** can include scenario stress-testing to assess how climate risks might affect long-term service delivery costs, shifts in insurance markets, insurance liabilities, or infrastructure depreciation.
- **Service provision** may be challenged or constrained as funding is redirected towards transition or climate impact response. Scenarios can be used by councils to work with

communities in exploring potential necessary trade-offs if climate action takes a priority. Equally they can help identify opportunities for innovation and operating agility.¹⁶

Methodology for climate change risk assessments

Climate change risk assessments use a specific methodology that considers the hazard, exposure and vulnerability to determine risk. Vulnerability can be combination of both physical and social vulnerability and includes considerations of sensitivity to the hazard and capacity to adapt. This methodology differs from the traditional risk assessment methodology of *likelihood* and *consequence*.



Diagram X. Components of climate change risk assessment

Priority climate risks

To understand risk severity, factors that need to be considered include:

- the level or severity of the risk in different time periods under different emissions scenarios
- how the risk may compound and cascade
- whether the risk varies in different locations
- whether the risk has significant impacts for Māori
- potential lock-in risks (and at what point in time this will occur). “Lock-in” is where decisions made today are difficult to reverse and can increase exposure to subsequent risks long-term and/or will commit decision-makers to future interventions to manage exposure
- climate and non-climate aspects that may exacerbate or reduce the risk, such as thresholds, tipping points, socio-economic trends, climate mitigation action

To understand policy readiness, consider:

- what actions can be taken to address the risk, the potential impact of those actions on future risk, and the lead-in time for those actions
- what action is already being taken to address the risk and the impact it is having
- whether any actions could have or lead to mal-adaptation or when risks may become locked in
- whether there are any barriers delaying action to address the risk
- shortfall in planned adaptation action – a sense of what further action is needed.

¹⁶ [Local Government Sector Climate Scenarios - Guidance Document FINAL.pdf](#), p8

Key concepts for adaptation planning

Design note: show nested nature of these terms visually:

Adaptation planning is the broad process of deciding how to adjust to actual or expected climate and natural hazard impacts. Asks what risks are we facing, what matters, and how should we respond? = **The “what are we planning for and how do we respond?” process**

DMDU — *Decision Making under Deep Uncertainty* — is the broader decision-making family of approaches used when future conditions are highly uncertain and cannot be predicted confidently. DAPP is one type of DMDU approach. = **the “how do we make good decisions when the future is uncertain?” approach**

DAPP — *Dynamic Adaptive Policy Pathways* — is one structured method used within adaptation planning to sequence actions over time using signals, triggers and thresholds. Answers which responses should happen now, which should happen later, and what will trigger a change. = **the “what pathway do we follow, and when do we change course?” tool**

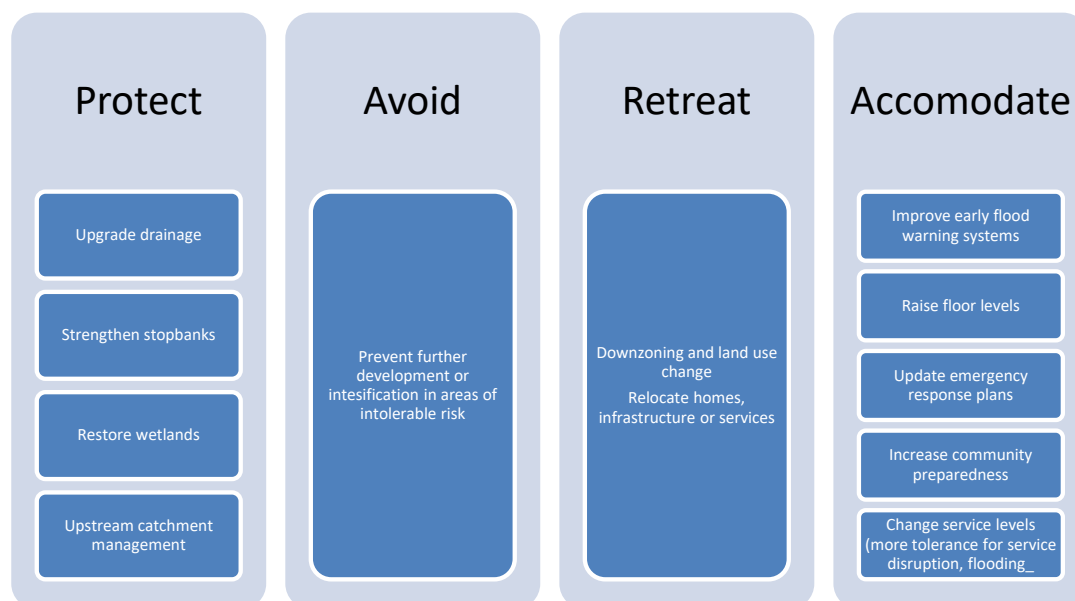
PARA - *Protect, Avoid, Retreat, Accommodate* – a practical way to organise and compare response options. Answers what types of responses are available. = **the “possible actions” menu**

DAPP can be used either as part of a community adaptation planning process or by itself to scope the range of available options and pathways and tailored for any scale. Over the past decade, DAPP has been applied in New Zealand to help reduce the risk of pluvial, fluvial, and coastal flooding that is exacerbated by climate change, and manage other hazards and situations of deep uncertainty.¹⁷ Applications span national and local levels: coastal adaptation, flood management, conservation, agriculture, infrastructure, and military planning.¹⁸

The diagram below shows how **PARA** is used to consider and organise responses for a flood prone community. Used with DAPP, these options can be sequenced over time, with signals and triggers identifying when the council should shift from maintaining or upgrading an asset to alternative risk management pathways.

¹⁷ Lawrence, J., Gallop, S. L., Marquardt, L., Bell, R., Blackett, P., Craddock-Henry, N. A., & Wreford, A. (2025). Dynamic adaptive pathways planning for adaptation: lessons learned from a decade of practice in Aotearoa New Zealand. *Journal of Integrative Environmental Sciences*, 22(1). <https://doi.org/10.1080/1943815X.2025.2451424>

¹⁸ Lawrence, J., Gallop, S. L., Marquardt, L., Bell, R., Blackett, P., Craddock-Henry, N. A., & Wreford, A. (2025). Dynamic adaptive pathways planning for adaptation: lessons learned from a decade of practice in Aotearoa New Zealand. *Journal of Integrative Environmental Sciences*, 22(1). <https://doi.org/10.1080/1943815X.2025.2451424>



Examples of applications of PARA adaptation approach for a flood-prone community

How is adaptation planning different to community adaptation planning?

We talk a lot about “community adaption planning” in local government, however adaptation planning is used at different scales and for many different purposes, including for sectors, specific assets, infrastructure networks, locations, communities, catchments and ecosystems. Because these processes vary in scope, purpose and level of community involvement, we need to be clear about the differences:

Adaptation planning for specific assets and infrastructure is often technical and asset-based, focused on asset performance, service levels, investment timing and adaptive pathways.

Community adaptation planning is broader and more participatory, supporting communities, iwi, partners and stakeholders to understand risk, consider acceptable levels of risk, and identify options and pathways for managing that risk over time.

