Premiums Under Pressure

How climate change is reshaping residential property insurance and what to do about it

A REPORT BY **KALI MERCIER**

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He Mihi / Acknowledgements



Kali Mercier
Report author

Aotearoa New Zealand holds much of its wealth in residential property, making the country especially vulnerable to climate-related weather events and sea-level rise. As insurance premiums begin to rise in response to climate change, now is the time to plan how we will remain financially and socially resilient into the future. That means designing policy responses to keep New Zealanders insured, while proactively working to minimise climate-related risks to existing and new properties. It won't be straightforward, or cheap, but failing to act will be more expensive still.

This report was written with the input of many informed and intelligent people who have been ringing the alarm bells on these issues for some time. I hope this report can help amplify their voices. We still have a small window to tackle these issues head on, proactively and calmly. This report sets out initial thinking on the most promising ways to do so.

To all those who helped with this report in so many different ways, ngā mihi nui ki a koutou katoa. I'd like to start by giving warm thanks to Jonathan Boston, Emeritus Professor of Public Policy at Victoria University of Wellington, for his invaluable help throughout the production of this report. Professor Boston inspired many ideas, helped inform my arguments, and contributed with significant research, writing, and thinking. This report would have been poorer without his generous help—ngā mihi nui.

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Kali Mercier
WSP Fellow, and Deputy Director of the Helen Clark Foundation

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Executive Summary

WITHOUT INTERVENTION THE COUNTRY CAN EXPECT STEEP RISES IN PREMIUMS AND INSURANCE RETREAT FROM SOME PROPERTIES, LEAVING HOMES UNPROTECTED.

The world faces unprecedented climate-related challenges over the coming decades and beyond. Aotearoa New Zealand, with its long coastline, many rivers, and varied climate, will not be spared the impacts. In particular, the country will face more severe floods and increasing coastal inundation due to sea-level rise.

Residential insurance premiums in Aotearoa New Zealand have faced steep increases over the past few years. Premiums are expected to rise further in the coming years as more insurers move to adopt 'risk-based pricing' for flood hazards and as the impacts of climate change increase, pushing up costs for insurance companies and their international underwriters. Without effective policy measures, these pressures are expected to result in unaffordable premiums for some properties, leading households to reduce, or cancel, their insurance cover.

Additionally, insurance companies will over time withdraw cover in some locations as increasing levels of damage—especially from floods and coastal erosion—make selling cover in those locations unattractive or infeasible. This phenomenon is known as 'insurance retreat' (*Storey et al., 2017*), and is already very common in places overseas that have been badly hit by climate change-related events in recent years.

While the exact timeline for partial and full insurance retreat remains uncertain, it is clear the impact will be large under any global warming scenario. For example, recent estimates suggest that on current trajectories some 10,000 coastal properties in Auckland, Wellington, Christchurch, and Dunedin could become uninsurable by 2050 as a result of coastal flooding (*Storey et al., 2024*).

Aotearoa New Zealand must act now to maintain high levels of residential insurance and help protect the country from an uncertain future. Failing to do so will mean not just personal hardship for those who find themselves underinsured after a disaster—it could also have significant fiscal impacts for the government. High residential insurance penetration is crucial to maintaining economic and societal resilience and enabling individuals, communities, and the country as a whole to recover from more severe climate-related impacts.

Those hardest hit will be those who are already struggling

While climate change will affect all New Zealanders, low-income households, whether they are homeowners or renters, will be impacted disproportionately by premium rises and by future extreme weather events. Uptake of residential property insurance is already lower in poorer communities. Those who are already most vulnerable to socioeconomic shocks are also likely to be least insured, and this will worsen over time without government intervention. This points to insurance retreat as a looming social equity issue for the country.

Homeowners with properties in a natural hazard risk zone will pay higher premiums as risk-based pricing—under which premiums reflect property-level risk rather than risk being shared equally between all policyholders—becomes more common. But many homeowners in such a position bought their properties without knowing or fully understanding the risks, or were unable to afford a more expensive property in a less risky area. As such, this report argues that it is important not to cast blame on individuals who now find themselves in a precarious situation.



Residential suburbs in Whangaparoa Peninsula, Auckland

The drive to adapt must be led by democratic processes rather than insurance prices

Proponents of risk-based pricing argue that premium prices should reflect risk because high prices will send signals to policyowners and local authorities to act to mitigate risks and implement adaptation measures (such as building flood protection, or moving away from risky areas). However, there does not appear to be convincing evidence that price signals strongly encourage or discourage such behaviour in and of themselves—people are motivated to act in a certain way by a range of factors, price being just one of them. A person suffering financial hardship may be more likely to reduce or drop their insurance coverage than incur the cost of moving from their home or invest in expensive risk protection measures.

This report argues that it is primarily the responsibility of central government, in consultation with local government, iwi/Māori, business, civil society organisations, and the wider public, to set the strategic policy direction for how the country should adapt to the impacts of climate change. Insurance, which is run by private companies with their primary allegiance to shareholders, should complement, not lead, the drive to adapt.

Aotearoa New Zealand must urgently stop inappropriate development in flood zones, flood-prone areas, and those coastal locations that are likely to become uninsurable within decades. The country must also invest in risk mitigation and climate adaptation measures (at the right price and in the right places) to keep residential insurance premiums lower, for longer.

Where other types of intervention are not cost-effective or technically viable, some homes in very risky areas will need either to be relocated or face repeated and unsustainable losses from natural-hazard damage. This report backs widespread calls for Aotearoa New Zealand to agree on a comprehensive, proactive, and legally binding adaptation framework that sets out clear roles and responsibilities for the country's response to the growing impacts of climate change, and on how this will be funded. A risk management framework is also needed to give direction—based on the best available evidence—on what constitutes an acceptable level of natural hazard risk (a 'threshold') for individual properties.

In the absence of such frameworks, preparations to respond to climate change will be haphazard and will very likely only be properly implemented in wealthier areas, where more money can be raised through rates (or in other ways) to pay for risk mitigation. In such an environment, partial and full insurance retreat will start sooner and cut deeper.

The country must act now to keep insurance accessible and affordable

This report provides a preliminary analysis of residential insurance policy options available to government, in the face of increasing climate-related risks. It draws on the experience of a range of other countries and discussions with a variety of stakeholders and experts.

The overall goal must be to maintain high residential insurance coverage, for flood risk in particular. Insurance cover must remain affordable to all, so that the burdens of climate change do not fall most heavily on those least able to bear them. One of the first steps must therefore be to agree a calculation for 'affordability' of premiums in relation to household income. It will be important to minimise perverse outcomes—such as encouraging people to remain in unsafe homes or build in inappropriate locations.

While significant additional analysis will be needed over the coming years, this report explores several options for the insurance market. First, it concludes that offering subsidies on premiums to those facing affordability issues would likely save the country money in the long term, as well as sparing hardship for individuals on low incomes. Other options worth exploring include standardising and simplifying insurance contracts, agreeing the level of transparency that is expected from insurance companies making pricing decisions, and better promoting competition in the insurance market.

More comprehensive intervention should also be urgently considered to maintain high coverage for flood hazards in particular. Many countries, including France and the United Kingdom, have responded to flood insurance protection gaps for floods by creating separate entities known as Protection Gap Entities (PGEs). This country already has such an entity, the Natural Hazards Commission (NHC Toka Tū Ake)—formerly EQC—but it does not provide flood cover, other than in a very limited way for land damage.

There are many potential models for such an entity and how it operates. For example, the roles of NHC Toka Tū Ake could be extended in ways—to provide first loss cover for flooding as it currently does for other natural hazards, to instead provide 'total loss cover' for floods (and potentially for other natural hazards), and/or to take on a reinsurance function. Alternatively, a new separate public PGE could be established to fulfil any of these roles.

Such a scheme, depending on its design, could aim to fill any of several different potential future ‘protection gaps’. These may include providing cover for:

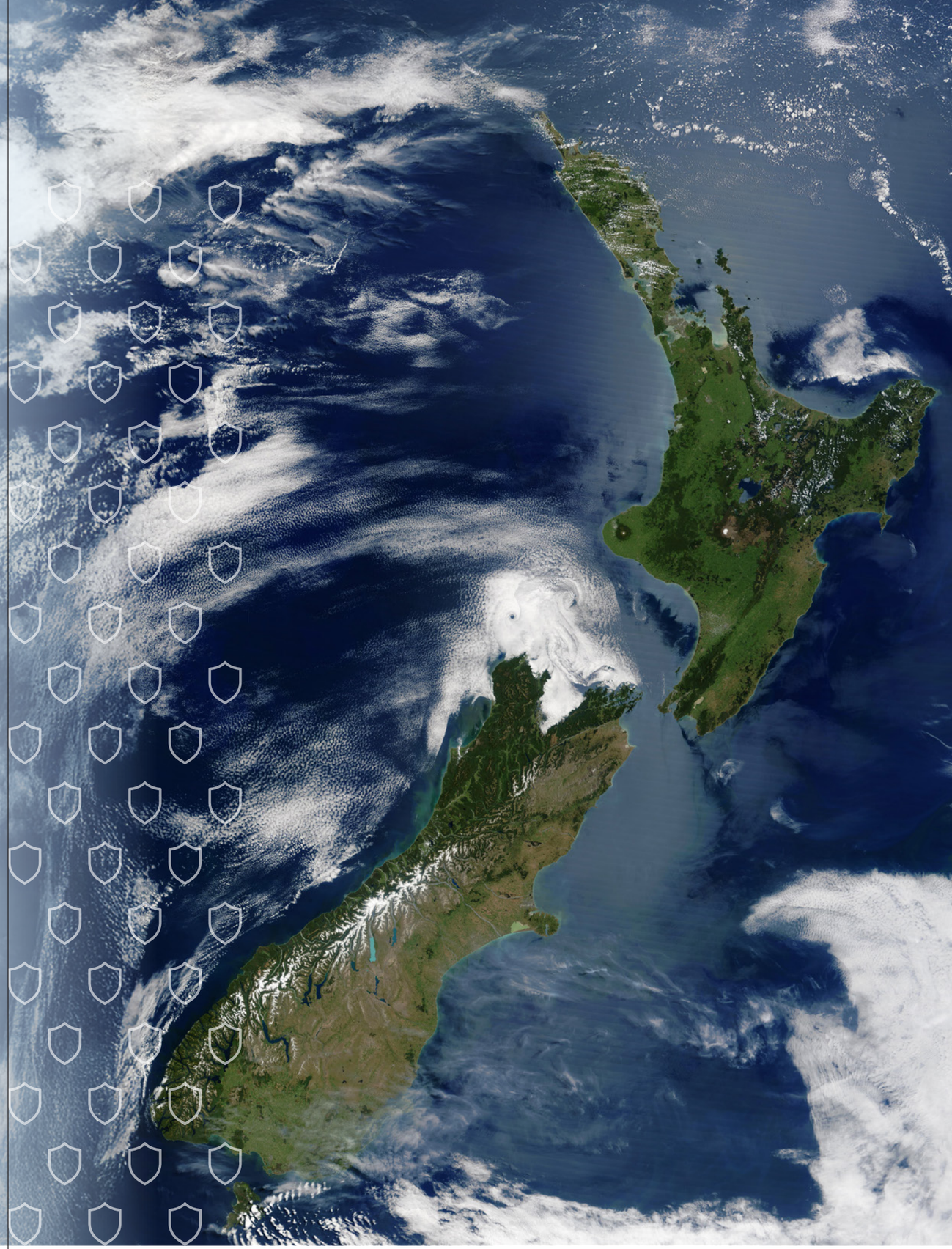
- Homes that are unable to access private insurance (but for whom the ‘risk threshold’ is still tolerable, according to nationally agreed criteria).
- Homes in areas where insurance has been withdrawn because risks are too high, where risk mitigation measures have been planned but not yet implemented.
- Homes that are facing a future process of planned relocation, and require cover in the meantime.

Cover provided by such a PGE could be capped or uncapped, temporary or long-term, targeted to homes in high-flood-risk locations or offering wider cover to all homes. One particularly promising option would be to design a new public scheme to cover any home experiencing total loss caused by a natural hazard event (particularly flooding), with private insurance continuing to cover lesser damages. Depending on its design and purpose, such an entity could close several existing insurance gaps—including helping those whose houses are red-stickered but who cannot access insurance payouts, or those facing erosion from sea-level rise—for example.

Crucially, Aotearoa New Zealand must take a strategic decision about how best to balance two competing notions in insurance cover. Is the country best served by an individualistic, risk-based approach—where those who face greater risks pay higher premiums—or a more collective-minded community-based approach that shares the risk more evenly across policyholders (noting that NHC Toka Tū Ake takes such an approach for natural hazards such as earthquakes)?

As an innovative and forward-looking country, Aotearoa New Zealand is well-placed to find solutions to create a robust, world-leading insurance ecosystem. Policy options should be considered in detail now, backed up by public debate, ideally with multi-party consensus. To be most effective, appropriate interventions must be designed to last, and be ready to implement well before protection gaps become widespread.

Satellite image of New Zealand Jacques Descloitres, MODIS Land Rapid Response Team at NASA GSFC, Public domain, via Wikimedia Commons



Recommendations

RECOMMENDATION 1

RECOGNISE THE VITAL ROLE OF RESIDENTIAL INSURANCE IN MAINTAINING SOCIETAL RESILIENCE IN THE CONTEXT OF INCREASING CLIMATE CHANGE-RELATED RISKS.

» ***RESPONSIBLE – Central government (Treasury, MBIE)***

1.1 Recognise the importance of maintaining high levels of insurance penetration across the country, for flood risk in particular. Achieving this will be dependent on residential insurance cover remaining accessible and affordable.

1.2 Establish an expert advisory group to explore how maintaining high insurance penetration can best be achieved. Draw on the experience of relevant overseas jurisdictions while also recognising the distinctive features of the Aotearoa New Zealand insurance market and institutions.

1.3 Note that insurers have a valuable role to play—together with other stakeholders including local and central government, iwi, Māori, and local communities—to incentivise and promote climate adaptation interventions. Ensure the design of any intervention considers the full range of relevant views.

1.4 Agree on criteria to determine what constitutes 'affordability' in insurance premiums.

1.5 Agree a list of principles and goals to inform any intervention in the current insurance market. These may include:

- 1.5.1 Ensuring insurance cover is affordable to all, regardless of socioeconomic circumstances, and ensuring the burdens of climate change do not fall most heavily on those least able to pay.
- 1.5.2 Minimising 'moral hazard', and perverse outcomes, such as continuing development in hazardous locations.
- 1.5.3 Recognising it is not helpful (and in most cases not fair) to blame individuals who find themselves in a precarious situation due to climate change.

RECOMMENDATION 2

INVEST IN CLIMATE RISK MITIGATION AND ADAPTATION TO KEEP RESIDENTIAL INSURANCE PREMIUMS ACCESSIBLE AND AFFORDABLE FOR LONGER.

» ***RESPONSIBLE – Central & local government***

2.1 Ensure that insurance market signals (such as the move to risk-based pricing) complement, rather than lead, the drive to adapt to climate change. The responsibility for deciding where people can live should rest with democratically elected officials.

2.2 Avoid further developments in flood-risk areas that exceed agreed risk tolerances, for example by:

- 2.2.1 Giving councils greater powers to decline land-use consents in areas vulnerable to flooding and other climate change impacts. These powers could be set out within the proposed new national direction on natural hazards.
- 2.2.2 Investigating options for insurance companies to provide input into consenting processes for new housing developments.

2.3 Urgently invest in proactive flood-risk mitigation at the local level—though only where such mitigation is cost effective. Prioritise nature-based solutions and sponge cities approaches for flood mitigation in cities where appropriate.

2.4 Prioritise flood-resilient design for new and existing homes in areas that may be vulnerable to flooding.

2.5 Develop and agree a Climate Change Adaptation Act or equivalent, which sets out clear roles, responsibilities, and decision-making processes at national and local levels for how adaptation will be planned and implemented.

2.6 Develop and agree a funding framework for adaptation, to provide clarity on how the full range of adaptation costs will be shared and met. Urgently provide funding for adaptation initiatives, for example through the establishment of one or several targeted national adaptation funds.

2.7 Agree on national standards for natural hazard and climate change risk tolerance to:

2.7.1 Establish thresholds for acceptable community-level and property-level risk, based on the best available evidence.

2.7.2 Clarify actions that should be taken when property risk thresholds are exceeded (whether physical risk mitigation measures, planned relocation, or other action).

2.8 Agree a framework and a funding model for planned relocation, as proposed by the Expert Working Group on Managed Retreat. Consider planned relocation for homes in risky areas where other types of intervention are not cost-effective or technically viable.



RECOMMENDATION 3

CONSIDER A RANGE OF INTERVENTIONS IN THE RESIDENTIAL INSURANCE AND FINANCIAL MARKETS TO MAINTAIN HIGH LEVELS OF INSURANCE PENETRATION.

3.1 Consider directly subsidising premiums for those who struggle to afford them, as part of a package of responses. This will be most effective within a robust adaptation framework that identifies tolerable risk thresholds for properties and provides public assistance for planned relocation where appropriate.

» ***RESPONSIBLE – Treasury***

3.2 Further investigate the viability of a range of promising policy options, including:

» ***RESPONSIBLE – MBIE, Financial Markets Authority, Commerce Commission***

3.2.1 Standardising and simplifying insurance contracts to make it clearer what is covered and what is not.

3.2.2 Monitoring insurer conduct and value for money in insurance contracts.

3.2.3 Agreeing on the level of transparency that is expected from insurance companies about how they make decisions affecting insurance accessibility and affordability. Insurers could for example be required to make available the hazard information and data used by them to inform a risk-based premium increase or discount on a homeowner's policy.

3.2.4 Monitoring and promoting competition in the insurance market.

3.3 Develop policies to respond to the future likely 'unbundling' of perils from insurance contracts.

» ***RESPONSIBLE – Treasury***

3.4 Consider requiring banks and other financial institutions to undertake due diligence on long-term insurability of properties when granting mortgages.

» ***RESPONSIBLE – Reserve Bank of New Zealand, Financial Markets Authority***

RECOMMENDATION 4

DEVELOP A PUBLIC RESIDENTIAL INSURANCE SCHEME OR SCHEMES TO FILL CURRENT AND FUTURE GAPS IN INSURANCE CAUSED BY CLIMATE CHANGE, ESPECIALLY FOR FLOOD RISK. ACT NOW TO DESIGN OPTIONS.

» ***RESPONSIBLE – Central government, Treasury***

4.1 Explore policy options for a public insurance scheme to provide cover for some elements of flood hazards. Coverage could be offered only to at-risk properties, or (probably more sensibly) to all properties. NHC Toka Tū Ake could be adapted to take on an extended role, or a new entity established.

4.2 Consider whether such an entity should cover first losses up to a cap—as NHC currently does for natural hazard damage other than flooding—or should rather focus on providing total loss cover for flooding (and potentially also for other natural hazards). The latter approach may help close a number of existing insurance gaps (such as providing assistance for those who are red-stickered but cannot access insurance payouts, or those who are threatened by coastal erosion, for example).

4.3 Further explore policy options for the design of a public reinsurance scheme for natural hazard damage, to keep premiums lower, for longer. The existing NHC Toka Tū Ake could be adapted to take on this role (instead of, or in addition to, a public insurance role), or a new entity established.

4.4 Learn from other countries that have established public insurance schemes for floods. Ensure any scheme established here promotes risk reduction and adaptation, and does not encourage poor practices or inaction.

4.5 Decide on the best balance between two broad conceptual approaches for a new scheme:

4.5.1 Continuing an individualistic, risk-based approach to flood insurance, where those who face greater risks pay higher premiums (noting this will negatively impact Aotearoa New Zealand's historically high insurance coverage rates, and therefore risks entrenching poverty and inequitable outcomes in the aftermath of an underinsured disaster).

4.5.2 Adopting a more collective-minded community-based pricing model that shares the risk of flooding more evenly across policyholders as for other natural hazard risks via NHC Toka Tū Ake (noting that this approach may 'mute' economic signals to undertake risk mitigation and requires some policyholders to cross-subsidise others, which may be perceived as unfair).



CHAPTER 1

How insurance premiums are coming under pressure

INTRODUCTION

THIS REPORT SETS OUT EARLY THINKING ON OPTIONS FOR A THORNY AND PRESSING POLICY ISSUE THAT HAS NOT YET BEEN WELL DEVELOPED IN THE LITERATURE: HOW TO KEEP RESIDENTIAL INSURANCE ACCESSIBLE AND AFFORDABLE IN AOTEAROA NEW ZEALAND IN THE FACE OF INCREASING CLIMATE-RELATED CHALLENGES.

The report first provides an overview of the pressure climate change is already exerting on insurance premiums, and investigates when we might expect to see insurance companies begin to withdraw coverage for some properties (the answer is: very soon). It next sets out the arguments for and against intervention in the insurance market, and outlines some key goals and principles for any intervention, to minimise the risk of unintended outcomes.