Both are important for the council, as they are closely connected and need to inform one another. The risk tolerance thresholds of communities will inform the service levels for specific assets and infrastructure. The council’s own asset planning and management processes may also identify the need for a more comprehensive community adaption project. The performance of specific assets and infrastructure will inform thresholds for community adaptation planning. The adaptation pathways developed in community adaptation projects will inform our own planning.

For some of the council’s assets and services, such as our **flood and drainage infrastructure** and our **public transportation services**, adaptation planning must be both **technical** and **community-focused**. These assets and services provide services to specific communities and landowners, based on agreed levels of service. Future decisions about them will directly affect community risk, costs and adaptation choices.

Appendix 2 – Principles for working with partners on community adaptation planning

Regional infrastructure and adaptation pipeline: The council will seek to develop with territorial authority partners a pipeline of risk-informed flood management projects and community adaptation projects. This pipeline would:

- Be a key tool to support both regional council and territorial authority resource and investment planning
- Integrate the timing of community adaptation planning projects with the timing of flood infrastructure projects (capital, maintenance, nature-based)
- Signal ongoing resourcing needs for the monitoring and implementation of community adaptation plans
- Deliver clearer sequencing and better partner alignment.

Risk-based involvement: The council values its partnership with territorial authorities. However, due to resource constraints the council cannot be involved in every adaptation project. Our involvement will be determined by the Regional Risk-based Analysis Process for Prioritisation outlined in the WRF and the identification of priority locations for adaptation planning in spatial plans. Where the council is able to be involved, it will provide resilience leadership, technical, and political and project governance support to agreed community adaptation planning projects.

Involvement in early planning: The council will seek to be involved in community adaptation planning with external partners and stakeholders from the very outset. The council's experience across multiple adaptation projects, data and knowledge, delivery of regional functions and knowledge of rating and funding mechanisms and policies for flood defence infrastructure provide critical information to shape the scope and approach to community adaptation planning projects.

Advocacy: As community adaptation projects are scoped and planned, the council will advocate for key local and regional considerations to be incorporated. These include:

- The development of options for intervention which are integrated whole of catchment, whole-of region solutions
- Using multi-criteria decision-making frameworks to ensure system-wide intergenerational implications are addressed in option development and decisions
- Consideration of iwi perspectives and interests, and inclusion of te ao Māori and Mātauranga Māori perspectives and lived experience in the risk assessment and optioneering
- Inclusion of iwi, CDEM and critical infrastructure providers as key strategic partners in the project
- Consideration of environmental risks and opportunities, which are often more difficult to quantify
- Opportunities for non-climate hazard risk reduction activities to be incorporated to increase resilience to all hazards
- Seek to integrate project community engagement with existing community events to increase participation and reduce engagement-fatigue.

Clear definition of roles and responsibilities: The council will ensure a clear understanding of roles and the extent of commitment is agreed.

Data and knowledge: The council holds and will make available key data and knowledge that is necessary to inform community adaptation planning, including hazard data such as drought, erosion, landslip, seismic, tsunami and liquefaction and modelling for flood and coastal inundation, water

quality and availability, flood risk management and groundwater. Key data requirements should be determined early to ensure enough time to develop/source/check hazard and element data prior to commencing the risk assessment.

Regional functions integral to enduring future-proofed solutions: Regional functions such as flood and drainage infrastructure, catchment management, soil conservation, water quantity and quality and biodiversity are all integral to developing future-proof options for community adaptation planning. Experts for these work areas need to be closely involved in both early planning and scoping of a community adaptation project, risk assessment and the development and assessment of suitable options for community adaptation plans.

Agreement in writing: The council's input into adaptation planning process will be agreed and formalised in writing at the outset of projects and approved via appropriate governance forums. This should consider:

- Councillor representation on political governance arrangements
 - The constituent Waikato Regional Council councillors of the relevant community will be the first preference for governance appointment requests.
- The council's staff representation in project governance
- The council's staff representation on technical advisory groups
- Roles and responsibilities at each stage of a community adaptation project, including:
 - **Implementation** of agreed adaptation plan outcomes that require a council service or further support
 - **Ongoing** monitoring and review of the community adaptation plan.
- Nature and detail of technical support
- Proposed funding arrangements for the project itself and potential interventions

Funding of interventions:

- The council will advocate for
 - options for intervention to include indicative costs to guide conversations
 - funding options and impacts on rates to be outlined early to assist communities to understand the cost implications of adaptation pathways.
- The council's participation in a community adaptation planning process does not indicate an agreement or a commitment to fund interventions.
- The funding of options and interventions will:
 - need to travel through additional funding processes, such as council LTP processes or seek external funding
 - include consideration of whether targeted and/or general rates will apply, where a discussion on option beneficiaries will be well canvassed.

Appendix 3 – Considerations for reform

Consideration for reform include:

1. Ensuring spatial and land use plans:
 - a) account for future risk of existing development
 - b) identify areas of likely future natural hazards and extents
 - c) allow for changing hazard and risk data rather than static maps
 - d) have robust mechanisms for managing uncertainty
 - e) set policies and objectives to prompt consideration of *all* natural hazards, not only hazards which are specifically referenced in the plan. See for example the approach taken by the Rotorua Lakes Council in its [District Plan Change 8 - Natural Hazards | Participate Rotorua Lakes Council](#)
 - f) incorporate the integrating role of the current Regional Policy Statement.
2. Preparing the data required to inform spatial and land use planning
3. Management and quality control of natural hazard data
4. Designing systems, structures and processes to ensure land use planners are aware of the activities of asset management and capital planning, and vice versa
5. Appropriate governance, institutional and decision-making arrangements, recognising the systemic nature and complexity of climate change and the cross boundary nature of hazards
6. The interaction between community adaptation planning and the development of spatial and land use plans, and how community adaptation plans are implemented via other local government processes.
7. Where key opportunities for community engagement and consultation about regional risk management are likely to occur in the new system, noting that:
 - a) community engagement is intended to occur primarily during the development of spatial and land use plans, where strategic choices about growth, infrastructure, and environmental limits are made.
 - b) in local areas, community input will be through adaptation plans.
 - c) public input into consent applications is expected to be limited to more significant developments.
8. If not provided through the planning system reforms, the development of regional policy on setting risk tolerance and risk thresholds for land use.

Glossary

Adaptation planning The broad process of deciding how to adjust to changing natural hazard and climate risks over time.
Natural hazard risk reduction Natural hazard risk reduction is the concept and practice of reducing existing natural hazard risk, avoiding or minimising future risk, and managing residual risk. It can be achieved by reducing one or more of the key components of risk: hazard, exposure, and/or vulnerability.¹⁹
Nature based solutions (NbS) Solutions that are inspired and supported by nature, cost-effective, and simultaneously provide environmental, social and economic benefits and help build resilience.²⁰
Residual risk Residual risk describes the part of the risk that remains after efforts have been made to reduce it. It describes the level of risk that remains after efforts to address the risk.
Resilience Resilience has become a commonly used term but can mean different things in different contexts. For the purposes of developing this Framework, we have adapted the Resilient Cities Network definition of urban resilience: <i>“Resilience is the capacity of a region/district/city/community’s systems, businesses, institutions, communities, and individuals to survive, adapt, and thrive, no matter what chronic stresses and acute shocks they experience.”</i> What is Urban Resilience? - Resilient Cities Network This is generally consistent with the definition of resilience used in New Zealand’s National Disaster Resilience Framework, as shown below, which is more disaster/event focused. <i>“Resilience is the ability to anticipate and resist the effects of a disruptive event, minimise adverse impacts, respond effectively post-event, maintain or recover functionality, and adapt in a way that allows for learning and thriving.”</i> National Disaster Resilience Framework

¹⁹ [Risk Reduction Strategy 2025-2029](#)

²⁰ Te Mana o te Taiao – Aotearoa New Zealand Biodiversity Strategy 2020, DOC, 2020, p 62

Acronyms

Add all acronyms for final version.

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ADD OTHER REFERENCES FROM FOOTNOTES

Regional risk-based analysis process for prioritisation (RRAPP) for natural hazard risk in the Waikato region

Executive summary

The Regional Risk-based Analysis Process for Prioritisation (RRAPP) provides a structured, consistent evidence-based approach to help identify where to direct resilience effort and investment. The process supports investment decision-making by combining available hazard evidence with practical expert-led judgement about urgency, consequence and deliverability. It recognises that some known locations may require immediate attention because of potential risk to life, while also establishing a broader process to identify and compare locations at risk across the region.

The process begins with a preliminary qualitative urgency assessment to identify known high-urgency locations where there may be a risk to life, so immediate or short-term actions can be initiated with the responsible agencies while the full prioritisation process continues. The main RRAPP then works through a sequence of steps to identify locations, assess their exposure to in-scope natural hazards, and consider urgency criteria and enabling factors.

Exposure will be assessed using natural hazard modelling (where available) and GIS data on the elements of buildings, population, critical community facilities and roads to produce exposure ratings. The exposure assessment will consider current and future climate scenarios, residual risk and confidence in the underlying information. Urgency criteria such as “risk to life” and “known significant community vulnerabilities” represents conditions where a natural hazard event may result in greater consequences. Enabling factors cover a range of social, political, economic and cultural factors that may enable risk management processes to improve collaboration, engagement, efficiency and practicality in WRC’s adaptation and hazard mitigation work programme.

The outputs are brought together using primary and secondary prioritisation factors to identify high-rated locations for future adaptation or hazard risk mitigation work. High-rated locations are those where all three primary prioritisation factors are met. These are very high or high natural hazard exposure, risk to life and that a risk mitigation/adaptation response is not already underway. Secondary prioritisation factors are then used to further differentiate between high-rated locations and incorporate the remaining urgency criteria and enabling factors. For each location, the RRAPP also identifies the likely type and scale of response. Together, the outputs of the RRAPP provide key information to inform WRC decisions on how to allocate limited resources through WRC’s long-term plan and annual planning processes. The RRAPP of itself does not provide a decision-making framework for the allocation of resources and investment decisions.

The information generated from the RRAPP is expected to also be helpful for territorial authorities, CDEM and the spatial plan committee in the new planning system, which must identify priority locations for adaptation planning when creating the regional spatial plan.

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Key changes to RRAPP since presented to councillors on 22 April 2026

Change	Rationale
Phased implementation with hazards in scope for first phase limited to; pluvial and fluvial flooding, coastal inundation, coastal erosion and rainfall-induced land instability.	See text box in step 1
Step 2 is an 'exposure' assessment (to a consistent magnitude hazard scenarios where possible, i.e. 1% AEP), not a 'risk' assessment (may be subject to change to remain consistent with national legislation and guidance).	See method description in step 2. An exposure assessment for key elements provides sufficient detail for risk-based prioritisation when combined with 'urgency' and 'enabling' factors. It considerably simplifies the process and ensures that implementation of the RRAPP is achievable. More detailed risk assessments are likely to be undertaken for areas identified with a high rating in the RRAPP.
Enabling factors are considered as part of the process (step 4)	Step 4 (enabling factors) has been kept within the process so there is a clear pathway for incorporating these factors. Doing so does not detract from the risk-based analysis as enabling factors are only used to further differentiate between high-rated areas that meet all other 'rating/prioritisation factors'.
Prioritisation process and primary and secondary prioritisation factors (step 5)	This step has been further developed with the addition of a flowchart to provide a simple and effective way to combine the outputs from previous steps into a rated/prioritised list of locations. The process proposed for this step is based on that developed by Otago Regional Council and has been modified to better suit the intent of WRC's RRAPP.
Recognition that an additional decision-making process/framework is needed to inform final decisions on the allocation of resources for natural hazard mitigation and adaptation projects in highest rated locations.	As it stands, the RRAPP provides a list of the highest rated locations for hazard mitigation and adaptation projects but does not provide a decision-making framework for the allocation of resources and investment decisions to these projects. Such a decision-making framework will need to consider factors such as the relative cost vs benefit/efficacy of the proposed work and locations being considered for investment. For adaptation projects in particular, cost vs benefit/efficacy cannot be determined prior to commencing work. For large scale adaptation projects, the cost of the adaptation process itself is substantial, before the costs of implementing options are even considered.

Introduction

The Waikato region is exposed to a wide variety of natural hazard risk. For natural hazards such as flooding and rainfall-induced land instability, climate change is increasing both the frequency and intensity of these hazards which increases the risk to people, property and communities. This is increasing the demand on Waikato Regional Council (WRC) to lead or assist with work to mitigate and adapt to natural hazard risk and WRC resources cannot meet all demand.

There is a need to prioritise potential natural hazard mitigation and adaptation projects in a way that is risk-based, transparent, consistent and equitable, to ensure that work is carried out in the areas that need it most. The Regional Risk-based Prioritisation Process (RRAPP) has been developed to fill this need and produces key outputs that are necessary to inform decisions about the allocation of resources to different project locations across the region.

The RRAPP outputs are primarily intended to inform investment decision-making around WRC's regional resilience work programme and reduce the need for reactive or ad-hoc decisions. The information generated from the RRAPP is expected to also be helpful for territorial authorities, Civil Defence Emergency Management (CDEM) and the spatial plan committee in the new planning system, which must identify priority locations for adaptation planning when creating the regional spatial plan.

The RRAPP is evidence based, using an exposure assessment to identify areas with high exposure of people and assets to natural hazards (building on the planned regional natural hazard exposure assessment). It also incorporates 'urgency' factors to identify where exposure may have greater consequences, and 'enabling' factors to identify where action may be more successful or practical. The combination of these inputs using 'primary' and 'secondary' prioritisation factors results in a prioritised list of locations. For each location, the appropriate response and scale of response will be briefly described. Together, the outputs of the RRAPP provide key information to inform WRC decisions on how to allocate limited resources through WRC's long-term plan and annual planning processes. The RRAPP of itself does not provide a decision-making framework for the allocation of resources and investment decisions.