To keep premiums lower for longer, Aotearoa New Zealand's insurance scheme must sit within, and mutually reinforce, an adaptation framework setting out a robust plan for risk mitigation—including the planned relocation of homes that can no longer be kept safe for their inhabitants. How this should work is discussed at length in Chapter 3.

Chapters 4 and 5 cover several options for direct intervention in the insurance market. The overriding goal of the policy options put forward is to maintain high penetration by keeping premiums affordable, and to explore options for a public insurance or reinsurance scheme that can fill any 'protection gaps' as they arise.

This report looks exclusively at residential insurance, and as such forms only the beginning of the conversation that must take place about the future resilience of Aotearoa New Zealand. The implications of climate change on other types of insurance (such as for essential infrastructure owned by central and local government, for commercial properties, and agricultural buildings and equipment) also needs urgent policy work, but will have to wait for a future report.

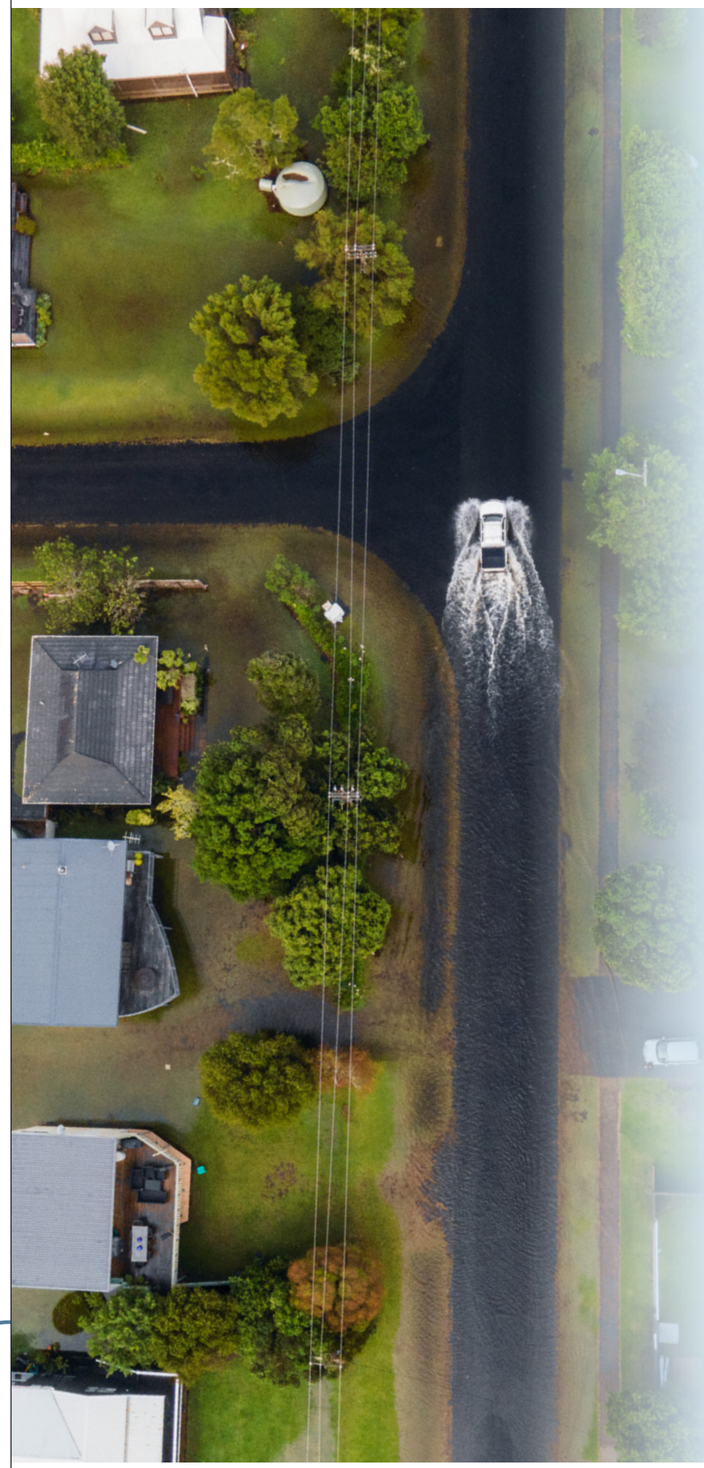
THE IMPACTS OF CLIMATE CHANGE ARE ALREADY EVIDENT

The warming of the climate system caused by greenhouse gas emissions is now unequivocal. Depending on how successfully emissions can be reduced globally, a New Zealander in their early twenties today might experience mean temperature increases of between 1.5°C and 3.5°C in their lifetime, with a range of related impacts *(NIWA, n.d.)*.

Already, Aotearoa New Zealand is observing gradual changes such as sea-level rise, higher average temperatures, and more frequent and severe extreme weather events. Some locations in Aotearoa New Zealand are expected to become uninhabitable as time progresses, either due to extreme events—such as flooding and landslides—or to gradual, accumulating changes such as rising sea levels *(Ministry for the Environment, 2020)*.

It is generally accepted that the impacts from these changes are likely to be pervasive across the country's economy and society, and could threaten Aotearoa New Zealand's long-term fiscal sustainability *(Treasury, 2024a)*. There is less certainty about the scale of the potential impacts, which will depend in large part on the level of future global emissions—but under all scenarios, the country will experience increasing climate-related impacts, including more severe droughts, wind-storms, floods, fires, and sea-level rise.

While earthquakes have historically dominated residential insurance payouts in terms of the single-event losses, weather events are beginning to gain in significance for insurers and reinsurers in the country (*Clough, 2023*). Intensified development along coastal areas and urbanisation are also increasing the number of people exposed to extreme weather events, landslides, and coastal flooding (*Ministry for the Environment, 2020*).



Weather events such as storms and flooding are growing in intensity

Historically, storms—bringing wind damage, floods, and landslides—have caused significant damage, disruption, and financial cost in the country (*ICNZ, 2023*). As global temperatures rise, the energy and intensity of those storms is likely to increase (*Ministry for the Environment, 2024*).

The impacts of the Auckland Anniversary Day floods and Cyclone Gabrielle in 2023 significantly outstripped previous weather events of their kind, with the two together driving insurance claims larger than the 2016 Kaikōura earthquake (*NZIER, 2024*). This was the first time such weather events were sufficiently large to trigger residential insurers in this country to make a claim against their international reinsurance policies. Based on existing knowledge and science, it is not likely to be the last.

Flooding along the Coromandel Peninsula after Cyclone Gabrielle, 2023



Example of fluvial flooding, Rangitata River (Dec 2019)
Image by ∑64, CC BY-4.0, via Wikimedia Commons



Example of pluvial flooding, Puhoi



Example of storm surge

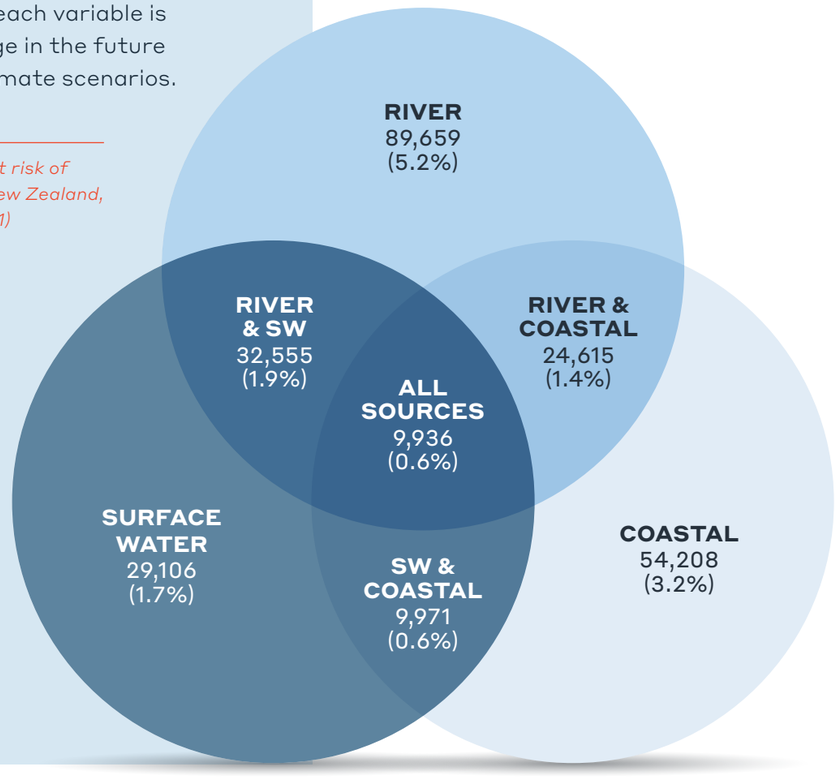
Aotearoa New Zealand is particularly susceptible to flood risk—partly because of the climate, and partly due to the location of towns and cities, with many of the largest and most popular settlements on flood plains and along the coast. There are several different types of flood risk in Aotearoa New Zealand:

- **Fluvial flooding** is caused by swollen rivers breaking their banks and flowing out to surrounding areas—as seen in several instances in Hawke's Bay during Cyclone Gabrielle, for example.
- **Pluvial flooding** occurs when intense rainfall overwhelms drainage systems and natural water pathways—such as in Auckland during the Anniversary Day events in 2023. The two main types of pluvial flooding are surface water flooding, which is more gradual, and flash flooding, which occurs over a shorter period and can be very dangerous.
- **Storm surges** are the main cause of coastal flooding. Storm surges occur when a low-pressure weather system results in higher than normal sea levels, and strong winds push water onshore.

Rivers pose the biggest flooding risks to Aotearoa New Zealand properties currently. However, many properties face multiple hazards: around 10,000 homes are exposed to all three types of flooding (river, coastal, and surface water) (see Figure 1). Climate change has the potential to increase all three types of flooding.

NIWA's recently completed online database (*New Zealand Climate Projections, n.d.*) can be searched by territorial authorities to show representations of how climate-related hazards and variables will change over time. The database includes information about key climate variables such as temperature, rainfall, wind, and drought, and how each variable is predicted to change in the future under different climate scenarios.

Figure 1 – Properties at risk of flooding in Aotearoa New Zealand, by flood peril (Aon, 2021)



Sea-level rise will increase coastal erosion and impact flooding inland

Sea-level rise caused by global warming is expected to further increase the impact of storm surge events and to hasten erosion in many coastal locations around the country. New data released in August by Coastal Change (*2024*) shows how coastal erosion combined with increasing storm surges will become a major issue in some places as the century progresses, threatening thousands, if not tens of thousands, of existing houses, along with businesses, farms, and public infrastructure.

How this affects different regions in Aotearoa New Zealand will depend on ongoing natural land movements: vertical land changes are expected to reduce the impacts of sea-level rise in some places and exacerbate them in others (*NZ Sea Rise, 2024*).

This land movement effect means that in some parts of the country, sea levels will increase by as much as 1.2m by the end of the century, with the largest increases around the southeast of the North Island, along the Wairarapa coast. Other parts of the country will experience much lower rates of increase.

Many households are vulnerable to flooding now, and that number will increase

A report by Aon *(2021)* commissioned by the EQC analysed current flood exposure to homes across Aotearoa New Zealand from river, surface water, or coastal flooding, and found:

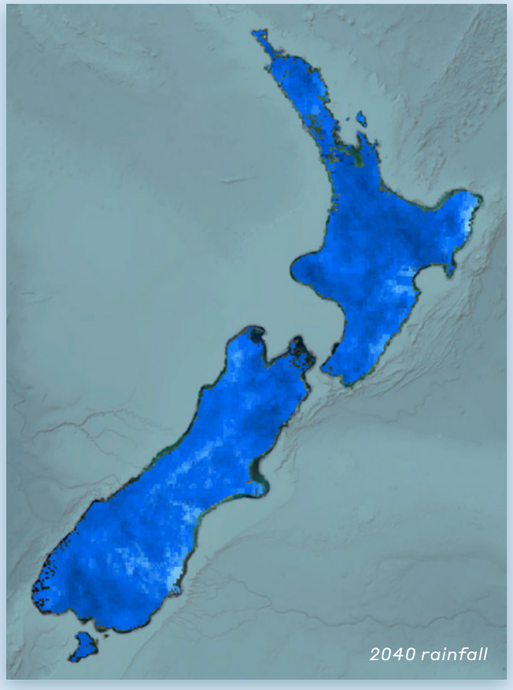
- 250,050 homes (14.5%) are already exposed to some flood risk (10,000-year return period).
- 137,499 (8%) are particularly exposed (100-year return period).
- 88,647 (5%) are extremely exposed (20-year return period).

Research by NIWA (*Paulik, 2019a*) put the number of people and buildings at risk of flooding higher still, finding that extreme weather events could expose almost 700,000 people and 411,516 buildings to river flooding alone. A second NIWA research paper found a further 72,000 New Zealanders were at risk of extreme coastal flooding, along with about 49,000 buildings (35,000 of which are residential buildings) (*Paulik, 2019b*).

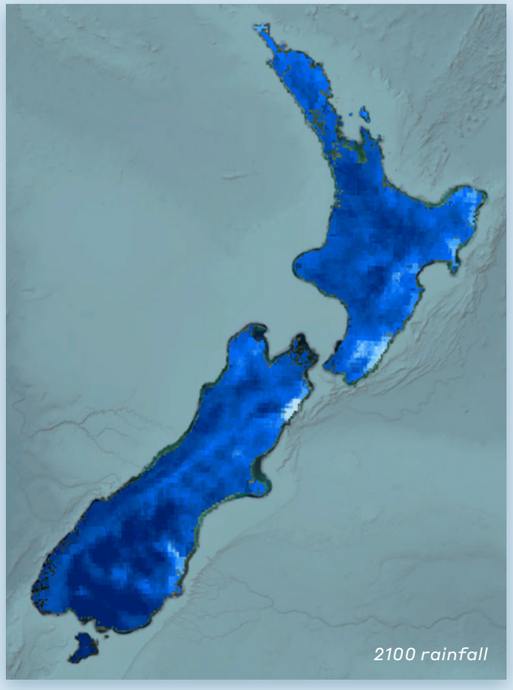
Figure 2 – Maps of heavy rainfall over time under medium climate scenario (Ministry for the Environment, n.d.)



Lighter rainfall *Heavier rainfall*







Calculating how many additional buildings will be at risk of pluvial and fluvial flooding under different climate change scenarios is extremely complex and differs by region and by study methodology. In different warming scenarios, and over different time periods, thousands of homes may face increases in mean annual flooding of 20% or more between 2036 and 2056, whereas other catchments could experience lower mean annual flooding. With different temperature increases, the same areas may become slightly less prone to flooding, and others more so (*Paulik, 2019a*).

In Aotearoa New Zealand, coastal properties in inundation zones are experiencing the fastest rate of change in flood risk due to sea-level rise, with the rate of change for fluvial (and pluvial) residential properties significantly lower.

Even modest increases in sea levels will dramatically reduce the return period of major coastal flood events. With just 10cm of sea-level rise (expected by 2040), a 100-year event would be expected to occur every 35 years in Auckland, and every 20 years in Wellington (*Parliamentary Commissioner for the Environment, 2015*).

Most disturbingly, with just 30cm of sea-level rise (which will likely occur sometime between 2045 and 2070), what is today considered a 100-year flood event will happen:

- Every year in Wellington and Christchurch
- Every two years in Dunedin
- Every four years in Auckland (*PCE, 2015; Paulik, 2019b*)

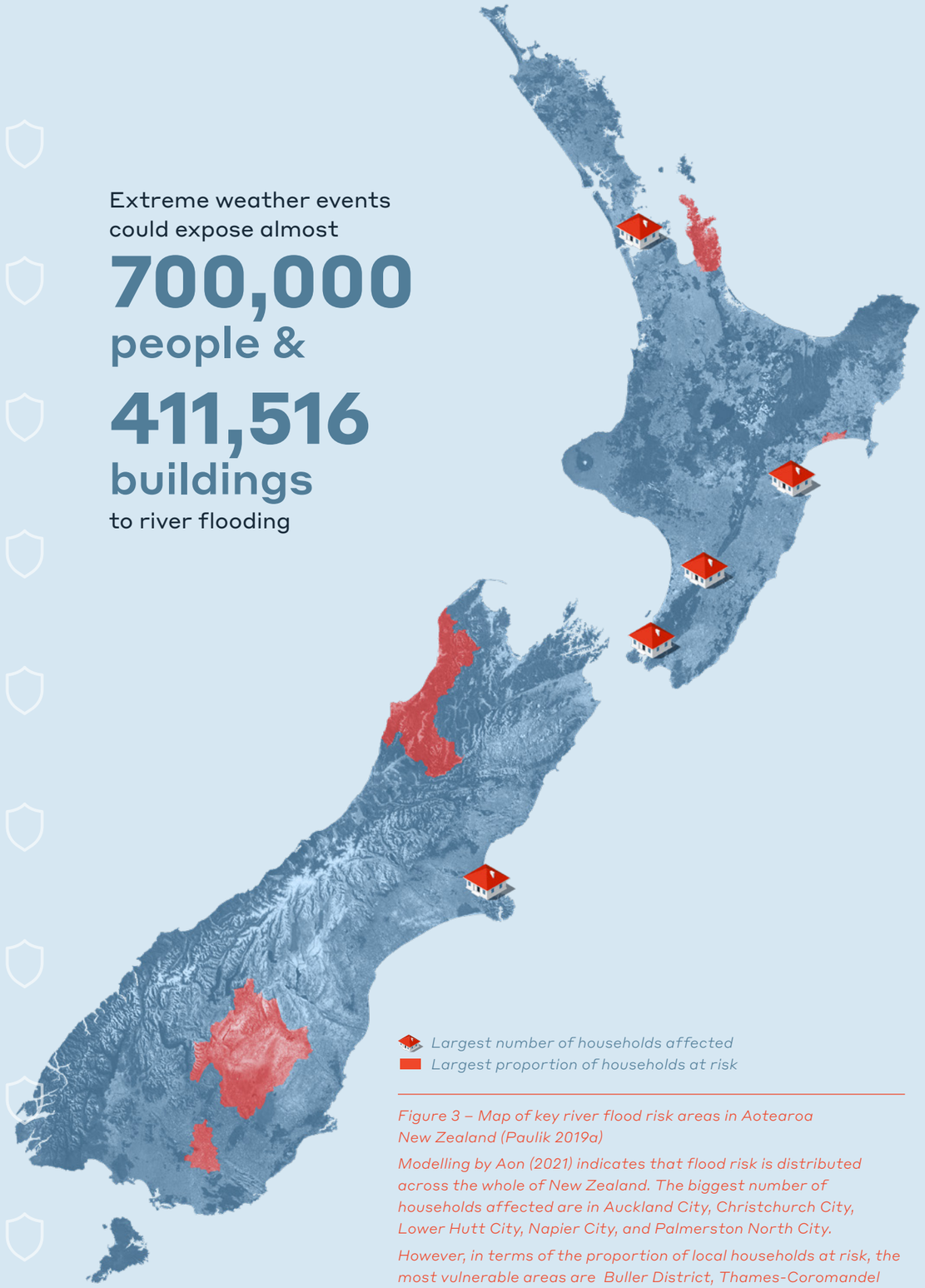
That level of sea rise would expose an additional 20,000 buildings to 'extreme risk' of coastal flooding (*Paulik, 2019b*). Soberingly, more recent research has suggested that as parts of Wellington and Auckland are subsiding at rates of more than 3cm a decade, the threshold for 30cm of sea-level rise could actually be crossed in those places as early as 2040 (*Naish, as cited by Morton, 2024*).

Regions with major coastal urban areas that are likely to be seriously impacted by sea-level rise by 2050 include the Bay of Plenty, Hawkes Bay, Wellington, Canterbury, and Otago (*Paulik, 2019b*).