Implementation of the RRAPP will be phased to ensure it is achievable. For the first phase, the scope of included natural hazards is limited to those commonly experienced throughout the region and that will be exacerbated by climate change, i.e. pluvial and fluvial flooding, coastal inundation, coastal erosion and rainfall-induced land instability. While other natural hazards will be identified in each location, they will not be assessed in detail. Remaining natural hazards may be incorporated in later phases as resource allows.

The RRAPP leans strongly on a similar approach developed and implemented by Otago Regional Council as well as discussions with staff from other regional councils. It will be refined as required during implementation and to respond to upcoming changes to national legislation and policy guidance and the development of new national standards.

Preliminary step (step A): Qualitative urgency assessment to identify locations with risk to life

*Aim: Identify areas **known** by WRC, Group and local CDEM staff to be exposed to hazards with a risk to life. Then initiate, in collaboration with Civil Defence Emergency Management (CDEM), immediate and short-term actions to mitigate the risk (e.g. community awareness, emergency response planning). This step is designed to identify **known** high-risk and high urgency locations prior to the completion of the prioritisation approach which will be time consuming.*

Step A will produce:

- *A list of areas known by WRC, Group and CDEM staff to be exposed to hazards with a risk to life and where current risk mitigation approaches may be inadequate.*
- *Identification of the responsible agency for action to mitigate the risk (and documentation of next steps after contacting the responsible agency).*

**Note that implementing risk mitigation is out of scope of this process.*

Actions on completion of Step A:

- *Continue with RRAPP*
- *Contact the agencies responsible for action to mitigate risk, with a report advising the areas exposed to hazards with a risk to life where current risk mitigation approaches may be inadequate.*

Historic and recent weather events in the Waikato region and across NZ have shown the devastating consequences that severe weather events can have, particularly in conjunction with land instability, debris flows and flash flooding.

*WRC subject matter experts (SME) are aware of locations in the region where there is both the potential for significant risk to life and a lack of knowledge and resource to **better** manage the risk. This is particularly the case for communities on or at the base of steep catchments where targeted and timely impact-based warnings need to be enhanced.*

While these locations will be identified through the prioritisation process, the process will be time consuming and there is an urgent need to identify and start work addressing risks in these locations now.

Method:

The process for step A includes:

- WRC staff, in conjunction with Group and local CDEM, will identify locations where there may be significant risk to life. These are likely to be locations:
 - where natural hazards may have a rapid onset or are unpredictable, and therefore little warning time is possible for evacuation, and/or:
 - that are difficult to evacuate in a timely manner or that have significantly vulnerable populations, and/or;
 - with inadequate or no existing risk mitigation (such as forecast modelling and warning and evacuation procedures).
- Compile existing information
 - Some hazard information is likely to be sourced from national agencies, such as Earth Science New Zealand (ESNZ) including rainfall, landslip, seismic data etc.
 - Identify the gap in the current hazard risk mitigation approach for each identified location and immediate/short-term actions that can be taken to mitigate the risk.

- Contact the responsible agency and document next steps for risk mitigation (i.e. urgent inclusion in their work programme).

Considerations:

- Collaboration with CDEM on community response plans to mitigate the risk for these locations is likely work that will result from the completion of step A.
- All locations identified in step A should be included in step 1 to be further assessed through the prioritisation process. Further locations will be identified and prioritised through the prioritisation process (step 1 onwards) which will be undertaken concurrently.
- Step A uses the same 'risk to life' urgency criteria as step 3 in the full prioritisation process.

Regional risk-based prioritisation process (RRAPP)

Key steps

Figure 1 shows the steps of the RRAPP.

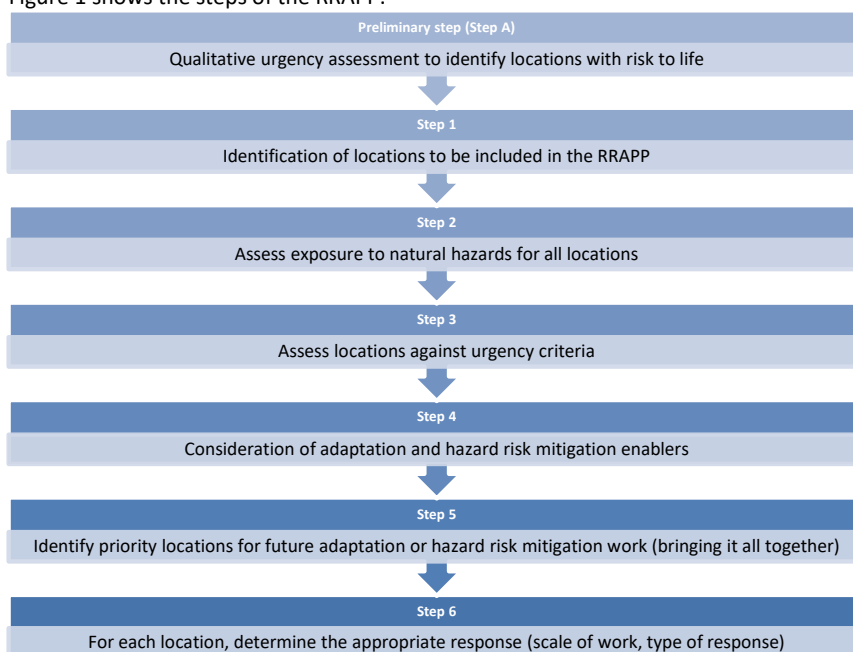


Figure 1 RRAPP process

Step 1: Identification of locations to be included in the RRAPP

Aim: To identify and describe locations that are exposed to natural hazards in the Waikato region to include in the RRAPP.

Step 1 will produce:

- A list of locations (linked to GIS polygons) that are exposed to natural hazards in the Waikato region.
- Description of each location by the attributes of natural hazard, geomorphology, township/community and broad land use categories.
- Classification of the natural hazard information for each location by "[natural hazard information hierarchy](#)", i.e. the quality, scale, and applicability of the hazard information.

Data and information required for Step 1:

- Stats NZ geographical boundaries for 'urban rural', 'statistical area 1' (SA1) and 'statistical area 2' (SA2).
- Spatial hazard datasets showing the modelled extent of each hazard (current climate and considering the effects of climate change to 2130).
- Historical event hazard extents and observations for hazards or locations where modelling does not exist.
- Qualitative information (reports and SME knowledge) for hazards or locations where modelling does not exist.
- Regional natural hazard exposure assessment (when complete).

Hazards in scope:

The RRAPP will be a phased implementation, with the following hazards in-scope for the first phase:

- Pluvial and fluvial flooding
- Coastal inundation
- Coastal erosion
- Rainfall-induced land instability

Location identification will be based on these hazards. However, for each identified location, all natural hazards present will be described (Table 1) to consider multi-hazard risk. Step 2 (exposure assessment) will only be carried out for these in-scope hazards initially.

Why these hazards?