Extreme weather events could expose almost

700,000
people &

411,516
buildings
to river flooding

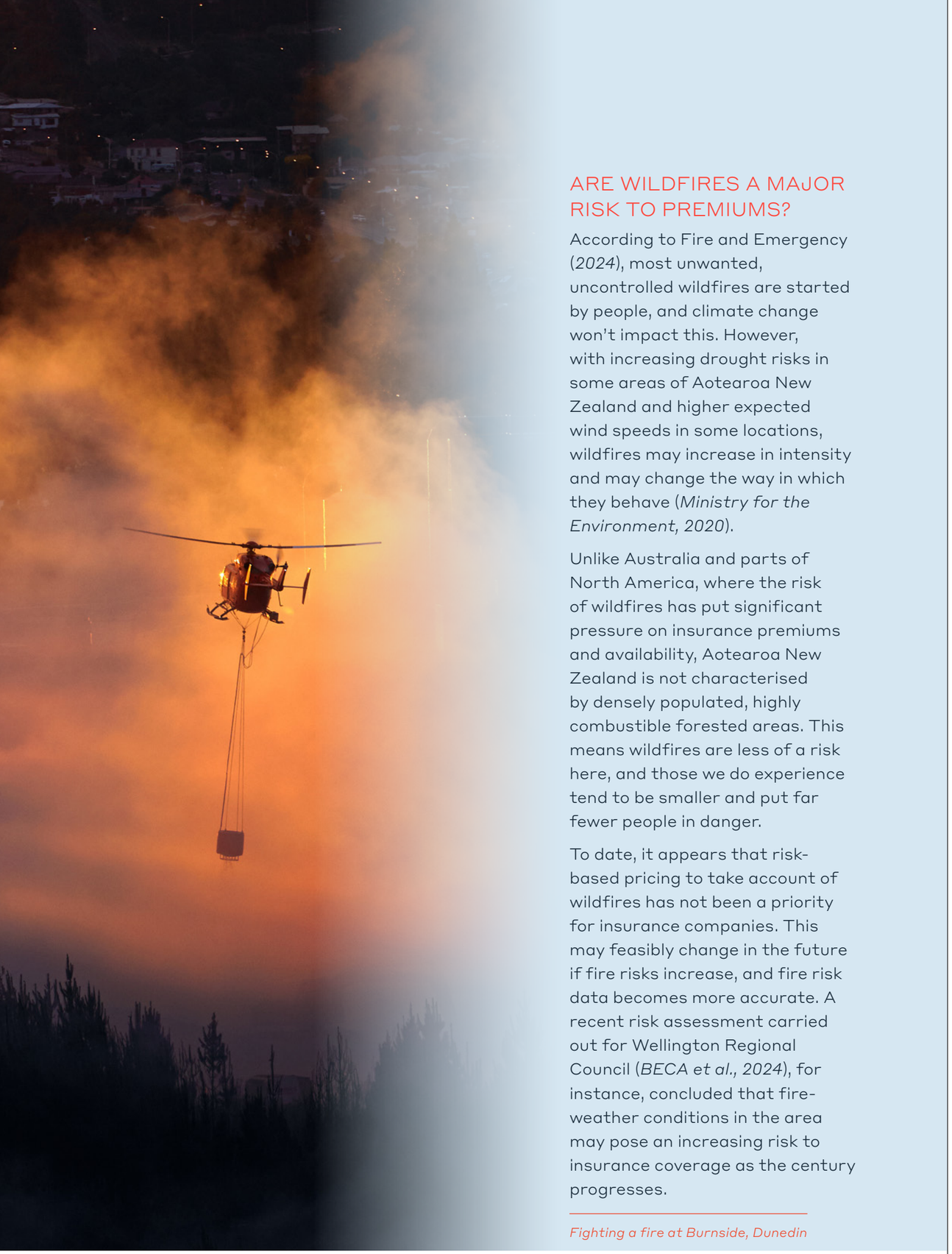


Largest number of households affected
Largest proportion of households at risk

Figure 3 – Map of key river flood risk areas in Aotearoa New Zealand (Paulik 2019a)

Modelling by Aon (2021) indicates that flood risk is distributed across the whole of New Zealand. The biggest number of households affected are in Auckland City, Christchurch City, Lower Hutt City, Napier City, and Palmerston North City.

However, in terms of the proportion of local households at risk, the most vulnerable areas are Buller District, Thames-Coromandel District, Wairoa District, Central Otago District, and Gore District.



ARE WILDFIRES A MAJOR RISK TO PREMIUMS?

According to Fire and Emergency (*2024*), most unwanted, uncontrolled wildfires are started by people, and climate change won't impact this. However, with increasing drought risks in some areas of Aotearoa New Zealand and higher expected wind speeds in some locations, wildfires may increase in intensity and may change the way in which they behave (*Ministry for the Environment, 2020*).

Unlike Australia and parts of North America, where the risk of wildfires has put significant pressure on insurance premiums and availability, Aotearoa New Zealand is not characterised by densely populated, highly combustible forested areas. This means wildfires are less of a risk here, and those we do experience tend to be smaller and put far fewer people in danger.

To date, it appears that risk-based pricing to take account of wildfires has not been a priority for insurance companies. This may feasibly change in the future if fire risks increase, and fire risk data becomes more accurate. A recent risk assessment carried out for Wellington Regional Council (*BECA et al., 2024*), for instance, concluded that fire-weather conditions in the area may pose an increasing risk to insurance coverage as the century progresses.

Fighting a fire at Burnside, Dunedin

THE FUTURE OF RESIDENTIAL INSURANCE UNDER CLIMATE CHANGE IS UNCERTAIN

Prices are high, and rising

Insurance premiums have increased rapidly in Aotearoa New Zealand in recent years. Average dwelling insurance premiums increased by about 200% between 2010 and 2023—faster than overall price inflation and faster than other items in the Consumer Price Index (*Treasury, 2024b*).

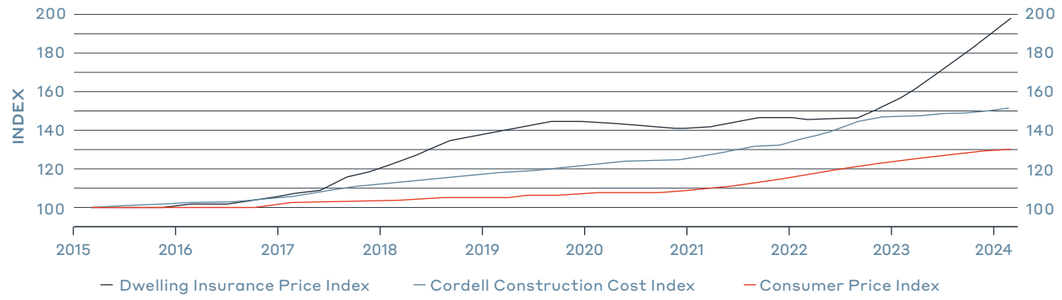
According to an analysis carried out by the Treasury (*2024b*), the biggest recent price increases have been in areas that have both high flood and seismic risk, such as areas in Christchurch and the Hutt Valley. During 2023–24, Wellington was the hardest hit, with premium price increases for a standard house up 29%. This was followed by Auckland, up 26% (*Consumer, 2024*).

Climate change has played a role in that, though it is by no means the only cause. Construction costs have increased substantially over recent years, even faster than inflation, making house repairs and replacements significantly more expensive for insurance companies (*RBNZ, 2024*) (see Figure 4). As inflation levels out however, this particular pressure on premium prices is expected to do the same (*Aib Group Insured, 2024*).

The price of reinsurance has also increased, partly in response to a series of extreme weather events that have taken place globally, and partly because of the North Island weather events in 2023. This means insurers here must pay higher premiums to share their risk of significant disaster events with global underwriters.

Adding to these pressures are increasing government-set levies for fire and earthquake coverage, a recent move towards 'risk-based pricing' from insurance companies, along with the ongoing impacts of a changing climate. Some of the key pressures on premiums are outlined in more detail below.

Figure 4 – Residential insurance prices and construction costs (RBNZ, 2024)



Increasing reinsurance prices, partly caused by climate change, are pushing up prices

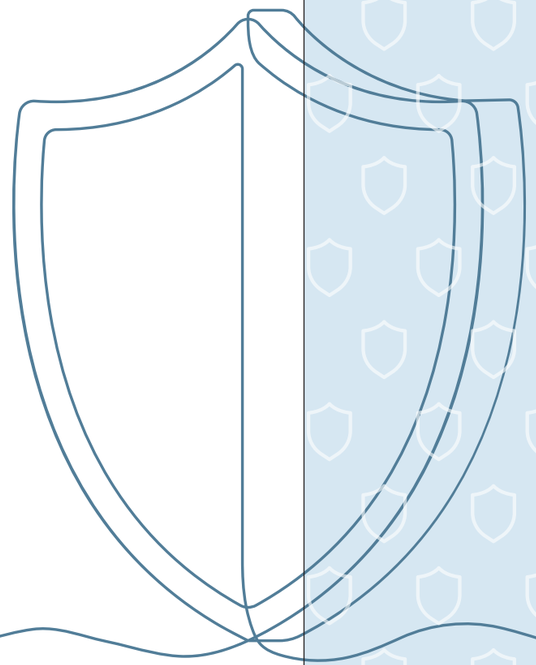
The Christchurch earthquakes, and then severe floods in 2023, were a wake-up call to reinsurers, causing them to adjust their views of the risks of reinsuring Aotearoa New Zealand. Reinsurance premiums have risen as a result, and insurers have passed the increased costs to homeowners (*RBNZ, 2024*).

Alongside the risk re-calculations for New Zealand specifically, reinsurance costs have risen internationally following significant insurance losses due to multiple severe storms and wildfires in the past few years. Global insured losses from natural catastrophes have grown by an average of 5.9% annually from 1994 to 2023 (*Araullo, 2024a*).

Significant costs to insurers and reinsurers are also likely for the second half of 2024 with Hurricane Helene costing insurers at least $8 billion (*Araullo, 2024b*) and widespread flooding in central Europe costing up to $5.5 billion (*Rodriguez, 2024*).

It is expected that reinsurance prices will continue to rise as the costs of disasters made worse by climate change continue to mount—and these costs will be passed on to residential insurance prices in Aotearoa New Zealand.

> "As a country with pronounced earthquake exposure and weather losses long seen as secondary, the recent events must change our perspective of overall risk drivers in Aotearoa New Zealand, as weather losses are now rapidly closing the gap to earthquake on both loss severity and frequency expectations."
>
> **(Soyka & Sinai for Swiss Re, 2023)**



A move to risk-based pricing will push prices up even more significantly for some

Another key price pressure for some policy holders is that insurers are moving towards greater use of risk-based pricing for floods (*RBNZ, 2024*). Risk-based pricing means the premium price is tailored towards the specific risks a property faces, as opposed to reflecting broad averages of the risks facing properties over wide areas (known as 'community-based pricing'). Community-based pricing shares the risks across wider populations, so that price rises are more gradual, whereas risk-based pricing leads to sharper increases, but for a smaller number of properties.

Insurance companies already use risk-based pricing for seismic risk—this makes Wellington premiums more expensive than Auckland premiums, for example—but pricing flood risk in this way is a relatively new phenomenon. The change has been made possible by advancements in data and modelling technology, which allow risks to be predicted with far more granularity.

Tower Insurance was the first company to launch risk-based pricing for inland flood risk in 2021, and the company now applies it for flood, landslide, and sea surge risks (*Tower, 2023*). Some other companies are in the early stages of rolling it out, although use is not yet widespread.

Over time, it is expected that all insurance companies will move to risk-based pricing because the companies that can be most precise about assessing risk for an individual home will be able to offer more attractive pricing to lower-risk policyholders, thus increasing their competitive advantage. This will allow those companies to grow their market share, and will leave any insurers that continue to use community-based pricing holding a portfolio of higher-risk customers. Insurers who use risk-based pricing will also be able to attract better terms when they purchase reinsurance. These factors together mean that risk-based pricing for flood hazards will almost certainly be the norm in the not too distant future (*RBNZ, 2024*).

Some properties will be particularly impacted by price rises due to climate change

Over time, as the impacts of climate change intensify, two things are likely to happen:

- More properties will fall into the 'at risk' category.
- Those already at risk will face steeper premiums as their level of risk intensifies.

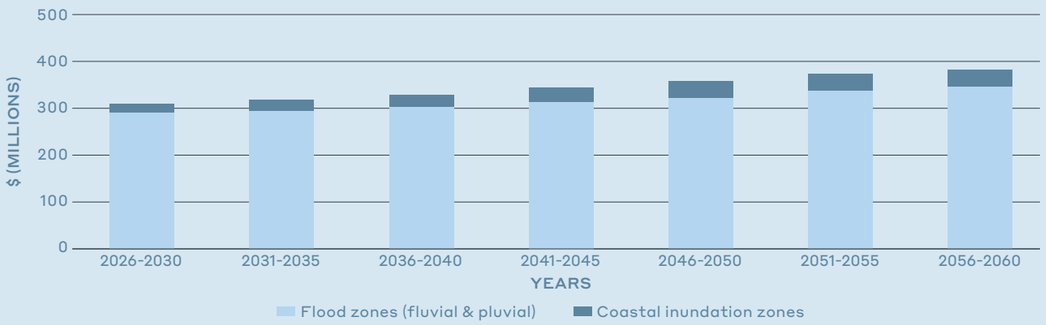
Coastal properties are expected to be impacted more quickly by these changes than properties located inland (*FEC, 2024, Appendix D*). Risk mitigation responses such as sea walls and other flood protections may slow these trends in some locations.

Given the ongoing uncertainty about which climate change scenario Aotearoa New Zealand might face, how quickly these impacts will be felt, and how insurance companies will respond, it is impossible to be certain exactly how many properties will be affected, when this might happen, and what insurance premiums homeowners may face.

However, work to support the Finance and Expenditure Select Committee's report on climate adaptation is attempting to better understand this, and some interim findings have recently been presented in the form of a case study for Canterbury (*FEC, 2024, Appendix D*) (see Figure 5), which shows how we can expect flood damage to increase over time.

In that one region, an extreme weather event is expected to damage $305 million worth of residential property in the period 2026–2030. In the following five-year period, an additional $316 million worth of residential property would be exposed. In each five-year period, more property would be exposed until around 2060, at which time most properties in a flood/inundation zone would already have been exposed to an extreme event and been counted in earlier years.

Figure 5 – Valuation of residential properties damaged by one extreme flooding/inundation event, by 2060 (FEC, 2024; Storey et al., 2024)



THE IMPACT ON INSURANCE AFFORDABILITY AND ACCESSIBILITY WILL BE GRADUAL AT FIRST, AND WILL TAKE SEVERAL FORMS

A reduction in the high levels of insurance for residential properties that Aotearoa New Zealand has enjoyed until recently is likely to take a variety of forms, including:

- Rising prices, meaning more people drop their coverage.
- A lessening of the extent of coverage (higher excesses, smaller sums insured for example)—also known as partial retreat.
- An 'unbundling' of hazards in policies, so that, for example, fire risk is covered but not flood risk.
- Full retreat, where insurance companies cease to offer insurance in an area or for a house at all.

Each of these trends is outlined in more detail in the following text.

Rising prices will mean more people drop their coverage

The trend towards more risk-based pricing, meaning higher prices for some, is already reflected in premiums. A recent report by Finity (*2024*), found that:

- The number of insurers pricing flood risk at address level has increased.
- For properties at high risk of flooding (i.e., with at least a 1-in-100-year return period), around 20% of online insurers' quotes included additional flood-risk premiums. Owners of these homes are being quoted on average $250 or more annually, relative to properties in the same suburb that are not subject to flood risk.
- One property at risk of flooding (worth $500,000) was found to be paying $4,500 more in premiums each year than a similar property in the same suburb that was not at risk of flooding. This was an increase of $500 from the previous quarter.

In a recent survey by Consumer (*2024*), 28% of respondents rated the cost of insurance as a top-three financial concern for their household, compared with just 18% who did so in 2023. Of those without insurance, 8% had cancelled or failed to renew the policy because of the high cost, continuing a pattern Consumer first noted in 2023.

Greater use of risk-based pricing should theoretically lead to lower prices for those who have until now been cross-subsidising the risk of those in more vulnerable locations. However, for the 15%–20% of policy holders who are at some risk of flooding, it has already led to steep price increases.

Many people will choose to reduce coverage to save costs—also known as 'partial retreat'

In the face of price rises, some property owners have mitigated the impact of higher prices by agreeing to higher excesses. Others are reducing the amount their property is insured for, meaning they will have to top up the cost should a full loss occur (*Boston, 2024; RBNZ, 2024*). Insurance companies shifting more of the risk back onto the insured has been termed 'partial retreat' (*MinterEllison RuddWatts, 2023*).

Worryingly, some people are choosing not to insure their properties at all and/or not insuring their household contents (*Boston, 2024; Tan, 2024*). All these responses involve owners bearing more property-related risk, and insurers less. Not only does a lack of home insurance leave owners vulnerable after a severe weather event, it also means they are not eligible for Natural Hazards Commission (NHC Toka Tū Ake) cover in the event of an earthquake or other natural hazard covered by NHC Toka Tū Ake.



Insurance companies may move away from comprehensive cover

Aotearoa New Zealand's residential insurance market is currently characterised by comprehensive 'all perils' policies—meaning it typically covers damage such as fires, storms, floods, landslides, tsunamis, earthquakes, and volcanic activity. As risk-based pricing becomes more commonplace, it is likely insurers will begin to make coverage of some types of risk optional in their policies.

In Australia, flood insurance was historically offered separately to general house insurance. Owners of high-risk properties there continue to opt out of flood cover given the very high premiums (*RBNZ, 2024*). Similarly, only around 13% of California households now opt to add earthquake cover to their standard residential policies since insurers withdrew earthquake coverage from their standard policies in the 1990s (*RBNZ, 2024*).

Some insurance companies are beginning to talk about this as an option in Aotearoa New Zealand, although it is not currently common (*Tower, 2023*). If, as seems likely, Aotearoa New Zealand insurers begin to move away from comprehensive policies towards named peril policies—a process known as 'unbundling'—this could cause a significant reduction in essential coverage and have wide-ranging implications for the insurance market. Policy holders offered a choice of coverage for named perils (for example fire or flood) will be likely to forgo the most expensive part of their policy—even though it protects them from their biggest risk.

Full 'insurance retreat' is a likelihood for some homes or even whole areas in the not-too-distant future

As the scale and financial cost of the impacts of climate change rise, it is inevitable some insurers will stop providing residential insurance policies to those living in very high-risk homes. Continuing to provide insurance for a house that floods regularly would place insurance companies at risk of significant financial loss (*Boston, 2023; Treasury, 2022a*)—at some point, the economics no longer make sense.

In some other countries the process of complete insurance retreat is more pronounced than here, and we can infer from those experiences how things may develop locally over time.

For example, the United States has become particularly vulnerable to damaging hurricanes in Florida and wildfires in California, pushing up premiums and leading some insurers to withdraw completely from the market. As a result, the rate of those not insured in the country is increasing—in 2023, around 10% did not have insurance, an increase from around 5–8% a few years prior (*National Academies, 2024*).

> "Without an all-hazards insurance system, it is likely that the current exceptionally high levels of residential insurance for natural hazards will be difficult to maintain, and that will have consequences for the outcomes after disasters. This is especially important as this specific-hazard retreat will almost certainly exclude the very hazard(s) that pose the greatest threat to the property."
>
> **(Storey et al., 2024)**

Globally, the insurance 'protection gap' (the gap between property value that is insured, compared with the value of property that is not insured) has grown year on year by as much as 5.2%, according to Swiss Re (*Wallace, 2024*).

Currently, evidence suggests insurance remains widely available in Aotearoa New Zealand, and it is rare for insurance companies to withdraw insurance, even for properties facing greater risks (*RBNZ, 2024*). In online research undertaken by Finity (*2024*) this year, 92% of high flood-risk profiles and 93% of the low flood-risk profiles were able to generate an online quote from at least two underwriters.

At what level of flood risk are insurance companies likely to stop offering insurance? Research by Climate Sigma (*Storey et al., 2020*) concluded, based on anecdotal evidence from the insurance industry, that partial insurance retreat would likely occur when a property is expected to flood at least once every 50 years, and full insurance retreat may be expected for properties facing a 1-in-20-year flood event.

Flood damage to a building in Eskdale, Napier, Hawkes Bay during Cyclone Gabrielle, 2023

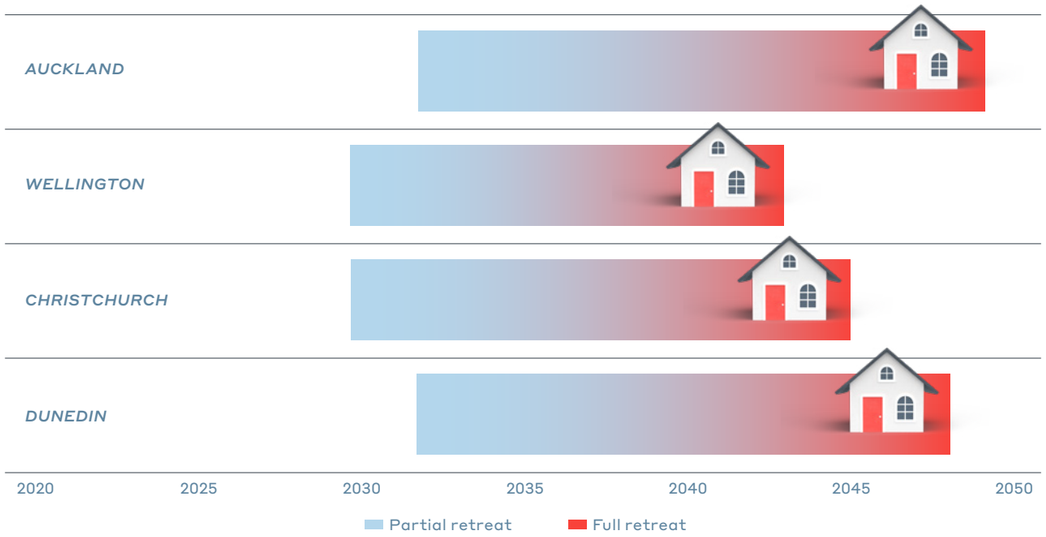


In terms of what the future holds, current estimates by Storey et al. (*2024*) are that:

- Relatively soon, all-hazards insurance for coastal flood-prone properties will become increasingly difficult to renew as insurers become more discriminating.
- Within a decade, insurance companies will start retreating from offering full coverage for flood damage in Aotearoa New Zealand's coastal cities.
- Properties at risk of flooding from a 1-in-100-year event can expect at least partial insurance retreat with less than 10cm of sea-level rise.
- Full insurance retreat for those properties is likely within 20–25 years, with timing dependent on the property's elevation and distance from the coast and, less intuitively, on the tidal range in each location.
- 10,000 coastal properties in Auckland, Wellington, Christchurch, and Dunedin could become uninsurable by 2050 due to coastal flooding.

Homes in Wellington and Christchurch currently facing a 1% annual exceedance probability for coastal inundation (also known as a '100-year flood') may face partial insurance retreat as soon as 2030, with homes in similarly exposed locations in Auckland and Dunedin following only a few years later (*Storey et al., 2020*) (Figure 6).

Figure 6 – Indicative estimates of timing for insurance retreat for properties near the coast in major cities (Storey et al., 2020)



These conclusions, while sobering, are not necessarily definitive. Future outcomes depend partly on what risk mitigations are put in place, where and how quickly. Insurers' risk appetites and the policies they choose to adopt in reaction to growing hazards will also be key. Statements from major insurers in the media strongly suggest they are keen to work with government and other parties to keep insurance widely available for as long as possible, for example (*Vaughan, 2023*).

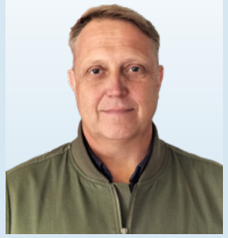
It is clear however that the distribution of insurance withdrawal, whenever it takes place, is likely to be uneven, with concentration in certain high-risk locations. Māori and those living in lower-income / higher deprivation areas could be disproportionately affected (*Treasury, 2024b*). The communities likely to experience full retreat first will be those that already have known risks, and where there have been previous claims (*RBNZ, 2024*). For example, it is reasonable to expect that coastal communities such as Petone (in the Hutt Valley) and some areas of South Dunedin and Napier will become uninsurable in the not too distant future (*Milne, 2024*).



Beachside suburb, South Dunedin

Given insurance contracts are typically renewed annually, insurance retreat could occur relatively quickly or out of the blue for some properties, or for whole areas (*RBNZ, 2024*). The changing risk appetite of international reinsurers will also impact calculations for when local insurers decide to cease offering insurance in some areas.

Because private insurers are not obliged to disclose commercial decisions regarding the availability of insurance, it will be difficult to track the progress of insurance retreat as it happens (*Boston, 2024*). It is important to note though that insurers want to sell insurance—that is how they make money. This points to the benefits of insurance companies working together with councils, banks, and the government to invest in adaptation and risk reduction for at-risk communities (see Chapter 3 for more on this).



Sam Morgan

NAVIGATING COASTAL EROSION

Coastal erosion poses a complex challenge for both environmental management and the insurance sector, explains WSP technical principal in coastal adaptation, Sam Morgan.

Recent research from the University of Auckland (*2023*) reveals a mixed picture for Aotearoa New Zealand's coastlines. It shows areas where the shore is expanding and others where erosion is problematic. However, predicting the exact nature of future erosion remains uncertain.

Historical data is crucial for understanding coastal erosion, but data is often sporadic and only captures broad trends. This can be an issue when used in predictive models because they may not fully account for the evolving and smaller scale dynamics of coastal systems over recent decades.

For instance, we know that weather patterns such as El Niño and La Niña influence wave climates and periods of beach erosion or accretion at different beaches. New studies indicate that we can expect future changes in wave climates associated with climate change, but we are still unsure how aspects such as shifts in wave direction might impact wider sediment transport mechanisms, potentially creating new or compounding existing erosion issues (*University of Auckland, 2022*).

The uncertainty is further complicated by the limitations of shoreline projection methods, which often rely on historical imagery and often do not consider the full range of dynamic processes at a site. For example, estimating shoreline positions based on aerial images may miss important factors like the presence and condition of seawalls or those obscured by vegetation, leading to potential inconsistencies.

Managing coastal erosion effectively requires proactive planning and monitoring. Although government guidelines suggest using environmental triggers to guide adaptation and retreat strategies, there's a significant gap in implementing thorough monitoring systems. For example, at St Clair in Dunedin, which has faced coastal erosion issues for over a century, monitoring efforts have only recently been enhanced by local authorities (*Otago Daily Times, 2024*).

The absence of robust historical data and effective monitoring can hamper decision making. Recent high-profile issues in Port Waikato and Whitianga illustrate the need for better planning and earlier intervention to handle coastal risks more effectively. In these cases, better linkages of monitoring data to management regimes may have resulted in different outcomes.

Regional authorities and insurance companies face challenges due to the inherent uncertainty and variability of erosion projections. Risk assessments often rely on broad data sets that might not accurately reflect the conditions of specific properties. For instance, the presence and condition of protective structures like seawalls may not be well-documented, leading to possible misjudgements in risk evaluations.

Addressing these challenges will mean improved collaboration between insurance companies and local councils. Greater consistency in risk assessments and adaptation strategies is essential for fair outcomes. Improvement in the standardisation of how erosion risks are assessed and managed is required, with the aim of improving the application of adaptation measures and protection structures.

Tackling coastal erosion needs a multifaceted approach, including enhanced monitoring, better data use, and stronger collaboration among stakeholders. As climate change impacts become more pronounced, there's no doubt that developing robust, consistent, and fair strategies for managing risks and implementing adaptation measures will be increasingly important for all communities.



CHAPTER 2

The case for intervention

THE KEY JUSTIFICATION FOR ANY FURTHER INTERVENTION IN THE EXISTING RESIDENTIAL INSURANCE MARKET WOULD BE TO PROMOTE AND MAINTAIN HIGH LEVELS OF INSURANCE COVER, THUS MAINTAINING INDIVIDUAL AND SOCIETAL RESILIENCE IN THE FACE OF CLIMATE CHANGE.

However, concerns have been expressed that any such attempts may lead to negative outcomes, such as promoting behaviours that increase risk rather than reduce it (known as moral hazard). By way of overview, this chapter describes how the insurance market works in this country. It then asks whether any form of additional intervention in the market can be morally, socially, and financially justified.

Noting that some interventions may promote good outcomes, but some will lead to negative consequences (or a mix of the two), the report discusses what principles should be followed to ensure any proposed interventions are positive on balance.

CHARACTERISTICS OF THE AOTEAROA NEW ZEALAND INSURANCE MODEL

The Aotearoa New Zealand insurance market is characterised by the following attributes (*Treasury, 2024b*):

- **High uptake of coverage:** While uptake data is relatively limited, the most recent available surveys suggest somewhere between 84% and 95% of households have residential insurance. This is a high number by international standards, and implies residential insurance still remains affordable for and available to the majority. Nevertheless, the uptake is lower in some communities and locations, including those subject to high risk (*Boston, 2024*). This uneven coverage raises equity issues, and is discussed further below.

- **High market concentration:** The private insurance sector is small by international standards. Market share concentration is high, with the top four companies generating around 88% of the private residential insurance market (*RBNZ, 2024*). The effective level of competition between insurance companies varies further by geographical location (*Tan, 2024*).
- **Use of 'all perils' policies:** As noted above, residential insurance policies in Aotearoa New Zealand generally cover key perils (e.g., fire, flood, storm, earthquake, tsunami, and volcanic—but not coastal erosion, or inundation from sea-level rise) as a bundle, rather than offering cover for these separately (*Treasury, 2024a*).
- **Annual contracts:** Insurance contracts are generally valid for only one year, meaning insurers can adjust terms (including price) or stop offering insurance from one year to the next.
- **Government involvement:** The government directly supports residential insurance through the Natural Hazards Commission scheme (formerly EQC), which promotes a community-based pricing model to share the risks of most natural hazards across the country (discussed further below).
- **Community-based pricing:** Under a community-based approach, an insurer assesses risk based on broad averages across policyholders and does not apply a differentiation in premiums charged (*RBNZ, 2024*). Insurers have until recently relied on community-based pricing for hazards such as floods. Although private insurers have historically used risk-based pricing for earthquakes, the impact of this has been softened by the flat rates applied by NHC Toka Tū Ake, which cover any earthquake losses up to $300,000 per property.

Premiums are expensive in Aotearoa New Zealand

Insurance is already costly in Aotearoa New Zealand compared to many other countries, so when prices rise, they do so from a high baseline. This is in large part due to the high seismic risk faced by Aotearoa New Zealand, but is not helped by the fact that so many homes have been built in areas that are vulnerable to natural hazards—on flood plains and along the coast for example (*Storey et al., 2017*). By international standards our local property insurance market is also small and not highly competitive, which no doubt impacts prices (*Boston, 2024*).

IAG New Zealand (part of Insurance Australia Group) is the country's largest general insurer with over one million customers (around half the total) and trades under multiple brands. Some other local insurers, such as Vero, are also subsidiaries of Australian insurers, meaning policies and practices are influenced to a large extent by events across the Tasman, including major disasters such as floods and fires (*Boston, 2024*).



Wellington is currently the most expensive region to insure a home. The median premium for a standard house there is $3,733, while a large house costs $5,088. Insuring a small apartment in a multi-unit block can be even more expensive. In Auckland, house insurance premiums for a single-story brick property range from approximately $1,700 to $3,000 (*Moneyhub, 2024*).

These prices can be compared with an average premium price of just £284 in the United Kingdom for example (at December 2023). In the United Kingdom, there is limited earthquake risk, a lower proportion of houses are affected by flood risk, and a greater number of insurers compete to offer the lowest premiums (*Association of British Insurers, 2024*). On the other hand, average premiums in Aotearoa New Zealand are significantly lower than in the United States (*Bankrate, 2024*), where homeowners have frequent hurricanes and wildfires to contend with, as well as significant seismic risk in some places.

Insurance premiums include a range of fees

Premium prices include several charges that insurance companies gather on behalf of the government—the NHC Toka Tū Ake levy, the Fire Service levy, and GST. Reinsurance is also a significant component of premium costs, comprising around 12% of an average policy cost (see Figure 7).

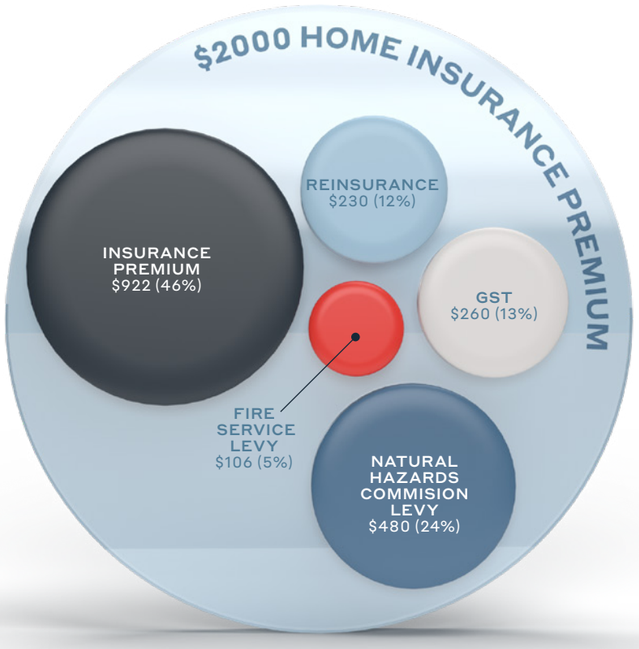


Figure 7 – Components of an average $2000 home insurance premium (ICNZ, n.d.)

The Natural Hazards Commission provides unique cover

When the 2010–2011 Christchurch earthquakes hit, almost 90% of homeowners in the city were insured against earthquake risk. That made the disaster the most heavily insured seismological disaster in history, and the fourth most costly insurance event the world had ever seen (*Jarzabkowski et al., 2023*).

The high level of earthquake insurance in Christchurch was thanks to the existence of the Earthquake Commission (EQC)—renamed as the Natural Hazards Commission Toka Tū Ake in April 2024.

It is NHC Toka Tū Ake's purpose to "reduce the impact of natural hazards on people, property, and the community" (*Natural Hazards Insurance Act 2023*). The scheme was set up in the 1940s as a public mechanism to address the gap between the risk of disaster from earthquake and existing private insurance cover, with the state filling the gap (*NHC Toka Tū Ake, 2024*). There are a growing number of such entities across the world, also known as Protection Gap Entities, or PGEs (*Jarzabkowski et al., 2023*).

At the time the precursor to the NHC Toka Tū Ake was set up, most of the private insurance companies were refusing, at least in Wellington, to take any further cover against earthquake risks because they could not insure them profitably. Even if a homeowner could find insurance, it was typically so expensive it would be out of reach for most people. The new entity filled this gap—what is called a 'protection gap' internationally—and made the risk affordable to homeowners by sharing levy costs equally across all homeowners, regardless of whether they lived in an earthquake-prone area Jarzabkowski et al. (*2023*).

Because of the NHC Toka Tū Ake, Christchurch was able to recover and rebuild after the earthquakes far more easily than it would have done. The scheme paid out a total of $10 billion on losses, while private insurers covered $21 billion. In total, 77% of the total economic cost from the disaster was covered by these combined insurance payouts. As a point of comparison, if a similar earthquake had happened in Japan, the share of overall losses compensated for would have been closer to 15% (*Jarzabkowski et al., 2023*). This example shows that Protection Gap Entities can make a large and positive difference in disaster recovery.



Damaged building in Christchurch after an earthquake

The existence of NHC Toka Tū Ake has also kept the cost of residential property insurance lower than would otherwise have been the case, thereby almost certainly facilitating wider insurance coverage in the country as a whole (*Boston, 2024*).

NHC Toka Tū Ake works in the following way (*NHC Toka Tū Ake, 2024*):

- Coverage is a compulsory add-on for anyone holding a private residential insurance policy that includes fire cover. It is not compulsory (and generally not available) for those who are otherwise uninsured.
- Premiums are community-based rather than risk-based, which means policyholders share the risks equally, regardless of the earthquake or other natural-hazard risks in their particular location.
- The scheme provides cover for most kinds of natural hazards that might affect residential buildings, such as earthquakes, landslides, volcanic activity, hydrothermal activity, tsunami, and fires caused because of any of those hazards.
- The scheme does not cover storm or flood damage to homes, although it does offer limited coverage for damage to land (with several conditions).
- NHC Toka Tū Ake covers homes up to a maximum of $300k + GST per natural-hazard event. Any cover over this amount is provided by the existing private insurance policy.
- NHC Toka Tū Ake only covers residential properties—though other types of property were covered until the 1990s.

Because NHC Toka Tū Ake does not cover damage from flood hazards (other than damage to land, in limited circumstances), flooding is covered by general insurance policies held with private insurers. If private insurers stop offering coverage, there is no back up in terms of a public insurer (unlike in several other countries).

NHC Toka Tū Ake was not set up to not cover damage from floods because insurance against floods has historically been widely available at affordable prices. Many PGEs in other countries (such as the United Kingdom, Iceland, Norway, Spain, and Switzerland for example) do cover flood risks, in contrast to Aotearoa New Zealand.



Interior of house in Eskdale, Napier, Hawkes Bay destroyed by flooding from Cyclone Gabrielle, 2023

WHAT'S NEEDED TO MAKE AN INSURANCE SYSTEM WORK?

As set out by Jarzabkowski et al. (*2023*) in their book *Disaster insurance reimagined*, private-sector disaster insurance works best at a sweet spot among three sets of tensions, or paradoxes:

1. Who is in control of how the insurance market provides protection to society—whether the private sector, or the government. From an industry control perspective, disaster risk is traded for profit. From a government control perspective, social protection from disaster (an activity that is important for society as a whole) is transferred to the market, or 'marketised'. In this way, the insurance market could be seen to provide a critical safety net for society, which has been (in this country and most others) 'outsourced' from governments to the private sector.
2. How much is known about the risk to be insured. Sufficient knowledge about a specific risk is an important factor in insurability, because it enables an insurer to calculate what cover they are prepared to offer, and for how much. However, if there is too much knowledge about the risk in question, it may not be insurable. There is no profit in taking on a risk that is as good as certain to occur—an element must remain of not knowing who will suffer the loss, and when.
3. Who is responsible for paying for protection. Insurance is based on the concept that 'the premiums of the many pay for the losses of the few'. Each individual pays in advance for a fraction of the losses of other individuals in the collective, in exchange for their own risk being covered. In other words, insurance enables the 'mutualisation' of individual risk. Individual and collective interests are always in tension and must be balanced for insurance to be possible.

In large part due to the climate crisis, these contradictory forces are increasingly imbalanced. As disasters such as floods, high winds, and large wildfires become more frequent or severe, or as we become better at predicting who will most be impacted, the system can tip over into disequilibrium, leading to a breakdown in private sector disaster insurance (see Figure 8). This has led some countries to introduce Protection Gap Entities (PGEs) to cover natural hazards such as floods, wildfires, and hurricanes, in much the same way this country introduced the EQC in the 1940s to cover the earthquake protection gap (*Jarzabkowski et al., 2023*).

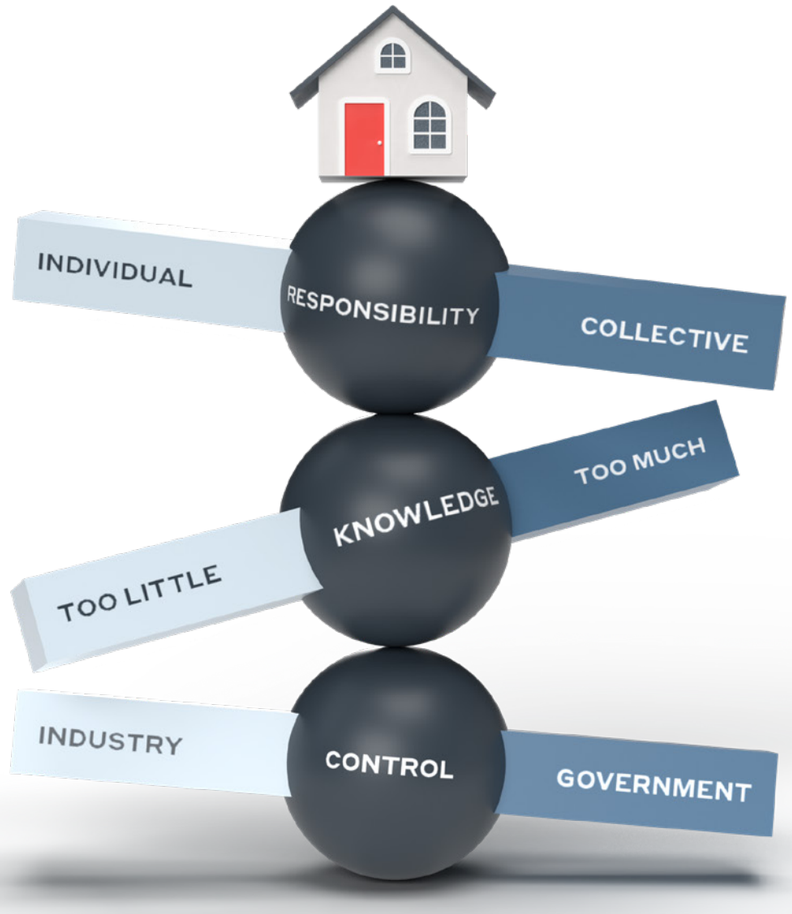


Figure 8 – Viable insurance depends on maintaining the balance between the three paradoxes of insurability (Image adapted from Jarzabkowski et al., 2023)

WHY INTERVENE IN THE INSURANCE SYSTEM?

As mentioned above, Aotearoa New Zealand has high rates of residential insurance, and this has helped us bounce back quickly from past disasters. Retaining high levels of insurance has significant benefits: it increases economic and social resilience, reduces the financial, psychological, and other stresses caused by uncompensated losses, and helps limit fiscal risks (see below).