The above hazards are some of the most common experienced throughout the region and WRC already has good data on most of these (except for land instability which poses a high risk to life). The effects of climate change will intensify both the frequency and magnitude of these hazards, likely requiring adaptation in many cases.

Hazards such as volcanic and earthquake are largely low (and unchanging) probability hazards with the potential to impact a large area. Hazard modelling is limited or non-existent and risk is often dealt with through measures such as the building code and CDEM planning, rather than WRC-led or assisted land use planning or adaptation projects. This is also true of tsunamis, though good modelling exists. Geothermal areas are well documented and managed through district plans. Wildfire, severe weather and drought may occur anywhere in the region and there is limited spatial information, thus it would be difficult to prioritise areas based on these hazards.

Finally, the RRAPP is a large piece of work and WRC resources are stretched. Narrowing the scope ensures that implementation is achievable.

Method:

It is proposed to use the Stats NZ 'urban rural' dataset (identifies urban areas, rural settlements, other rural areas, and water areas) as a starting point to identify and spatially define locations in the Waikato region. These 'urban rural' boundaries are based on aerial imagery, district plan maps designations, and other available information and provide a systematic, repeatable basis for identifying locations in the RRAPP, whilst limiting the risk that boundary selection will influence the results of the exposure assessment in step 2. In some cases, a group of related urban areas and rural settlements may be combined for the RRAPP locations (for example, adjacent locations exposed to a similar hazard scape). In other cases, an urban area or rural settlement might be further divided into smaller areas based on SA1 or SA2 boundaries (for example, high population areas with a diverse hazard scape).

For each location, the relevant natural hazard(s) (and natural hazard information hierarchy), geomorphology and community/land use attributes will be described using Table 1 to Table 3 below (further refinement of the attribute tables is likely).

Table 1 Natural hazard attributes

Natural Hazard driver and type	Further hazard detail
Rainfall	• Fluvial flood • Pluvial flood • Riverbank erosion • Debris flow • Land instability (cliff collapse, rockfall, landslide, subsidence, etc.) • Drought
Wildfire	
Coastal	• Coastal erosion • Coastal inundation • Tsunami
Seismic	• Liquefaction • Fault surface rupture • Ground shaking • Land instability (cliff collapse, rockfall, landslide, subsidence, etc.)
Geothermal	• Hydrothermal eruptions • Land instability • Heat • Poisonous gas emissions
Volcanic	• Ashfall • Ballistics • Lava flow • Pyroclastic flow • Lahar • Poisonous gas emissions
Severe weather	• High winds
Others to be added as required	

The natural hazard information hierarchy classification is available here:

[Waikato Regional Hazards Portal | Waikato Regional Council](#)

Table 2 Geomorphology attributes

Geomorphological environment	Description and sub environment
Slope	• Plain • Base of slope • Mid slope • Top of slope
Coastal margin	• Open coast ◦ soft shore ◦ hard/cliff shore • Inland coast ◦ Low lying ◦ Elevated • River mouth
River flood plain	
Others to be added as required	

Table 3 Land use attributes

Land use	Further land use detail
Urban	- Residential area - Commercial area - Industrial area - Public amenity - Community service
Rural	- Rural residential - Primary industry - Rural industrial - Public amenity
Infrastructure	- Public infrastructure - Private infrastructure
Others to be added as required	

Public amenities include playgrounds, parks and reserves.

Community services include town halls, medical facilities, education facilities, emergency services, etc.

Considerations:

- This step may identify additional locations that are deemed to be high risk – high urgency and need to be escalated to the process in preliminary step A.
- Availability of hazard information is a key dependency for this process:
 - All suitably robust spatial hazard information that is held by WRC is already on the [Waikato Regional Hazards Portal](#). Further suitable regional (such as regional flood hazard modelling) and potentially national (such as rainfall induced land instability) datasets may become available over time.
 - Where suitable spatial data does not exist, qualitative information may be sufficient to classify locations. If not, these should be recorded as an information gap to be addressed, if feasible, as part of planning for hazard data acquisition.

Step 2: Assess exposure to natural hazards for all locations

Aim: To assess exposure to in-scope natural hazards for step 1 locations using the best available information.

Step 2 will produce: An exposure rating for each of the listed locations for each in-scope natural hazard (current and future hazard extents) or identify that there is insufficient information available to assess.

Upcoming national legislation, policy guidance and standards:

We are currently in a period of change with regards to national legislation and policy guidance for natural hazard risk management. National standards on risk assessment and risk evaluation have also been signalled.

The RRAPP, and particularly the detail in Step 2, may be subject to change to remain consistent with national legislation and guidance.

Method:

An exposure assessment will be completed to assign each location with an exposure rating for each applicable in-scope natural hazard. To ensure that the assessment is consistent and achievable with available resources the elements assessed for exposure will be limited to the minimum required to inform the RRAPP.

The inputs required for this are:

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- The location list and associated GIS polygons and information from step 1.
- For each location, hazard modelling for each in-scope natural hazard that it is exposed to OR information (reports, previous event observations, SME) to enable the estimation of each hazard extent.
- Element and population data:
 - Buildings (all buildings and residential buildings)
 - Critical community facilities (CCF) – including hospitals, schools, supermarkets, emergency shelters and Civil Defence Centres, Marae buildings.
 - Roads
 - Population – from census data
 - *Note that these elements have been selected to represent a focus on human life and essential services as well as existing quality data. These elements may be expanded in future iterations of the RRAPP.*

ArcGIS or specialised risk software (i.e. RiskScape or Resilience Explorer) will be used to assess exposure of the above elements to each hazard. This step should utilise the process and data from the Regional Exposure Assessment, with the difference that results will be filtered and presented for each location identified in step 1. Exposure should be assessed for consistent magnitude hazard scenarios where possible, i.e. a 1% AEP (annual exceedance probability; equivalent of a 1 in 100-year event on average).

An exposure ratings key will be used to determine exposure ratings based on the proportion (or count) of each element exposed (both proportion and count should be recorded). Table 4 is an example from Otago Regional Council (ORC). The WRC exposure ratings key may include both quantitative measures (like below) and qualitative measures for where hazard modelling or element data is insufficient. The WRC key will be developed during implementation of step 2 to ensure that the key is appropriate for the exposure results across the different locations.

Table 4 Exposure level classification from ORC's proposed prioritisation approach

Table xx: Exposure level classification (van Woerden and Welsh 2025).