Unfortunately, as outlined in Chapter 1, the status quo we have enjoyed for many decades is under threat from climate change. Within the next decade or two, homeowners in particularly risky locations will find insurance cover increasingly difficult to find. Some others will be priced out of insuring their properties—or will choose to underinsure or accept high excesses to keep premiums down. While we don't know how quickly this will happen or how extensive the problem will become—and acknowledging that appropriate risk mitigation measures will help slow this process down—it is an economic inevitability that insurance will become more unaffordable and less available for many households.

But why is high insurance coverage so important?

Prior to loss events, insurance helps facilitate economic activity and provides a sense of security. If premiums become too expensive or cover is withdrawn entirely, this could have profound impacts (*Treasury, 2024b*). Homeowners without insurance, or with limited access to insurance:

- Risk losing their home in a disaster—which would be deeply distressing.
- May face having their mortgage called in, because maintaining insurance is a requirement for residential mortgages in Aotearoa New Zealand.
- May be unable to sell the property because banks will not issue a mortgage to a new purchaser without insurance (*Storey et al., 2017*).

Insurance retreat could therefore put a family's entire wealth on the line. This is especially problematic in this country given homes are relatively expensive here by international standards, and such a significant proportion of household wealth is held in property (*Expert Working Group, 2023*).



Erosion flood damage at Stanley Point, Auckland after the Auckland Anniversary floods, 2023

After a disaster event, insurance coverage supports individual and community resilience. Because insurance pools risk, it spreads the costs of major disasters across the country, as well as globally, via reinsurance. When insurance functions properly it transfers the financial risk from individuals, families, and companies to financial markets (*Boston, 2024*).

Insurance cover ensures homeowners receive compensation for much or all the damage they suffer, speeding up recovery and increasing financial resilience by enabling people to bounce back after their home is damaged or destroyed. An important side effect of this protection is that insurance minimises financial hardship and protects the most vulnerable in our society from falling into poverty in the aftermath of an event. This is clearly economically, socially, and psychologically beneficial for the families and communities affected by a disaster (*Boston, 2024; Noy, 2018*).

It is in the Crown's interest to maintain high personal insurance coverage

High insurance coverage has other important benefits for society. First, it contributes to financial stability by protecting the assets used to secure much of the banking system's lending. Banks could be exposed to insurance retreat as the value of properties they hold mortgages against in high-risk areas declines due to them being no longer insurable (*RBNZ, 2024*).

Second, insurance reduces fiscal risk to the government by lessening the need to provide financial assistance to those who suffer significant property losses after a natural-hazard event (*Boston, 2024*). The less insured people are, the more help will be required. Financing disaster response and recovery can create large debts, and divert public spending from other critical services such as healthcare, education, and infrastructure in ways that affect both current and future generations. Insurance is thus a critical element in societal protection from the impact of disasters (*Jarzabkowski et al., 2023*).

There are therefore several good reasons to justify some type of additional form of public intervention in the insurance market as protection gaps increase. The Treasury (*2024b*) is already anticipating there will be pressure on the government in the future to provide support to people for whom insurance has become unaffordable or unavailable. The agency expects this pressure to be particularly acute after an event (such as a flood), or in instances where insurance had previously been available but is then withdrawn.

As mentioned earlier, for an insurance market to work effectively, a balance between individual and collective interests must be maintained—usually through regulation that protects the public interest. While in this country we largely outsource insurance to private companies (which insure individual risk), we also control that outsourcing to an extent as a collective, in the form of industry regulation and oversight.





Responsibility for advising on and regulating insurance in the country is shared across the public sector (*Treasury, 2024b*):

- The Reserve Bank of New Zealand provides advice on financial stability, and is responsible for prudential regulation—meaning it makes sure insurance companies manage their financial risk appropriately.
- The Ministry of Business, Innovation and Employment provides advice on conduct and competition policy, and monitors:
  - The Financial Markets Authority, which regulates the conduct of the insurance industry.
  - The Commerce Commission, which regulates competition within the industry.
- The Treasury provides advice on the functioning of insurance markets, administers the Natural Hazards Insurance Act, and monitors the Natural Hazards Commission.

Government regulation aims to ensure insurance markets function efficiently and effectively and provide the desired level and form of protection, rather than simply turning a profit for the insurance industry. However, governments might extend their supervision or control of markets when the level or form of protection provided by private insurers does not meet society's expectations for whatever reason.

There is good reason for this, as argued by Jarzabkowski et al. (*2023*):

> "...the government can never fully negate control of the insurance market, because it is the de facto 'insurer of last resort.' If the disaster insurance market fails to provide a level of financial protection that society finds appropriate, the government must step in to pick up the pieces, paying for recovery through reallocating budgets and/or by borrowing. The two—insurance industry and government—are thus in a deeply interdependent, if also contested, relationship of control over the market that provides insurance-based financial protection to society."

As the 'insurer of last resort', it would be in the Crown's best interest to keep high levels of insurance across the country. Doing so would serve both to minimise financial loss to individuals, but also to the population as a whole—who through their taxes may otherwise be required to help with disaster relief, and with ongoing social welfare and public health costs for those who are not easily able to bounce back after a disaster.

The logical approach is to anticipate this now, based on the best available scientific evidence and projections, and put in place sensible solutions before the situation becomes more acute. Put differently, in the absence of effective alternative arrangements, the state has a responsibility to step in and help remedy the situation. This is sometimes referred to as the state's "remedial responsibility" (*Miller, 2007*).



THERE ARE ALSO GOOD ARGUMENTS AGAINST ANY FORM OF INTERVENTION

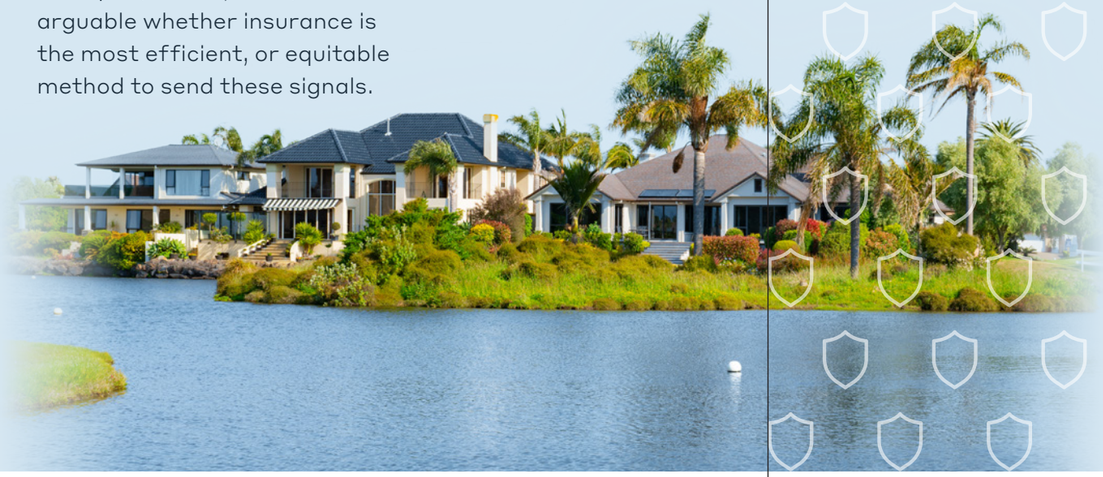
Could interfering in the insurance market—by introducing subsidies on premiums, or by developing a public flood protection scheme, for example—cause more problems than it would be worth, or lead to unforeseen negative outcomes?

One argument against intervention is that the market signals provided by insurance regarding access and pricing are important for the efficient management of risk, as they reveal information about risk before events occur. The argument goes that premium price rises and insurance withdrawals would signal the need to homeowners to put in place suitable adaptation approaches to climate change (*Treasury, 2024b*). A high premium may encourage an existing homeowner to raise the level of their house, or put pressure on the local council to improve stormwater systems for example, in an attempt to lower premiums (*RBNZ, 2024*). An extremely high premium, perhaps one that increases substantially year on year, may send a clear signal that a location is no longer suitable for habitation.

The Finance and Expenditure select committee (*2024*) recently reported back on their investigation into climate change adaptation, recommending among other things that asset and insurance prices should be allowed to better reflect long-term natural-hazard risk: "The more that asset and insurance prices reflect risk, the more efficient outcomes will be." Similar sentiments are commonly heard, but do not appear to be backed up by much evidence.

Following this line of reasoning, flattening the 'risk signals' sent by the private market would be seen as encouraging people to remain in risky locations, or to forgo paying for important risk mitigation interventions.

There is certainly a conflict to be addressed here. People should be discouraged from living in, or moving into, locations that are facing increasing hazards, for example (*Boston, 2024*). But it is arguable whether insurance is the most efficient, or equitable method to send these signals.



Te Ara ō Wairākei stormwater reserve & walkway

Other policy levers, such as planning rules, resource management, and a sensible adaptation framework, can also promote risk reduction and mitigation (*Boston, 2024*). If the country had a framework and regulations in place to manage adaptation as part of a thoughtful, methodical, fair, and transparent process, insurance would arguably not be called upon as the primary mechanism to send 'signals' to people about when they should move house, or mitigate risk.

In fact, there is a philosophical question about whether it is the role of a private industry to be leading such a process, and making such decisions on behalf of the public, based first and foremost on considerations of economic efficiency, narrowly defined. Other considerations governments are typically concerned about, such as social good, public health, and social equity, cannot be expected to be part of the calculations of companies with shareholders and fiduciary duties to their owners. The country must decide whether it is prepared to delegate to insurance markets the responsibility for deciding where people should live and who can secure property insurance.

The available social science evidence is also not particularly clear about the level of impact high premiums have of people's drive to mitigate risk. A review of empirical studies on the impacts of disaster insurance on incentives for hazard mitigation by Kousky (*2019*) notes that rigorous empirical work on this topic is limited. What work has been done suggests that impacts on risk reduction may be modest.

Barry (*2023*) also argues that, in practice, risk-based signals do not lead to risk mitigation or prevention as some economic theories might suggest. Instead, he examines the merits of the French public insurance scheme, CatNat, in which the responsibility for disaster prevention is separated from the insurance function and delegated to local authorities. CatNat operates on a community-based approach, meaning premiums are determined as a percentage of the total sum insured rather than based on risk. See page 131 for further discussion on the French public insurance scheme.

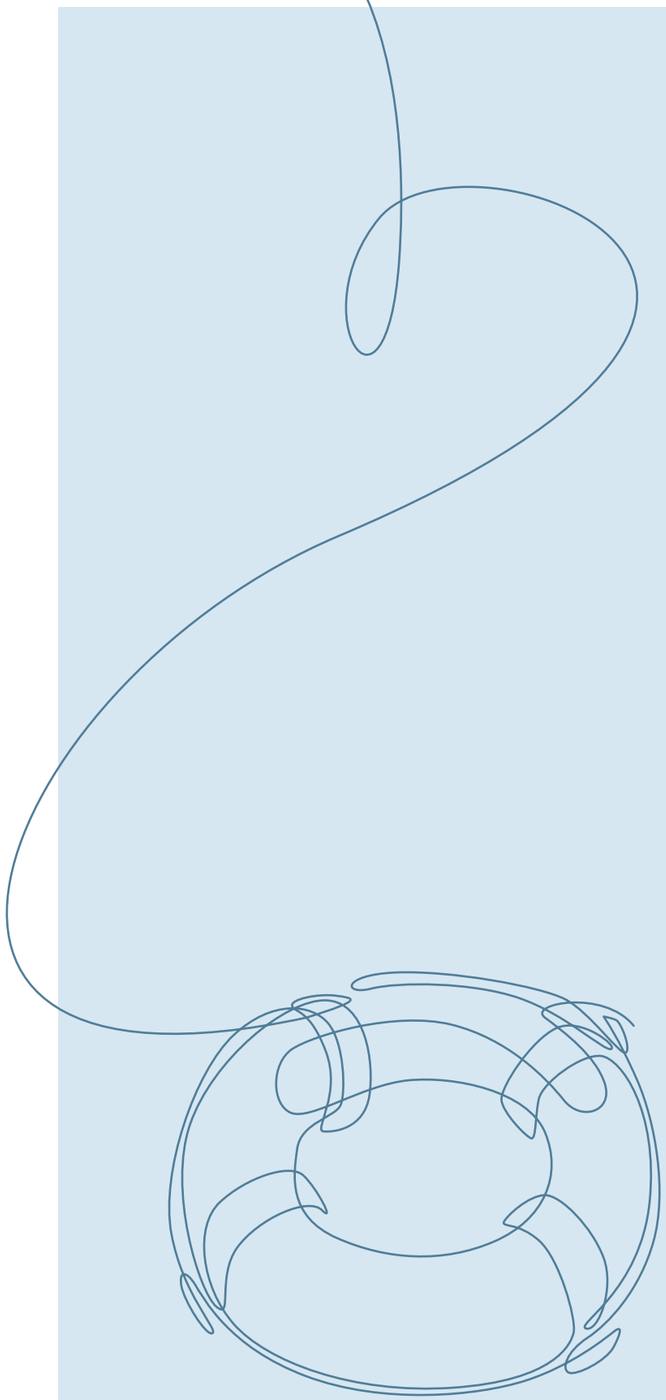
Another question is posed by the argument that high insurance premiums will encourage people to move away from risky locations. While this is certainly feasible, it is also likely that many people will make the call to stay in their homes and forgo costly insurance. If a person struggles to pay their insurance premium they may well also not have the resources to move to a new location—especially if their house has lost value and they cannot find another place for a similar price.

> "People have wider reasons for not wishing to move away from hazardous areas than increasingly onerous insurance terms or even the unavailability of cover, such as personal attachments, community values, family connections and environmental attachments ... For some, the ties to the home or area may be sufficiently loose for them to contemplate moving away but others will stay. This creates a dilemma for authorities that look to the insurance industry to trigger abandonment of an area. The more likely reaction to high insurance costs is to forego insurance altogether, and budgeting services report that this is, in fact, happening."
>
> **(Middleton, 2024)**

HOW FAIR IS IT TO SUBSIDISE ANOTHER PERSON'S RISK?

Despite these arguments against risk-based pricing, keeping some elements of it is likely to be considered fair by the public. Regular surveys by IAG (*2024*) show that as house insurance premiums have risen, hearts have hardened in favour of risk-based pricing. In 2019, just 41% of people agreed that it was acceptable for insurers to increase premiums for owners of riskier properties. That rose to 61% in 2024. Further, a significant majority (65%) of people responded that they are not willing to pay more for their insurance to subsidise people who live in high-risk areas.

These attitudes are likely based on a general sense that those who face high flood risks are to blame for their predicament in some way. For example, it may seem unfair that the public should have to help a homeowner who has willingly chosen to build a house on a flood plain. But what if that person didn't build the house, but bought it from the developer without knowing of the risk? Or perhaps they were told of the risk but didn't understand the full implications. What is 'fair' is not only subjective, but it relies on knowledge of a range of scenarios that many people have barely thought about.



Similarly, it is often supposed that people have made their choices for rational reasons, weighing up all the relevant risks. This makes it easy to blame those who live in flood zones, or who are underinsured. In fact, people often make choices based on economic necessity. For example, a person might choose to buy a specific property because it is the only one they can reasonably afford. They may or may not be aware at the time of purchase that the property is at risk of flooding—but, either way, circumstances may not allow them to buy a less risky property.

Similarly, a person with a low income may not have the luxury of undertaking a risk-based analysis of what it might mean to drop their insurance cover—they may simply be unable to afford to keep paying their premiums and still keep food on the table.

In terms of proactive risk mitigation, a wealthier person may also pay to raise their house and avoid flood risks that way, or they may pay to move away. A person with fewer resources will be unable to even consider such an intervention (*Aon report, Treasury OIA, 2022a*).

It is true that more people now consider climate risks when they purchase a new home than in the past. According to a nationwide survey, 89% of respondents would consider the risk, compared to 55% two years ago (*IAG, 2024*). However, this is a relatively recent development, and risks are not necessarily yet reflected in prices. Further, access to good information about future climate change impacts may not yet be significantly impacting people's choices about where to live, even if they do fleetingly consider the risk. As just one example, when detailed projections of coastal erosion on the Kāpiti Coast were published in 2012 the posting of this information was found to have had an insignificant impact on prices (*Filippova et al., 2020*).

Finally, the amount and quality of information that is available to help inform property purchase decisions will necessarily change over time, and we face deep uncertainty regarding the pace and extent of sea-level rise, certainly beyond 2050.

It is also worth bearing in mind that the impacts from climate change are happening to people through no fault of their own. While we all bear some blame for climate change, no one individual can reasonably be held responsible for its impacts. While it may be easy (and convenient) to cast blame on those living in flood zones as being morally responsible for their own losses because of the choices they have made to purchase that property (and therefore to expect them to carry a large portion of those losses), this ignores the big picture: the failure to address climate change adequately is a systemic global failure.

In summary, there are different principles of fairness, and these are in tension. On the one hand, it seems only fair and reasonable for those in high-risk locations to pay more to insure their properties because of the enjoyment they gain from living in those locations (on the seafront, for example).

But from another perspective, fairness requires society to share the risks of natural hazards collectively, on the basis of national solidarity. This perspective places primary weight on protecting the interests of those who are the least advantaged, those with the greatest needs, and those who are exposed to the most serious risks. This approach has parallels to the way Aotearoa New Zealand shares the costs of ill-health in a collective way through the public health system, for example.

MORAL HAZARD IS NOT ALWAYS CLEAR CUT

Moral hazard refers to the potential for people to be more inclined to take risks if it is assumed that an insurer (or the government) will compensate them for any damages (*Boston, 2024*). For example, a person may decide not to buy insurance because they expect the government to bail them out in a disaster. Or they may accept a subsidised insurance premium through a government scheme and then fail to mitigate risks to their property they may otherwise have invested in. Similarly, a person may remain in a property that is subject to frequent flooding, while other policyholders pay more to cross-subsidise their premiums.

Insurance markets clearly become less efficient if individuals feel free to take risks knowing the cost of that risk will be borne by the collective rather than by themselves (*Jarzabkowski et al., 2023*). But questions of moral hazard are not always clear cut, and people do not always behave in a way that rational decision theory might predict (*Barry, 2023*).

After the Canterbury Earthquakes, thousands of homes that had been red stickered were bought out by the government at their pre-quake value. However, those whose homes were not insured were not offered the same deal, regardless of the reasons for the lack of insurance cover. The Crown argued that it wished to avoid the 'moral hazard' of rewarding property owners who had chosen not to insure. Interestingly, the Court of Appeal later deemed this decision unlawful (*Small, 2017*). The courts found that while avoiding moral hazard was a relevant consideration, it should not be determinative, one of the reasons being that the Minister had not looked at individual circumstances to determine whether individuals had made a conscious choice not to insure.

The reality of the situation turned out to be less morally certain. For example, one couple had paid their insurance 'religiously', but was in the process of getting a new package and was uninsured for four days when the September 2010 earthquake hit. Another homeowner had overlooked buying insurance on their new property due to serious illness (*Small, 2017*).

EQUITY IS ANOTHER KEY REASON FOR INTERVENTION

While the principle of fairness might point to the desirability of risk-based pricing, fairness considerations also point the other way—that is, in favour of community-based pricing or national solidarity. There is arguably a very strong case based on equity considerations for some form of intervention in an insurance market that is facing increasing protection gaps, even if it is just limited to those in need.

Data bears out the conclusion that those who are less well off in Aotearoa New Zealand, while also bearing the least responsibility for climate change, also face greater risks from its impacts. Modelling by Aon in 2021 concluded that the groups likely to experience the most significant impacts from the move to risk-based pricing include:

- High flood-risk communities
- Low-income areas
- Areas with higher deprivation levels
- Māori

Bell et al. (*2024*) also recently investigated how the increasing move to risk-based pricing would likely affect people of various ethnicities, incomes, and material wellbeing in Aotearoa New Zealand. The researchers concluded that the move towards risk-based pricing in this country is most likely to negatively impact Māori and households with lower material wellbeing.

The uptake of residential property insurance is already much lower than the average in less affluent communities such as those Gisborne, Tolaga Bay, Tokomaru Bay, and Wairoa, with many households uninsured or underinsured (*Boston, 2024*). In other words, those who are already most vulnerable to socioeconomic shocks are also likely to be least insured, meaning a disaster will only serve to exacerbate their financial precariousness.

Modelling clearly indicates a correlation between those with higher levels of deprivation and those who live in areas at risk of river flooding. This may reflect the fact that homes with past experience of flood damage are likely to be cheaper, and thus more likely to be owned by those on lower incomes (*Treasury, 2024b*). In particular, Māori are statistically more likely to be subject to river flooding than other ethnicities—26.8% of those facing a 1-in-20-year flood in a river plain are Māori, compared with an overall population of 15.8% (*Aon, 2018*).

Less correlation between deprivation levels and flood risk has been observed for surface water and coastal flooding. This is likely explained by the fact that coastal areas are more desirable and therefore cost more, and that surface water flooding affects all areas across catchments (*Aon, 2021*).

Māori communities, in common with other Indigenous Peoples around the world, face particular challenges from climate change that extend beyond the socioeconomic. Iwi and hapū living near rivers and the ocean will experience significant negative wellbeing impacts if flooding requires them to move from locations of strong cultural significance and identity (*Treasury, 2024b*).



It is already often difficult for marae to obtain affordable (or any) insurance (*Climate Change Commission, 2024*). As just one example of the challenges facing Māori specifically, 16 of Ngāi Tahu's 18 marae are in low-lying coastal areas and at risk of flooding, as well as many urupā (burial grounds) and wāhi tīpuna (significant places) (*Radio NZ, 2023*). It is ironic that insuring marae poses difficulties, considering local and central government frequently rely on these as community facilities for disaster and emergency response.

In a recent briefing to the Government, the Treasury (*2024b*) advised that the Crown is likely to owe extra responsibility to Māori under Te Tiriti o Waitangi to ensure Māori do not face disproportionate burdens from insurance costs. However that disproportionate burden came about—whether resulting from "culturally-informed property selection, homeownership status, historical displacement [or] socioeconomic disparity" (*Treasury, 2024b*)—should not change that general responsibility, according to the advice given.

Tararu, Coromandel Peninsula







Left to right: Nathan Capper & Reginald Proffit

MĀORI ADAPTATION AND RESILIENCE TO CLIMATE CHANGE

Māori hold ancestral ties to land, rivers, and coastal areas, many of which are exposed to the effects of climate change. This represents a profound challenge, with the impacts beginning to touch many aspects of daily life and cultural preservation. WSP Kaitohutohu Māori Nathan Capper and Director Pou Arataki (Māori) Reginald Proffit explain.

A significant number of Māori marae and papakāinga homes are in low-lying coastal areas. Nearly 200 marae sit within one kilometre of the coast. Of these, 41 are exposed to coastal flooding risks during a one-in-100-year storm (*Gibson & Rodrigues, 2022*).

Among challenges is the issue of insurance for homes and marae, which research suggests is likely to significantly harm Māori and households with lower material wellbeing (*Bell et al., 2024; Radio NZ, 2023*).

As insurance companies assess the risks associated with climate change, some may become reluctant to continue coverage—presenting a challenge for maintaining marae and culturally significant sites.

For Māori, land is significant, whether this be a result of land returned through settlement agreements with the Crown or land under Māori Title based on whakapapa ownership.

Marae, urupā (burial sites) and wāhi tīpuna (ancestral sites) have immense spiritual and cultural significance. But the coming effects of climate change and the issue of insurance retreat is likely to complicate efforts to protect and preserve them.

Compounding the situation are the economic and social vulnerabilities faced by many Māori communities—limiting the ability of some to pay potentially much higher premiums or invest in adaptive measures such as resilient infrastructure or re-location from high-risk areas.

Insurance issues aside, Māori are well positioned to adapt to climate change. Central to the response is a deep connection to place, and a rich tradition of relocation and adaptation in response to environmental changes and challenges.

While anthropogenic climate change is much different to what has come before, Māori have long navigated changes in their environment through flexible responses, including relocating settlements when necessary (*Bailey-Winiata et al., 2024*).

Along with traditional practices and knowledge, the historic adaptability of Māori sets a solid foundation for efforts to address climate impacts. This is alongside collaboration between local communities and government agencies.

It is positive that climate action for Māori is an important part of the national climate adaptation plan, and that many iwi and whānau are already working to develop strategies to adapt to and mitigate the effects of climate change (*Ministry for the Environment, 2022*).

An adaptation plan put together by the Maketū iwi collective in Western Bay of Plenty (*Maketū Climate Plan, 2022*), which is seeing more frequent coastal flooding, is a fitting example. A land-use research project based around two coastal Māori farms and a whānau trust in the Horowhenua-Kāpiti region (*Deep South Challenge, n.d.*) is another.

In a heartening new initiative between iwi and Northland Regional Council, thirty-five of Te Tai Tokerau's most flood-prone marae are set to get a flood resilience boost in a first-of-its kind project (*Botting, 2024*).

While the impacts of climate change on Māori are significant, it seems likely that, together, iwi and communities will navigate the challenges.

By combining traditional Māori knowledge, adaptability, and deep connection of place with other strategies, there is a path forward that protects and preserves Aotearoa New Zealand's cultural heritage while addressing the immediate and future risks posed by a changing climate.

WOULD INTERVENTION BE AFFORDABLE? AND COULD IT LEAD TO POORER OUTCOMES?

There is another possible argument to leave private markets to sort out the future of insurance. Storey et al. (*2024*) argue that offering some kind of public insurance, or subsidising private insurance, for homes that face insurance retreat would be maladaptive, because such intervention would inevitably underwrite continued development in hazardous locations and will encourage people to insist on remaining in harm's way. They argue that as an unintended consequence, this will also make planned relocation more difficult to design and implement.

If the country were to introduce subsidised insurance or public insurance for houses facing managed retreat on the coast, for example, this could also very quickly become prohibitively expensive (*Storey et al., 2024*): A simple calculation is illustrative. Imagine a $1,000,000 wooden floored property in one of Wellington's ESL1 zones where the land value is $500,000 and the value of the buildings is $500,000. With just 30 cm of sea level rise, a 1-in-100-year flood will become an annual event … after just 30 cm of sea level rise, this property will face annual expected losses of $94,818.

So, can the country actually afford to intervene to remedy flood and other protection gaps, and will such intervention by definition be maladaptive? On one hand, this report argues that these fears must be taken seriously and incorporated into the policy design for any proposals to intervene in the existing insurance market. It is clearly in no one's best interest to subsidise at-risk properties at such a high rate. Besides anything else, the public would be unlikely to stand for it. It is also clearly absurd to continue to allow properties to be built in vulnerable areas that will face increasing insurance losses as time passes.

However, this report also argues that it is not the case that any kind of subsidisation or creation of a public insurance system must inevitably lead to adverse consequences of the kind described here. There are ways to subsidise insurance sensibly without being locked into covering repeated rebuilds, for example.

These are problems that can be predicted and managed following a process of careful, principles-based policy design. To ensure policy intervention is designed with the right outcomes in mind, we set out a list of principles and desirable outcomes intended to help guide decision making, below.

WHAT KEY GOALS AND PRINCIPLES SHOULD INFORM POLICY ACTION?

A sensible list of principles for the future of residential property insurance in Aotearoa New Zealand could be summarised as follows (*adapted from Boston, 2024*):

1. **Take seriously Aotearoa New Zealand's exposure to a wide range of natural hazards** and the high likelihood—if not virtual certainty—of increasing natural-hazard risk over the coming decades and beyond, and the implications of this for insurance availability and affordability.
2. **Maintain high levels of comprehensive residential property insurance coverage** in the interests of:
   - Economic resilience (for rapid recovery post-disaster, etc.).
   - Social and community resilience and cohesion.
   - Human wellbeing (including peace of mind and psychological wellbeing).
   - Minimising material hardship.
   - Minimising fiscal risk to the Crown.
   - Promoting equitable outcomes for less well-off communities and individuals.
3. **Place the framework for residential property insurance in the context of a range of measures to reduce and minimise risk,** including measures to protect existing property (where cost-effective), provide for planned relocation where there are no other cost-effective options to reduce risk, and limit future risk by minimising new development in high-risk areas. Recognise the need for an integrated, durable, long-term policy framework for climate change adaptation and natural hazard mitigation.
4. **Maintain competitive and effective insurance and credit markets,** including access by Aotearoa New Zealand insurance companies to the global reinsurance market (recognising that such access may become more difficult in the long term as natural-hazard risks increase globally and locally).
5. **Recognise the inherent tension that may arise between the interests of the private sector and the public good.** While the private insurance market is primarily profit-driven, the collective will have additional interests, such as equity of access and outcomes, public health, and socioeconomic wellbeing.
6. **Minimise inequality of access to residential property insurance** based on socioeconomic circumstances.
7. **Ensure any existing or new policy interventions do not result in perverse outcomes,** such as encouraging continued development in hazardous locations, encouraging people to remain in homes that are unsafe, or making planned relocation more difficult to design and implement.
8. **Recognise the tension between individual and collective interests,** and the difficulty in finding the appropriate balance between them. Individuals must feel the price they are paying is appropriate to their specific risk, and affordable, while those facing the highest risks from natural hazards should ideally be helped by the collective to maintain insurance coverage at an affordable price (*Jarzabkowski et al., 2023*) (except where that access is likely to result in perverse outcomes and/or maladaptive responses to climate change).
9. **Ensure fair outcomes and minimise moral hazard as far as possible**—for example by not designing an intervention that requires all New Zealanders to subsidise repeated losses for a small group of people for an indefinite period—while also recognising that many people are in a vulnerable position through no fault of their own, and may not have the means to adequately protect themselves or move elsewhere.
10. **Recognise the relevance of other types of insurance for societal resilience,** including commercial, agricultural, infrastructure, and contents insurance.
11. **Minimise the Crown's long-term fiscal risk.**
12. **Draw on the best available international evidence** and learn from prior experience.

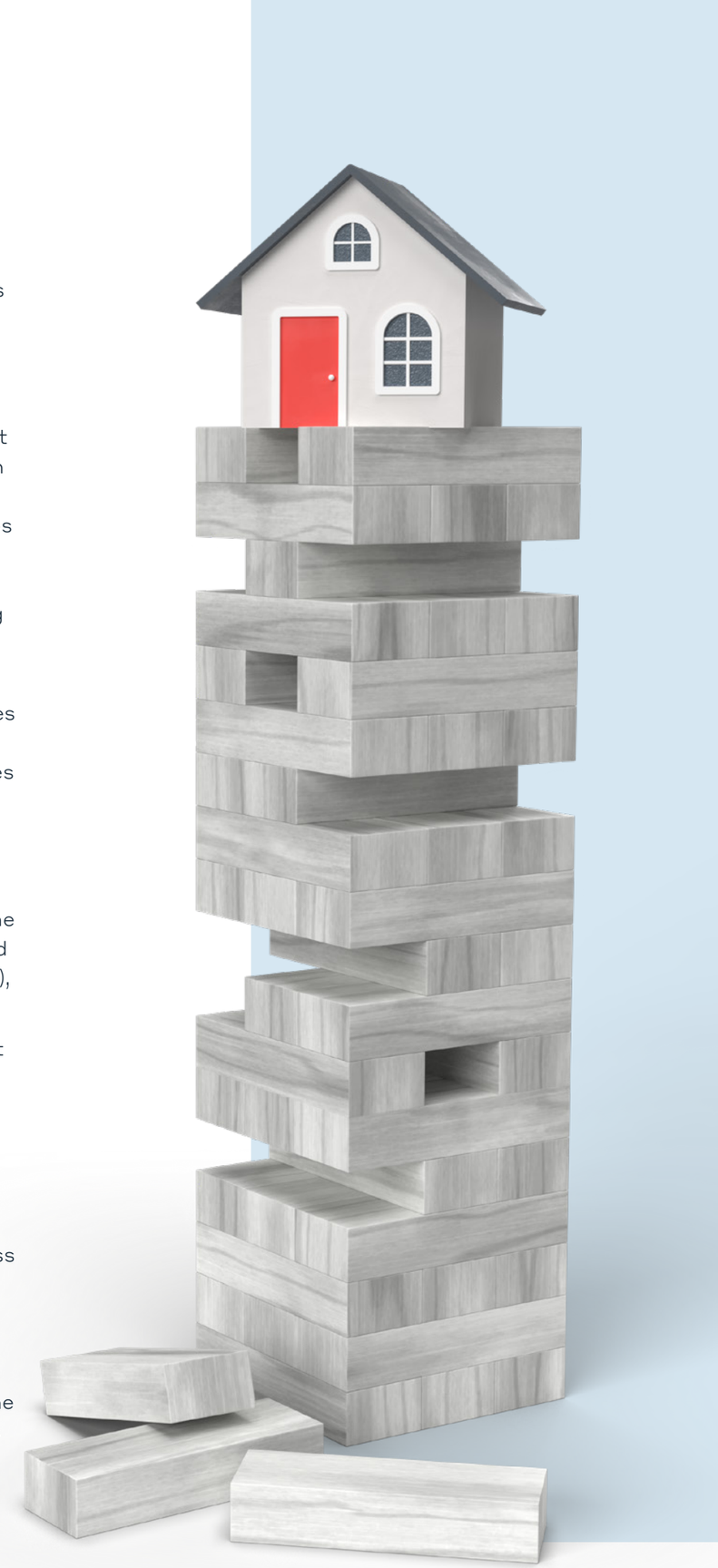
To this list of principles could be added the goal that any intervention in the insurance status quo should be fair and transparent, and should ensure the minimum cost and disadvantage for individuals and the country as a whole.

SOME SCENARIOS THAT MIGHT JUSTIFY INTERVENTION

Finally, in this chapter it would be useful to set out some examples of the kind of scenarios for individuals that any intervention in the current insurance market would be hoping to improve. A policy framework for the future of residential property insurance may wish to address any of a number of current and likely future protection gaps for the near and medium term, including (but likely not limited to) the following:

- After a big disaster event, insurers may retreat from an area, or from offering new cover, either temporarily or permanently, leaving a protection gap (this retreat may be triggered by overseas reinsurers reviewing their willingness to provide cover). This has happened in the country before—after the weather events in 2023 in Auckland, for example.
- Sea-level rise itself is not covered by insurance policies because it is neither unforeseen nor sudden. The increasing number of homes made unliveable by sea-level rise will not be able to call on insurance for help. As the impacts of sea-level rise worsen, insurers may also withdraw from offering other types of coverage to affected properties.
- Where risk mitigation responses are planned for a community, or for a household (such as building flood banks, or raising a house on stilts), or where a process of community relocation is planned but hasn't yet happened, insurance companies may well withdraw in some cases before such a planning process is complete (*Peart, 2024*). This may leave a permanent or temporary protection gap.
- In the not-too-distant future, insurers may begin to 'unbundle' risks. They may continue to offer insurance for fire damage, but not for flood damage, for example. They may do this only in certain risk-prone locations, or they may do this for the whole country.
- As insurance premiums go up in flood-prone areas, people on limited incomes may struggle to afford insurance, but may not be otherwise in a position to mitigate risks or move on from the area (or may not wish to). For example, a house may be expensive to insure, because of frequent, low-level flood risk perhaps, but it may be still safe to remain there. In many such cases, it may be in the public interest to help subsidise ongoing protection for a certain period, or to a certain level of risk (with the proviso that this does not lead to excessive cost or maladaptation).
- As insurance and reinsurance companies reassess natural-hazard risks and risk appetites over time, the number of companies prepared to insure against certain risks, or in certain regions, may reduce, leading to some level of market failure (a lack of competition in pricing, for example). At some point (most likely some decades away, but this is uncertain), this could conceivably even lead to private insurance being unaffordable for many, or most, people in the country.
- An increasing number of houses being 'red stickered' after climate events. Such properties are sometimes not covered, or only partially covered, by insurance payouts because, although the land may be damaged in such a way that the property can no longer be used (by slip or erosion, for example), the house remains untouched.

There is likely to be disagreement about which protection gaps ought to be filled by public intervention, and which do not warrant that. There are a large number of different options that may be explored to address the different gaps—some more or less practical—from means-testing and subsidising premiums, to requiring mandatory insurance, to developing a standalone public protection gap entity. Some of the more promising potential options are discussed in Chapter 3.



HOW MUCH IS TOO MUCH? DEFINING AFFORDABILITY

Affordability of insurance is commonly determined through the lens of what people can be expected to afford without it being an excessive financial burden (*Hudson, 2017*). While affordable insurance is a key part of ensuring resilient communities, there is no internationally or nationally recognised definition of what constitutes affordable or unaffordable insurance.

The Actuaries Institute (*2022*) in Australia calculates the ratio of the annual home insurance premium to the annual gross household income, expressed in weeks, to determine affordability. According to this measure, the median Australian household uses 1.1 weeks of gross annual income to pay a median annual home insurance premium of about A$1,500 (*Actuaries Institute, 2022*).

The Actuaries Institute defines 'affordability stress' as affecting households that pay more than four weeks of household gross income towards home insurance premiums. Affordability in Australia under this measure varies hugely, from 0.2 weeks for households with the most affordable insurance premiums to more than 7 weeks for the 5% of households with the most unaffordable insurance premiums. The median index score for vulnerable households is more than seven times the median for the base population (*Actuaries Institute 2022*).

There are other ways to calculate affordability. Hudson (*2017*) evaluated the potential of risk-based flood insurance (in Europe) to remain affordable under five different scenarios of future flood risk across three definitions of affordability. Of the models compared, Hudson (*2017*) preferred the "residual income definition" because it was most sensitive to equity concerns. Residual income definitions calculate that insurance is affordable if a household is left with at least a minimum surplus income after purchasing insurance.

Whichever measure is used, settling on a generally accepted definition of affordability for insurance premiums in this country will be an important step as reliance on risk-based premiums increases.

CHAPTER 2 RECOMMENDATIONS

RECOGNISE THE VITAL ROLE OF RESIDENTIAL INSURANCE IN MAINTAINING SOCIETAL RESILIENCE IN THE CONTEXT OF INCREASING CLIMATE CHANGE-RELATED RISKS.

- Recognise the importance of maintaining high levels of insurance penetration across the country, for flood risk in particular. Achieving this will be dependent on residential insurance cover remaining accessible and affordable.
- Establish an expert advisory group to explore how maintaining high insurance penetration can best be achieved. Draw on the experience of relevant overseas jurisdictions while also recognising the distinctive features of the Aotearoa New Zealand insurance market and institutions.
- Note that insurers have a valuable role to play—together with other stakeholders including local and central government, iwi, Māori, and local communities—to incentivise and promote climate adaptation interventions. Ensure the design of any intervention considers the full range of relevant views.
- Agree on criteria to determine what constitutes 'affordability' in insurance premiums.
- Agree a list of principles and goals to inform any intervention in the current insurance market. These may include:
  - Ensuring insurance cover is affordable to all, regardless of socioeconomic circumstances, and ensuring the burdens of climate change do not fall most heavily on those least able to pay.
  - Minimising 'moral hazard', and perverse outcomes, such as continuing development in hazardous locations.
  - Recognising it is not helpful (and in most cases not fair) to blame individuals who find themselves in a precarious situation due to climate change—the real blame lies with high emitters and governments that have repeatedly failed to act to reduce greenhouse gas emissions.



CHAPTER 3

Robust adaptation processes will keep premiums lower, for longer

INSURANCE SHOULD COMPLEMENT, NOT LEAD, THE DRIVE TO ADAPT TO CLIMATE CHANGE

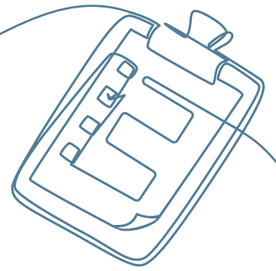
CLIMATE ADAPTATION REFERS TO STRATEGIES AND ACTIONS THAT CAN BE TAKEN TO BUILD RESILIENCE TO THE INCREASING RISKS POSED BY NATURAL HAZARDS AS A RESULT OF CLIMATE CHANGE. IN THE AUTHOR'S VIEW, IT IS PRIMARILY THE RESPONSIBILITY OF CENTRAL GOVERNMENT, IN COLLABORATION WITH LOCAL GOVERNMENT, IWI/MĀORI, BUSINESS, CIVIL SOCIETY ORGANISATIONS, AND THE WIDER PUBLIC, TO SET THE STRATEGIC POLICY DIRECTION FOR THE WAY IN WHICH THE COUNTRY SHOULD ADAPT TO THE IMPACTS OF CLIMATE CHANGE.

Signals from the private insurance market to act—or not act—and when, whether, and how this should happen, may be tailored to complement these approaches, but should not be the dominant driver of societal change. This is because the private insurance market has the primary purpose of making a profit for shareholders, whereas public policy decisions are expected to reflect what is in the public interest and to work for all members of society—including those who are least well off and/or most vulnerable to climate-related impacts.

There are several other compelling reasons why we cannot rely on insurance to lead the climate change adaptation response in isolation from other policy levers. As Boston (*2024*) notes, the format of most household insurance contracts does not promote the best outcomes in terms of community risk reduction. It also leaves many unfunded gaps in protection:

- Insurance will not cover losses from sea-level rise.
- Insurance will not fund a process of planned relocation from an exposed area in advance of an expected disaster. This leaves people vulnerable to personal and financial risk.

- Insurance will also not generally contribute to a process of planned relocation after a disaster has occurred, or to the construction of a new home in a safer location. Instead, insurance is focused on repairing damage to the existing home. Even where a property has been rendered uninhabitable, insurance payments will often be insufficient to enable the owners to purchase an equivalent property elsewhere (*Boston, 2024*).
- Insurance payouts are generally insufficient to both repair existing damage and to fund risk-reduction / resilience building measures. This means risks do not reduce over time, but rather likely increase in line with climate change.
- If left solely to the market, costs are likely to fall disproportionately on those least able to afford them, resulting in greater inequality and wider wellbeing issues (*Somers, 2024*).