Exposure level	Built		Health and Safety
	Buildings	Critical Community Facilities (CCF)	Population exposed to the hazard
Very high	≥ 50% of buildings within community area are located within a mapped hazard area	≥ 25% of CCF within community area are located within a mapped hazard area	> 100 residents located within a mapped hazard area
High	21-49% of buildings within community area are located within a mapped hazard area	11-24% of CCF within community area are located within a mapped hazard area	11-100 residents located within a mapped hazard area
Moderate	11-20% of buildings within community area are located within a mapped hazard area	6-10% of CCF within community area are located within a mapped hazard area	2-10 residents located within a mapped hazard area
Low	2-10% of buildings within community area are located within a mapped hazard area	1-5% of CCF within community area are located within a mapped hazard area	1 resident located within a mapped hazard area
Very low	≤ 1% of buildings within community area are located within a mapped hazard area	No critical community facilities within the community area located within a mapped hazard area	No residents located within a mapped hazard area

Additional information to be identified for each location will include:

- Existing and proposed significant structural mitigation measures

- Flood protection infrastructure
 - Defended areas
- Land drainage infrastructure
- Does the location have a previous or current adaptation planning project?
- Likelihood of increasing future hazard risk to at least 100 years
 - Climate change
 - Land subsidence
 - Planned land development (known growth strategies/plans)

Current and future risk:

Two exposure ratings should be assessed where there is sufficient information on how the hazard will be exacerbated by climate change:

1. An exposure rating for the current climate hazard scenario (1% AEP where applicable); and
2. An exposure rating for a future climate hazard scenario (to 100 years in the future; scenario selected using the method outlined in the Waikato Climate Change Adaptation Guideline).

Residual risk:

Two exposure ratings should be assessed for areas where there is existing significant structural hazard mitigation such as stopbanks or a sea wall:

1. An exposure rating assuming the hazard mitigation performs as designed.
2. An exposure rating assuming a failure (part or whole) of the hazard mitigation measure, such as a stopbank collapse.

This incorporates residual risk, recognising that the effectiveness of hazard mitigation cannot always be relied upon and may also reduce over time, particularly with the effects of climate change.

Confidence:

Each natural hazard exposure rating should be annotated with a confidence rating (based on WRC's [Natural Hazard Information Hierarchy](#) from step 1) and the exposure assessment process used (quantitative or qualitative).

Insufficient information

If there is insufficient information to determine an exposure rating, then the location should be classified as "insufficient information" (to be addressed in step 5).

Considerations:

- The boundary of each step 1 location will influence the proportion of elements exposed (and so the exposure rating) in that location which is a potential limitation. In some cases, SME judgement will be required to manage this limitation by considering both proportion and count rather than relying solely on the exposure ratings key.
- Due to complexity, the RRAPP does not currently address how to consider multi hazard exposure, i.e. where a location exposed to multiple hazards may experience greater impacts over time than a location exposed to one hazard. Nor does it currently consider where multiple hazards may interact and where there may be options that can address multiple hazards.
- The RRAPP does not currently address where there is significant uncertainty in hazard location, extent or magnitude, which is particularly likely for land instability. For example, with landslide risk, there is high uncertainty about where a landslide will occur and how it will be triggered.

Step 3. Assess locations against urgency criteria

Aim: Assess locations with 'high' or 'very high' exposure (from step 2) against 'urgency for action' criteria which represent conditions where a natural hazard event may result in greater consequences.

Step 3 will produce: Building on step 2, for each location it will be identified whether each urgency criteria has been met or not.

Data and information required for step 3:

- Spreadsheet with locations and exposure ratings from step 2
- Table of urgency factors (below)
- SME expertise, data or information to enable the assessment of urgency factors

Method:

For each location with a 'high' or 'very high' exposure rating, assess against each 'urgency for action' criteria in Table 5 using SME expertise and available information.

'Medium' exposure areas may be assessed in subsequent iterations. All 'low' or 'very low' exposure areas will not be assessed for urgency.

Table 5 'Urgency for action' criteria

Criteria	Description	Examples
Risk to life	Locations where natural hazards may have a rapid onset or are unpredictable, and therefore little warning time is possible for evacuation. AND/OR Locations that are difficult to evacuate in a timely manner or that have significantly vulnerable populations. AND/OR Locations with inadequate or no existing risk mitigation (such as forecast modelling and warning and evacuation procedures).	Flash flooding occurring in Waipa and Otorohanga Districts Feb 2026 (unexpected ARI-250 years event). Coromandel peninsula including landslips, flash flooding and debris flow. Areas such as eastern tributaries of the Waihou River with stop banks that have high risk of flash flooding, but no river level or rainfall telemetry for evacuation triggers.
Known significant community vulnerabilities	Locations where it is known that significantly vulnerable populations are potentially exposed to natural hazards impacts (e.g. school, rest home). <i>Option: This could be assessed by doing an exposure assessment of schools, early childhood centres, hospitals and rest homes.</i>	A high proportion of elderly people in Ngatea (low-lying and defended by stopbanks), Thames Hospital, Te Puru school.
Nationally or regionally significant infrastructure or services	Locations where nationally or regionally significant critical infrastructure or services are exposed and vulnerable, impacting multiple communities. <i>Option: This could be assessed by doing an exposure assessment using Waikato Lifelines Group data.</i>	Key regional transport routes such as SH1, 2 and 25, Huntly Power Station, Transpower National Electricity Transmission Grid, North Island Main Trunk Line.
Severe historical hazard impacts	Locations where there are known severe historical impacts from natural hazard events (e.g. flooding/debris inundation to above floor level or around dwellings), particularly repeated events.	1998 Waikato-Waipā Floods, 2023 Cyclone Gabriel, Kaimai range landslides, 2018 Wharekawa Coast flooding, erosion at Port Waikato.
Significant risk to areas of very high environmental, cultural or economic value	Locations where there are areas of very high environmental, cultural or economic value that are at significant risk of natural hazard impacts either now or in the future with projected climate change.	The primary sector in the Hauraki Plains is a significant contributor the region's economy.

Considerations:

- Risk to life is considered more 'urgent' than others thus will be a 'primary prioritisation factor' in prioritisation step 5. All other criteria will be a 'secondary prioritisation factor'. Step 5 describes how each factor may be incorporated into the overall prioritisation of locations.
- If many locations meet each urgency criteria, then each criteria may need to be assessed as high, medium or low (using SME judgement and standard definitions).
- Criteria will be refined if necessary, during implementation of the RRAPP.

Step 4. Consideration of adaptation and hazard risk mitigation enablers

Aim: To consider a range of social, political, economic and cultural factors that may enable adaptation or hazard risk mitigation processes to improve collaboration, engagement, efficiency and practicality in WRC's adaptation and hazard mitigation work programme.

Step 4 will produce: For each 'high-rated' (see below) location this step will identify the presence of any enabling factors, including but not limited to those in Table 6.

The presence of these enablers may help ensure the success of a community adaptation or risk mitigation project but should not undermine the objective of a risk-based prioritisation process to inform the investment of WRC resources in adaptation and risk mitigation. Thus, these factors will only be used to further prioritise 'high-rated' (see below) locations.

Method:

This step will only be executed for locations that are 'high-rated', i.e. those that meet the following criteria (primary prioritisation factors in step 5), to further prioritise locations:

- Very high or high exposure to at least one hazard (now or in the future with climate change and considering residual risk)
- 'Risk to life' urgency criteria met (or if necessary to further differentiate, then 'high risk to life')
- Risk mitigation /adaptation process is not underway or been completed.

For each 'high-rated' location, consider whether any enabling factors in Table 6 (or others) are met.