Treasury (*2024a*) identifies a number of regulatory failures in the way we currently manage natural-hazard risk in Aotearoa New Zealand, which it describes as creating "sub-optimal outcomes" with the system. These include:

- **The country continues to develop housing in high-risk areas.** This appears to be in large part because councils' attempts to restrict development are easily challenged by developers under the current RMA.
- **Uncertainty over who will decide about, and pay for, managed retreat (also known as planned relocation).** Existing avenues for enforcing planned relocation under the Resource Management Act, the Local Government Act, and the Public Works Act rely on acquisition, with compensation based on fair market value or similar, for which councils lack resources. Councils also lack the administrative tools and capacity to carry out planned relocation on a significant scale.
- **Affordability of risk mitigation.** Some councils say they cannot afford to build, maintain, or upgrade local risk-management infrastructure such as flood protection, whether from their rates, targeted rates, and debt.

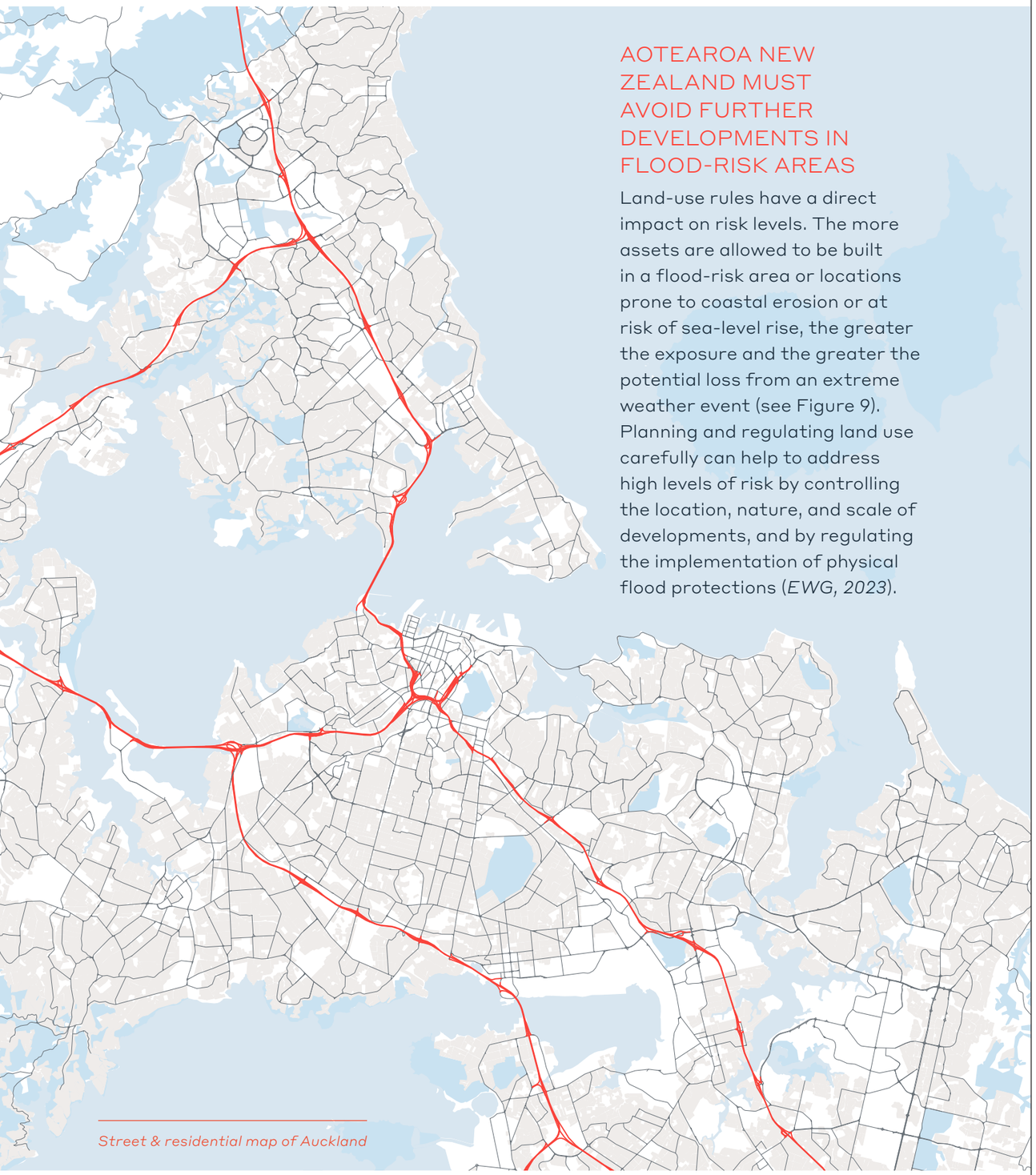
The role of insurance in responding to these wider issues is limited. It is true that insurance can help send price signals to homeowners and communities about the need for risk mitigation and/or planned relocation of at-risk houses, but it is just one way—and not necessarily the most effective or equitable way—to do so. Relying on insurance cover to help homeowners mitigate the costs of climate change will lead to many policy gaps (*Boston, 2024*):

> "...In short, existing policy settings concerning public powers, planning incentives, funding, and insurance arrangements are flawed. Without reform, they are destined to increase risk exposure, encourage moral hazard, worsen socio-economic inequalities, and exacerbate overall adaptation costs. We urgently need a new policy framework, one that safeguards the future, enables betterment, and supports communities to relocate when circumstances require."

Central government has undertaken some groundwork to strategically prepare for adaptation, including the release of the first National Adaptation Plan (NAP) in 2022, and ongoing efforts to develop an Adaptation Framework (*FEC, 2024*). There are also examples of best practice around the country in terms of successful small-scale adaptation efforts (*Mercier, 2023*). However, there are significant gaps in the country's response. Given the increasing number of climate-related impacts, the need for a new policy framework is now urgent.

In practice, when significant costs arising from a natural-hazard event are not covered through insurance, local and central government typically step in to assist—but they do this in an ad hoc, inconsistent, and generally reactive manner (*Boston, 2024*). Recent announcements from the Government also suggest it may be unwilling in the future to fund the relocation of communities that have suffered serious damage and face ongoing risks, at least in the way previous governments have done (*Williams, 2024*).

Discussed below are a number of approaches that are essential to ensuring residential insurance can continue to operate effectively within its primary role (that of transferring definable and limited risks from individual property owners to financial markets). Meanwhile, the Government must not abdicate its own important role—to lead policy in the public's best interests (financial and otherwise), for the long-term benefit of all.



Street & residential map of Auckland

AOTEAROA NEW ZEALAND MUST AVOID FURTHER DEVELOPMENTS IN FLOOD-RISK AREAS

Land-use rules have a direct impact on risk levels. The more assets are allowed to be built in a flood-risk area or locations prone to coastal erosion or at risk of sea-level rise, the greater the exposure and the greater the potential loss from an extreme weather event (see Figure 9). Planning and regulating land use carefully can help to address high levels of risk by controlling the location, nature, and scale of developments, and by regulating the implementation of physical flood protections (*EWG, 2023*).

This should be straightforward: 80% of New Zealanders are in favour of avoiding or reducing development in risky areas, according to a recent survey (*IAG, 2024*). Yet developments continue apace on vulnerable land. Within a year of the severe weather events of 2023, nearly two thousand building consents for new homes had been granted in known hazard zones in Auckland, for example (*Newton, 2024a*).

Many councils feel powerless to prevent development in risky areas under current legislation, even if they wanted to, citing inadequate current planning rules and a lack of clear direction from central government (*Newton, 2024a*).

Figure 9 – The level of risk from a natural-hazard event results from the interaction of vulnerability, exposure, and hazard (adapted from Field et al., 2014)



The Government has recently announced plans to develop a new national direction for natural hazards. According to RMA Reform Minister Chris Bishop, the new policy is expected to provide consistent direction to councils on how to identify natural hazards, assess the risks, and respond through planning and consenting (*Coughlan, 2024a*).

To achieve its purpose, the new national direction must address the need for councils to hold greater powers to decline land use consents, or to attach conditions, where there are significant risks to an area from natural hazards, without fear of legal action from developers (*Coughlan, 2024b*).

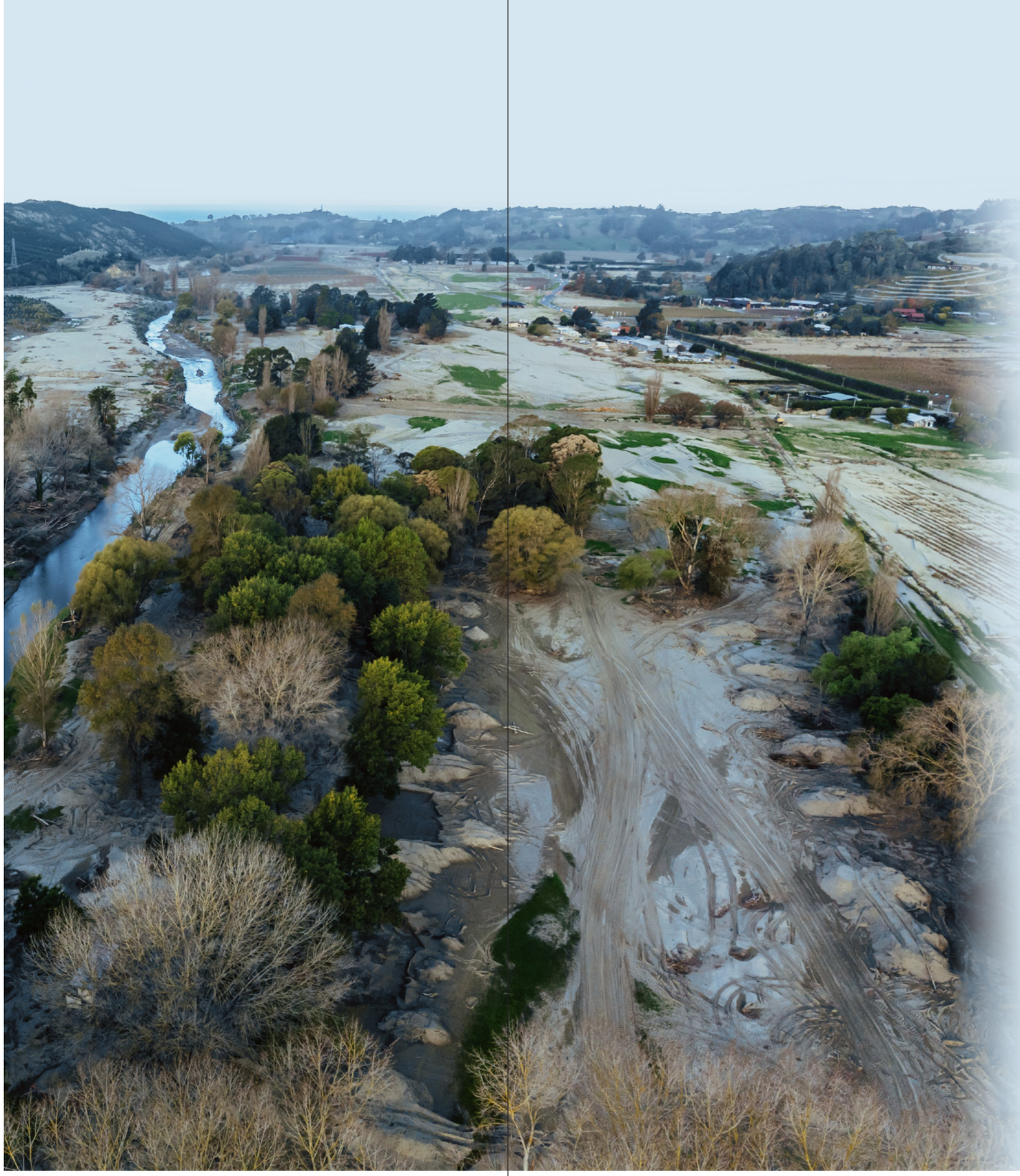
Another way to improve the consenting process in the interests of greater risk control may be to involve insurance companies more in new housing decisions before councils sign consents and developers break ground (*ICNZ's Kris Faafoi, cited in Milne, 2024*). Currently, there is no regulatory requirement for insurability issues to be addressed prior to land being zoned for residential development or a sub-division being consented.

Boston (*2024*) suggests one option might be to require developers to provide evidence that they expect affordable insurance cover to be available over an extended period (i.e., decades), as part of the consenting process. This is a feature of the Swiss system for example, where the public insurer participates in consent processes for construction. Boston also notes the challenges inherent in this suggestion. Future impacts of climate change are uncertain and open to debate—insurers and reinsurers would be very unlikely to offer multi-year guarantees, especially given it is their practice to reconfirm insurance availability on an annual basis.

However, it makes good sense to require developers to provide input from insurers—even if it is in the form of non-binding, good-faith advice on likely future affordability and accessibility of insurance in that location. At the very least, this would add another important check and balance to the consenting process.

If inappropriate developments on flood-prone land continue to be approved despite the known risks, it will become harder to make the case that others should subsidise the inevitable high premiums in those locations. To ensure fair outcomes for everyone, inappropriate and poorly designed developments in these locations must stop immediately.

Eskdale Valley covered in silt after Cyclone Gabrielle, Eskdale, Napier, Hawkes Bay, 2023



DEVELOPING AN ADAPTATION FRAMEWORK

The Climate Change Commission (*2024*) recently released its first assessment on the progress of New Zealand's National Adaptation Plan, which was launched in 2022. The Commission noted that climate change risks are significant and rising, and remain insufficiently addressed by adaptation action in Aotearoa New Zealand. In other words, Aotearoa New Zealand is not responding to risks at the scale and pace that is needed.

The Commission's recommendations included that:

- A clear and coherent legislative mandate for adaptation planning and implementation should be developed, setting out clear roles and responsibilities and decision-making processes at national and local levels.
- Iwi/Māori must be enabled to plan for and carry out adaptation action.
- Science and research systems should be improved to support good outcomes.
- The distributional costs and impacts of climate change should be considered and addressed, so they do not fall unfairly on particular communities and groups.

All these recommendations relate directly to ensuring the insurance market continues to work as efficiently as possible in the face of the growing impacts of climate change, and have therefore been adopted into the recommendations of this report.

If Aotearoa New Zealand is unable to agree a framework for adaptation, insurance premiums can be expected to rise far quicker than they otherwise would do. Adaptation approaches—such as investing in protection and resilience measures, and retreating from at-risk places—will help keep insurance prices affordable, for longer, by significantly reducing the overall amount spent on repairing damages from natural hazards (*NZIER, 2024*).

To manage this process, the EWG (*2023*) recommended that a single government agency (whether existing or new) take the lead on climate adaptation. This would be a sensible way to ensure adaptation is given the priority it needs.

> "Investing in resilience is akin to buying insurance or investing in defence. Society or a firm pays a cost upfront by investing in ways to help offset the negative impact of a shock if it occurs."
>
> **(NZ Productivity Commission, 2024)**

DECIDING WHO SHOULD PAY FOR ADAPTATION IS THE NEXT CRUCIAL STEP

The country must also agree who will cover the cost of local adaptation responses. Successive governments have been struggling to agree on this question for several years.

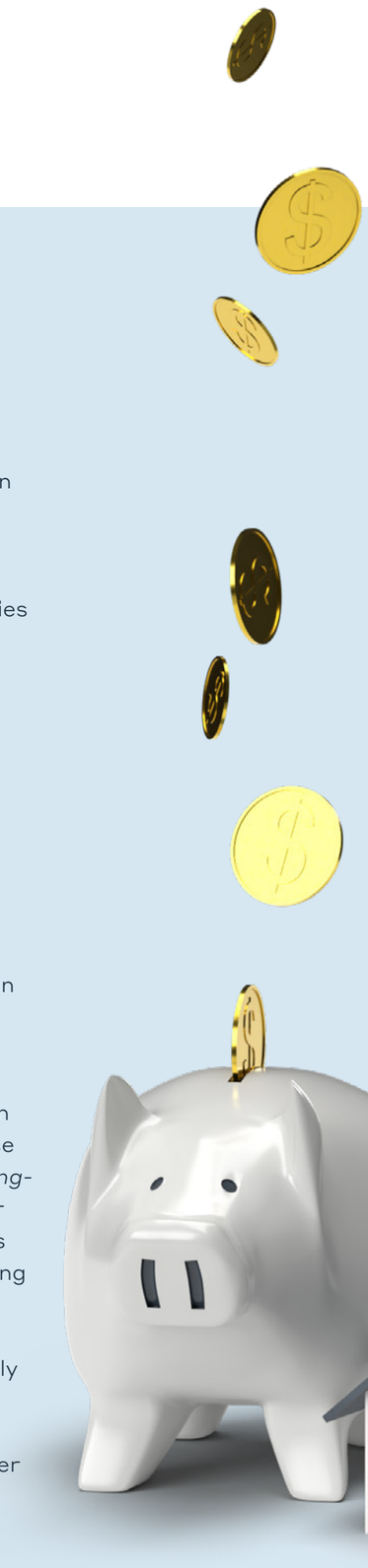
The Climate Change Commission's (*2024*) assessment on the National Adaptation Plan recommended that clarity be provided on how adaptation costs will be shared and met. There is currently no national funding framework for climate adaptation, which is delaying the process of adaptation in the country. Disappointingly, the recent cross-party inquiry on adaptation (*FEC, 2024*) once again failed to give any firm guidance on this question.

It is unarguable that not investing in adaptation will cost far more than timely interventions (*GCA, 2019*). It will also have inevitable consequences for the affordability and accessibility of insurance premiums. If the Government decides not to contribute to local adaptation efforts, then costs will inevitably fall elsewhere (to rate payers for example). Whether this will lead to the most desirable outcomes is highly doubtful (*Boston, 2023*). Many of the smaller local authorities in particular are simply unable to fund the required precautionary interventions from their limited resources and small rate bases (*NZ Productivity Commission, 2019*).

Not agreeing a clear pathway for funding heightens the risk that the costs of climate change will fall disproportionately on those who can least afford it—such as those on low incomes, tenants, homeowners with little equity, or those with significant health issues or disabilities (*Boston, 2024*).

In France, a standalone fund (the Barnier Fund) supports measures to prevent or protect people and property exposed to major natural risks. The Fund is supported by a levy of 12% applied to the premium surcharge on property insurance (the equivalent of about €4–€5 per residential property).

Local authorities, among others, can access the Fund for investments in flood prevention and protection, to raise risk awareness through the provision of risk-related information to property owners, and to purchase at-risk properties (*Lamond & Penning-Rowsell, 2014*). The test for whether purchase of properties is justified is that the estimated cost of protecting properties in high-risk areas is greater than the cost of relocation. The Fund is becoming an increasingly important source of finance for climate change adaptation by sub-national governments, and may offer a useful example to this country.



Whatever the funding pathway that is agreed, it should be consistent, transparent, and realistic. Many parties, including the Environmental Defence Society (EDS), have called for the establishment of a National Adaptation Fund to pay for planning and implementation of adaptation, from which funding could be sourced for a range of adaptation actions, based on a set of clear criteria (*Peart, 2024*):

> "Providing the bulk of the funding from general taxation may be the fairest and most cost-effective approach, minimising administration and compliance costs. However, a specific climate adaptation levy could also be considered, such as a targeted 'stamp duty' on property transfers."

EDS also recommends, sensibly, that no government funding for adaptation works (including seawalls and stop banks) should be provided unless a compliant local adaptation plan has been prepared, which identifies such works as part of the preferred adaptation pathway.

GET BETTER AT RISK MITIGATION TO KEEP INSURANCE PREMIUMS DOWN

Insurers and reinsurers are clear that better risk mitigation and adaptation is a must for Aotearoa New Zealand, if the country is to remain attractive for insurance. The public is also in favour. In a recent survey conducted by Ipsos Ltd, 65% of respondents urged more focus and resources be put towards addressing climate-related risks.

Research by the Global Commission on Adaptation found that early adaptation is also in countries' strong economic self-interest, with an overall rate of return on investment in improved resilience showing cost-benefit ratios of as much as 10:1 within 10 years for some interventions (*GCA, 2019*).

ONLY INVEST IN THE 'RIGHT KIND' OF RISK MITIGATION

There are limits to cost savings from investment in resilience and risk mitigation—in some (perhaps many) cases, the cost of mitigating risks will not be worthwhile. For example, where the cost of the intervention is greater than the value of the protection afforded, it may make sense to reconsider whether the resilience measure is worth the cost. This is true at community level too—a risk-protection measure costing many millions that protects only a few properties may not be justifiable.