Table 6 Adaptation and hazard risk mitigation enabling factors

Enabling Factors	Examples
Desire from community for a risk mitigation or adaptation work programme (" <i>WRC should do something</i> ").	Wharekawa Coast 2120 – targeted rate for Haurahi Stream (Kaiaua)
Support from a territorial authority or other agencies to collaborate for a risk mitigation/adaptation work programme.	WRC working with HDC (HDC led) for Our Plains Our Future (Hauraki Plains) and Wharekawa Coast 2120.
Timing to inform land-use planning processes	Wharekawa Coast 2120 to potentially inform Hauraki District Plan Review (as HDC acquired this area from Franklin District)
Timing and alignment with the WRC infrastructure maintenance and renewal programme	Infrastructure Strategy and Regional Asset Management Plan

Alignment with iwi priorities/planning for a risk mitigation or adaptation work programme	Waikato-Tainui Strategic Work Programme
Where the sequencing of the response/work is important, such as where the management decisions in one catchment/scheme will impact another or cannot be made independently of one another	Management of Lake Taupo and the impact on Taupo and downstream flood risk
Opportunity for the response/work to mitigate multiple risks and/or deliver multiple benefits <i>Note: Ensure that consideration of co-benefits does not detract from main purpose to reduce natural hazard risk.</i>	Our Plains Our Future where hazard risk adaptation options may also enhance environmental outcomes
Availability of external funding opportunities, or potential for opportunistic responses due to alignment with other investment. <i>Note: Ensure that this does not distract from the risk-based intention of the RRAPP, for example by pursuing an externally funded project that utilises staff time but will not provide as great a benefit (or where the risk is less) as another non-externally funded project.</i>	Working with NZSeaRise and Our Changing Coasts to include Waikato examples as a case study for local vertical land movement. Before the Deluge government investment designed to protect the interruption of regionally significant infrastructure.
High awareness of risks due to occurrence of recent hazard events	Jan – Feb 2026 severe rains in Thames Coromandel and Waipa districts 2018 coastal inundation of the Wharekawa Coast

Considerations:

- To ensure that enabling factors are well-considered, a key component of this step is expected to involve engagement with communities, iwi partners, territorial authorities and other agencies.

Step 5: Identify high-rated locations for future adaptation or hazard risk mitigation work (bringing it all together)

Aim: To prioritise the locations identified in step 1 for the purposes of work programme development by considering the information compiled in steps 2 to 4.

Step 4 will produce: A rating for each step 1 location, and a rated list of locations based on the information from steps 2 to 4.

Method:

This step should consider the following information/outputs from previous steps:

- Exposure ratings for each location (including current and future exposure ratings and residual risk exposure ratings) (step 2)
- Accuracy of hazard information informing the exposure assessment, including locations identified as 'insufficient information' (steps 1 and 2)
- Identification of locations with a previous or existing risk mitigation or adaptation plan process (step 2)
- Urgency assessment results (one or multiple criteria met) (step 3)
- Identification of enabling factors (step 4)

ORC has almost completed their prioritisation process and have developed a simple and effective process to prioritise locations incorporating all the above information (Figure 2). We propose to use this

process, but to adjust the primary and secondary prioritisation factors to reflect a focus on risk to life and the high quality and coverage of our existing and upcoming flood modelling, as follows:

- Primary prioritisation factors (*all three must be met for a location to be 'high-rated'*):
 - Very high or high exposure to at least one hazard (now or in the future with climate change and considering residual risk); and
 - 'Risk to life' urgency criteria met (or if necessary to further differentiate, then 'high risk to life'); and
 - Risk mitigation/adaptation process is not underway or been completed.
- Secondary prioritisation factors (*to further differentiate between 'high-rated' locations*):
 - All other 'urgency criteria' – at least 1 to 2 others present.
 - Enabling factors – at least 1 to 2 present, use judgement.

Additionally, we propose to add a step where locations classified as "insufficient information" to determine an exposure rating will be addressed. This will likely result in either:

- An action to develop and implement a proposal to fill the information gap; or
- A decision by the Director Integrated Catchment Management to not fill the information gap, for example where the location/hazard is likely to be low risk/low priority (subject to review).

Considerations:

The RRAPP does not current address:

- How to incorporate exposure ratings for multiple hazards in one location
 - options include; select the hazard with the highest exposure rating, develop a sound method to combine multiple ratings or use SME judgement.
- How to incorporate exposure ratings for current climate and future climate hazard scenarios
 - this will include consideration of whether to prioritise locations with current high exposure over those with only future high exposure.
- How to incorporate residual risk
 - Considering exposure ratings for where the hazard mitigation performs as designed vs failure/overtopping.
 - This will include consideration of whether to prioritise areas with no existing hazard mitigation over areas with existing hazard mitigation.

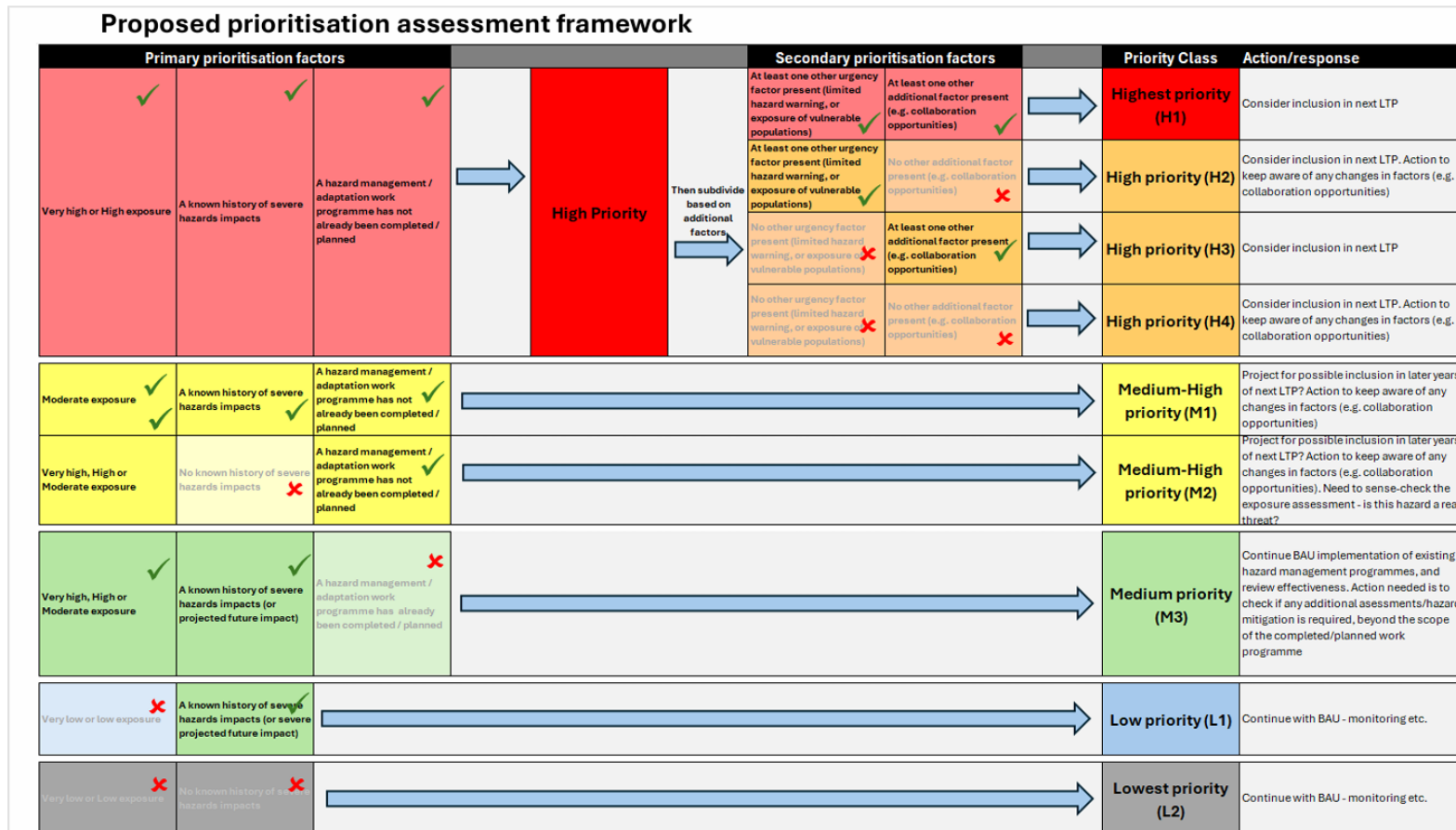


Figure 2 ORC proposed prioritisation approach flowchart

Step 6. For each location, determine the appropriate response (scale of work, type of response)

Aim: For each location identified in step 1, identify the likely response (scale of work, type of response) to inform resourcing and further planning for future WRC hazard risk management/adaptation activities to address the risk.

Step 6 will produce: A list setting out the type of response and indicative scale of work for each location

The two key criteria to be assessed for each location are:

- a. Type of response
- b. Scale of work

Together these factors will provide an indication of the general scale of resourcing and timeframes which may be required. This will help inform WRC's regional resilience work programme planning.

Type of response:

- Not all natural hazard risks across the Waikato region require a large-scale adaptation response. In some cases, a conventional hazard mitigation approach may be more suitable, for example, the upgrade of an existing flood protection scheme or CDEM-led community response planning.
- Adaptation approaches:
 - Suited to locations with significant complexity in hazard-scape and social/political settings and expected (but uncertain) future increases in hazard risk.
 - Due to complexity and uncertainty, a holistic approach is required with significant engagement/collaboration with territorial authorities, mana whenua, communities, and other agencies.
 - Adaptation planning is expected to consist of multiple adaptation options, possibly following a dynamic adaptive pathways planning (DAPP) approach.
 - Can't "engineer" the natural hazard risk away (in the long term), so community and stakeholder risk tolerance is a key consideration.
 - Examples: Wharekawa Coast 2120, Our Plains Our Future (Hauraki Plains).
- Hazard mitigation approaches:
 - Suited to more clearly defined hazards, where risks can be managed through targeted, largely technical or engineering led interventions.
 - Example: Paeroa floodgates on the Ohinemuri River

Scale of Work:

- The scale of work should be proportional to the nature and severity of the hazard risk.
- Small scale projects typically involve basic hazard assessment, monitoring, and community readiness activities and are often managed through business-as-usual resourcing, e.g. utilising existing telemetry for flood alerting.
- Medium scale projects generally require modelling (or other analysis), basic risk assessment, limited optioneering, and targeted community engagement, e.g. Port Waikato erosion, Grahams Creek Flood Protection Scheme.
- Large scale projects involve comprehensive hazard mitigation or adaptation programmes, including detailed risk assessment, thorough community engagement, and long-term, multiagency coordination, e.g. Hauraki Plains Our Plains Our Future.

Considerations:

- The National Policy Statement Natural Hazards (NPS-NH) advocates for a proportionate management of natural hazard risk, both when assessing the risk and when mitigating the risk

(noting that the context is different). Lower risks should have a smaller scale and less complex response than higher risks.

- This step should consider the impact and feasibility of implementing a potential risk management response. Not all hazard risk can be managed to the same level, and some will require more resourcing than others. This should be considered to ensure WRC's limited resources are being used to achieve meaningful risk reduction.
- Appropriate responses may include risk mitigation measures managed or led by other agencies, such as raising community awareness, emergency management or District Plan changes.
- WRC has limited resource (staff time and budget) to respond to natural hazard risks, thus for lower-rated risk locations the appropriate WRC response will likely be 'business as usual' or 'do nothing'.
- Natural hazard challenges vary in geographic scale, complexity, and potential suitable risk management approaches. Consequently, there is no 'one size fits all' approach for management of those natural hazard risks.

Using the outputs of the RRAPP

The RRAPP produces key outputs that are necessary to inform decisions about the allocation of resources to different locations across the region. The prioritisation list (step 5), type of response (step 6) and enabling factors (step 4) will be used to inform decisions about the allocation and investment of WRC resources in adaptation and hazard mitigation via the long term plan and annual planning processes.

While the RRAPP produces key outputs, the RRAPP of itself does not provide a decision-making framework for the allocation of resources and investment decisions. Such a decision-making framework will need to consider factors such as the relative cost vs benefit/efficacy of the proposed work and locations being considered for investment. For adaptation projects in particular, cost vs benefit/efficacy may be difficult to establish prior to commencing work. For large scale adaptation projects, the cost of the adaptation process itself is substantial, before the costs of implementing options are even considered.

The information generated from the RRAPP is expected to also be helpful for territorial authorities, CDEM and the spatial plan committee in the new planning system, which must identify priority locations for adaptation planning when creating the regional spatial plan.

3 PUBLIC EXCLUDED WORKSHOP ITEMS

PUBLIC EXCLUDED:

That in accordance with section 48(1) of the *Local Government Official Information and Meetings Act 1987* (Act) and the interests protected by section 6 or 7 of that Act, the public is excluded from the following parts of this workshop. The general subject of the matters to be considered while the public is excluded, the reason in relation to each matter, and the specific grounds for excluding the public are set out below:

Meeting item no. and subject	Grounds for excluding the public	Reason for excluding the public
3.1 - Health and Safety Due Dilligence	s7(2)(g) of the Act - To maintain legal professional privilege	section 48(1)(a)(i) of the Act - the public conduct of the relevant part of the proceedings of the meeting would be likely to result in the disclosure of information for which good reason for withholding would exist under section 6 or section 7

4 KARAKIA WHAKAMUTUNGA

Unuhia, unuhia
Unuhia mai te uru tapu nui
kia wātea, kia māmā,
te ngākau, te tinana, te hinengaro,
i te ara takatū
Koia rā e Rongo
e whakairia ake ki runga
kia tina! TINA!
Haumi ē, hui ē, TĀIKI ē!

Draw on, draw on,
Draw on to the supreme sacredness
To clear, to free
our heart, body and soul
Our pathway prepared
Lo, there is peace
suspended high above
manifest!
draw together!
Affirm!