Similarly, some resilience measures are maladaptive. 'Maladaptation' refers to actions that, rather than leading to better resilience to climate change, may actually lead to increased risk, including increased vulnerability to the impacts of climate change (*Ministry for the Environment, 2022*).

One example would be choosing an option for adaptation that has a high cost, but a short likely lifespan. Historically, Aotearoa New Zealand has tended to prioritise hard engineering solutions to flood risk, via sea walls, stop banks, and large flood-control schemes. These adaptations, while often effective, have high potential to be maladaptive by giving communities a false sense of security that the area protected is now 'safe', by reducing the flexibility of future options, and by exposing communities to greater risk in the long run (*Barth et al., 2019*). In such cases, relocating away from the risky area instead would mitigate long-term risk and be cheaper overall.

Dealing with increasing flood hazards in particular will necessitate a combination of several risk mitigation approaches for flood-sensitive areas (*Mercier, 2023*):

- Adopting 'sponge cities' approaches, such as use of more 'green infrastructure', water-sensitive urban design, and nature-based solutions to make cities more absorbent.
- Updating and improving 'grey' infrastructure such as pipes and drains in some locations.
- Increasing flood protections such as stop banks. Stop banks come with some risks—they may encourage growth in areas that are not suitable to be habited in the long term, for example.
- Raising houses or designing houses with living spaces on higher floors.
- Minimising damage by using wet-proofing techniques on buildings, using materials for floors and cupboards that are less susceptible to flood damage, or siting electrics higher up.

Other hazards—such as increased wind speeds, and exposure to wildfires, for example—will require different and targeted responses (such as creating fire breaks or improving building standards). However, for most of the country, responding to these hazards will be less of a priority than increasing resilience to flooding.







Left to right: James Reddish, Liam Foster & Richard Woods.

MANAGING FLOOD RISK

Effectively managing flood risk requires a mix of immediate, practical actions and thoughtful long-term planning, explain WSP's James Reddish, Liam Foster, and Richard Woods.

With storms and extreme rainfall events projected to become more severe and frequent in many parts of Aotearoa New Zealand (NIWA, n.d.), both individual property owners and entire communities need to focus on how they can adapt to flooding now, while also preparing for future challenges.

Homeowners can take several practical steps to protect their properties from flooding. Installing flood gates, barriers, or raising houses are direct, albeit sometimes expensive, measures that can significantly reduce flood damage—provided they don't make flooding worse for others.

Water sensitive urban design can play a critical role. So can innovative building design solutions. While not focused on residential properties, Queenstown implemented flood-resilient designs for commercial premises such as movable storage racks and flood-resistant flooring, following the 1999 Lake Wakatipu flood.

Adaptations like these can allow quicker recovery from floods and highlight how even small, relatively cost-effective changes can sometimes make a big difference.

THE NEED FOR LONG-TERM PLANNING

While immediate property-level measures like these are important, a long-term vision for our catchments is more crucial for effective flood management. This could include measures outlined in WSP's report with the Helen Clark Foundation on Sponge Cities (*Mercier, 2023*) and involves planning for future flood risks and making gradual changes over time at every opportunity.

Identifying high-risk flood areas at the catchment level and planning risk-reduction solutions, including property buyouts, in stages, can help spread costs and avoid sudden disruptions.

Cities like Auckland and Christchurch offer valuable examples of this approach. They have developed, or are developing, plans to create green spaces and designated flood zones, integrating these strategies into broader urban development. Spurred by past disasters, their planning shows the importance of every region preparing for the long term and being ready for your event.

BALANCING FLOOD MITIGATION WITH BUYOUTS

Deciding between investing in flood-protection infrastructure and buying out properties is a complex and sometimes emotionally charged issue.

As climate change increases flood risk, maintaining and upgrading flood defences becomes more costly. Studies, including by Victoria University's Jonathan Boston, suggest that property buyouts can sometimes be a more cost-effective solution than extensive flood mitigation infrastructure projects (*Boston, 2023*).

However, it's important to recognise that these decisions affect more than just finances. The emotional and social impacts on people must be carefully considered. At the end of the day, managing flood risk effectively is as much about people as it is about property.

Managing property buyouts or relocations requires sensitivity to the personal and community challenges involved. Professionals working with homeowners, like those in Auckland, play a crucial role in navigating these issues compassionately.

COLLABORATION AND COMMUNITY INVOLVEMENT

Successful flood management relies on collaboration between local authorities, insurance companies, and communities. By working together, stakeholders can develop solutions tailored to local needs and address broader flood risk-management goals.

While decisions should blend practical, short-term actions individual property owners can take with strategic, forward-thinking planning at the local and central government level, they should also consider the wellbeing of all residents, and not just be based on dollars and cents. That way, communities can better handle the challenges of flooding and climate change—protecting both people and property, ensuring a more resilient future for all.



Above: Queenstown during the November 1999 flood. Image from Otago Regional Council

Right: Queenstown

Case Study: Queenstown—the importance of flood-resilient design

Following major flooding in Queenstown in 1999, many insurance companies withdrew flood insurance cover for businesses, or increased premiums to an unaffordable level. In response, many businesses modified the design of their buildings and fittings to minimise their vulnerability to flood losses (*Forsyth, 2005*).

For example, they built drainage channels and installed pumps, replaced floor coverings with materials that were water resistant, tiled walls, isolated sewerage and stormwater services, installed water-resistant shelving, and ran electric writing through ceilings.

These interventions were targeted to reduce costs and to minimise downtime after any future flooding. Many of these types of approaches would be equally suitable for homes (for those who can afford to pay for them), and would help keep insurance premiums lower, for longer. Other building-design approaches include elevating homes, keeping flow paths clear, maximising drainage, and using outdoor materials inside.

It may be in the public interest to help subsidise the implementation of such approaches for existing homes, and to require them for new homes in areas with any flood risk. Options for subsidisation are discussed further below.



EFFECTIVE RISK ASSESSMENT REQUIRES NATIONAL DIRECTION, COMBINED WITH REGIONAL PLANNING

To keep insurance affordable and accessible for longer, it is essential the country collectively agrees which locations are most at risk from natural hazards, and helps those areas plan the most appropriate local adaptation response.

One problem is that there are currently no national standards or thresholds for natural hazard and climate change risk tolerance in Aotearoa New Zealand. While a Proposed National Policy Statement for Natural Hazard Decision-Making has been drafted to attempt to remedy this, it has not yet come into effect. This means case-by-case consideration of risk tolerance is undertaken when planning for adaptation and relocation, including in post-event situations.

In different areas, the best response may mean restoring wetlands to absorb more stormwater, building structures such as sea walls, or undertaking a process of planned relocation for example—or all of these, at different times. NHC Toka Tū Ake has produced an excellent risk-tolerance methodology, which could form the basis for a national framework (*NHC, 2023*).

If Aotearoa New Zealand does not agree on national standards to guide how these decisions are made, the country's approach will continue to be ad hoc and bespoke. In addition, homeowner responses to risk mitigation at the property level will be guided by premium pressures rather than considered policy decisions. This will inevitably lead to the burden of adaptation falling unevenly, with those who can least afford it carrying the biggest share.

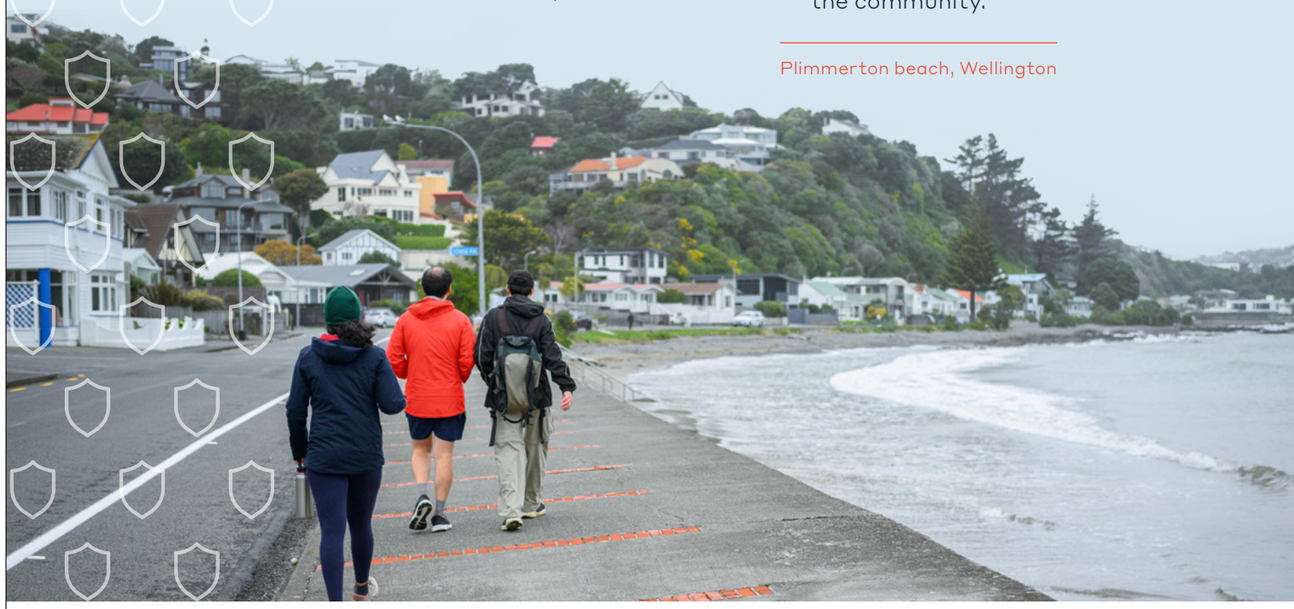
As part of decision making about which interventions are needed, and where, Government, following expert advice and with input from the community will need to identify the level of risk tolerance that is acceptable and that should be applied across the country as a whole. The relevant question is—what level and frequency of disruption and potential harm is the country prepared to accept and respond to (noting this may change over time—or suddenly, in response to a major event), compared with the costs of implementing an intervention to reduce the disruption and potential harm (*Boston, 2024; EWG, 2023*)? For example, how many times should a much-loved family home be rebuilt before the costs to the wider community are seen as too extreme? Or how much is it reasonable to invest in risk mitigation, to protect how many homes?

This report agrees with and adopts the recommendations of the Expert Working Group on this matter, which determined:

- National direction should guide the process of identification and prioritisation of areas for adaptation planning by setting out the circumstances in which adaptation planning should be required, and the principles and criteria for prioritisation.
- Local adaptation planning should be undertaken by a new, fit-for-purpose decision-making body—an adaptation committee—which should be provided for in new climate adaptation legislation. Risks should be assessed in priority areas at a local scale, to determine the specific adaptation options that are called for (*EWG, 2023*).

National direction is also needed to support other aspects of local adaptation planning (*EWG, 2023*), including:

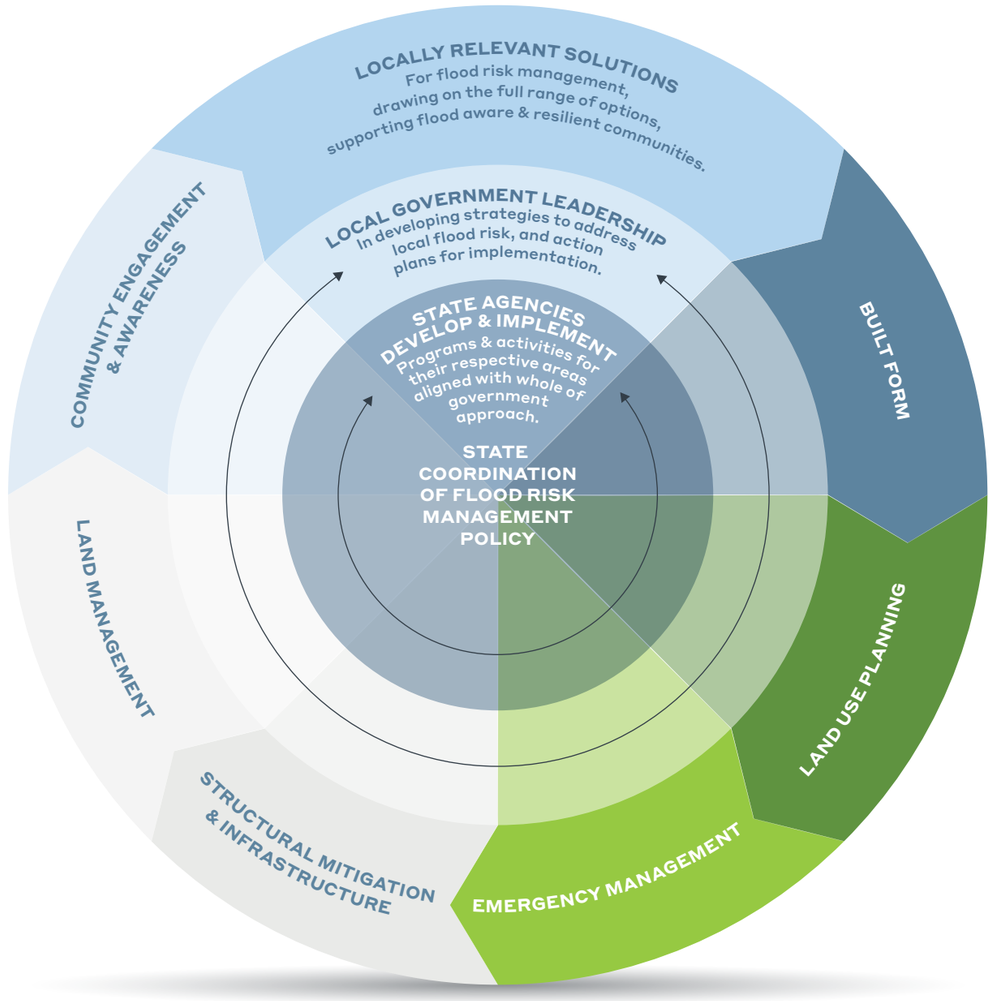
- The principles, criteria, and methodologies for the assessment of adaptation options, including the incorporation of mātauranga Māori, tikanga, and kaupapa Māori methodologies.
- The risk circumstances in which consideration of planned relocation as an option is mandatory, to provide a mandate for adaptation committees to consider relocation.
- The minimum requirements for who should be engaged with and at what point, and guidance on how to engage with Māori, stakeholders, and the community.



Plimmerton beach, Wellington

The Queensland Flood Risk Management Framework (*QRA, 2021*) provides a potentially useful model to help inform this country's approach. The model was developed after repeated disasters in the state to set the direction for flood-risk management, to outline the roles and responsibilities of all stakeholders involved, and to guide and support decision making by councils (see Figure 10). It sets out a multi-pronged response to flood mitigation, at state, local government, and community level.

Figure 10 – Queensland state coordination of flood-risk management policy (QRA, 2021)



INCENTIVES IN INSURANCE POLICIES CAN PROMOTE RISK RESILIENCE INTERVENTIONS

As a supplement to identifying and implementing adequate risk resilience measures at the central and local government level, it is worth investigating options to promote risk reduction through insurance policies. International examples of this approach include:

- In some American states, including California, Florida, and Texas, limited 'insurance of last resort' is offered by the State for residential properties that cannot access private insurance. To be eligible, homeowners must show that their property has put appropriate risk mitigation measures in place (*Minter-EllisonRuddWatts, 2023*).
- The United Kingdom has the Build Back Better scheme, which is offered as part of a state-sponsored reinsurance system funded by insurance premiums, called Flood Re. The scheme reimburses flood-hit customers up to a maximum per property to install risk protection measures (*Flood Re, 2024*).
- Following the devastation of Hurricanes Ivan and Katrina in 2004 and 2005, a programme called Strengthen Alabama Homes was established to help fortify homes against storm damage. The scheme is funded by fees levied on insurance premiums, and has been successful in increasing insurance coverage in Alabama (*National Academies, 2024*).
- Also in the United States, a financial services company called USAA provides discounted insurance to veterans and their families, but only if they live in areas that have completed a community wildfire risk assessment (*NZIER, 2024*).
- In Germany, 'flood passports' have been introduced as a voluntary property-level mitigation measure. Flood passports require a certified building survey and a detailed on-site assessment identifying how vulnerable or resilient a building is to flood risk. Insurance providers have responded favourably to the passport by offering lower premiums and rewards to residents with the passport (*Meyer & Hartmann, 2023; NZIER, 2024*).

Each of these approaches is slightly different. Some require a homeowner to implement risk mitigation to become eligible for a particular insurance scheme, others offer reduced premiums where risk mitigation is carried out, and others use a portion of insurance premiums to directly fund risk-mitigation approaches. Some are focused on the individual property while others consider a community resilience approach. While all have merit, schemes that provide some funding and are targeted towards helping poorer households are arguably more likely to have equitable outcomes.

Middleton (*2024*) suggests that insurance companies could work with local authorities to tailor the terms and conditions of their policies to suit particular community situations. This could keep policies accessible and affordable for longer, and mitigate community-level risk. For example, insurers could:

- Undertake to continue offering insurance for a community until specific prevention measures announced by the government are in place.
- Issue policies for houses in high-risk areas that do not allow automatic reinstatement of the full sum insured after a claim—meaning houses cannot be rebuilt multiple times. This would limit insurers' liability while giving homeowners a grace period before insurance retreat takes place.
- Reinforce the effectiveness of local adaptation plans by agreeing to maintain coverage until a planned process of relocation has taken place in a community.

Insurance companies in Aotearoa New Zealand have expressed a willingness and desire to help find solutions to keep their customers insured (after all, that is how they make their money). So finding creative ways to involve insurers in local adaptation planning—and enabling them to support actions to mitigate community-level risks—would be both sensible and practical.



PLANNED RELOCATION WILL BE THE BEST RESPONSE IN SOME COMMUNITIES

Managed retreat, or planned relocation, refers to the "strategic relocation of assets, activities and sites of cultural significance away from at-risk areas within a planned period of time" (*Ministry for the Environment, 2022*). Currently, most countries, including Aotearoa New Zealand, lack comprehensive and well-funded policy frameworks for planned relocation (and indeed for adaptation more generally). In most cases where people have been forced to move, their relocation has typically been unplanned or poorly planned, and largely without help. Given the serious projected impacts of climate change over the coming century, reactive and uncoordinated relocations will likely be neither adequate nor desirable (*Boston, 2024*).

Further issues impeding a clear process of planned relocation include (*Boston, 2024*):

- A lack of funding (which Boston refers to as a "critical and enduring problem").
- While local authorities are largely responsible for climate change adaptation in their regions, they lack the necessary powers to undertake planned relocation.
- There is a lack of clarity about how many residential properties are exposed to intolerable risk and are no longer suitable for residential use. There is also uncertainty about how much that exposure might increase in the future as climate risks increase and as the number and value of assets increase (*FEC, 2024*).
- There is no consistent definition or understanding as to what even constitutes 'intolerable risk' (*FEC, 2024*).

What is clear, however, is that relying on insurance will not help those who face a process of planned relocation before any disaster has occurred. Without damage to the house, no insurance will be payable. This means the loss of the property and removal of the structure would fall entirely on the owner if not covered, whether partially or fully, by another party such as the government (*Peart, 2024*).

This is important because a risk-informed process of planned relocation should be designed to reduce risks proactively. That will often mean undertaking relocations based on agreed risk-based thresholds, not in response to major natural-hazard events (*Boston, 2024*).

An important reason to agree on a framework for planned relocation is that, without such a policy, de facto policy decisions will be taken by insurance companies (whether they want to or not). As one specific example, after the Auckland Anniversary floods and Cyclone Gabrielle, many insurance companies informed owners of properties assigned to Category 3 that if they decided not to participate in the voluntary buyout process, their insurance policies would be cancelled (*IAG, 2023*). This gave homeowners very little choice—they had to accept a buyout process or face a future without insurance access (which would have had a significant impact on their property price).

The Expert Working Group on Managed Retreat (EWG) was established by the Ministry for the Environment in 2022 to provide advice on an equitable and enduring system of 'managed retreat'. The EWG set out a list of outcomes and principles to inform policy development for a managed retreat process, which this report recommends should form the basis for future decisions in this space (see Figure 11).



How should planned relocation be compensated?

The EWG also examined whether compensation should be payable for those forced to relocate due to the impacts of climate change. They concluded that failing to provide any form of financial support would be inconsistent with the objective of reducing hardship, would create a disincentive for voluntary participation in any planned relocation, and would be inconsistent with Aotearoa New Zealand's social values and commitments (as reflected in a variety of settings such as accident compensation, government superannuation, and how governments have responded to disasters in the past).

The EWG also dismissed the idea of providing full compensation for all properties, due to the significant cost that would result, the need to preserve social licence (i.e., full compensation for multi-million-dollar properties was unlikely to be popular), and the potential that such an approach could exacerbate existing social inequalities. A key principle of the group's reasoning was that any compensation scheme should aim to reduce hardship and ensure everyone has an adequate and affordable place to live, rather than to preserve wealth.

Figure 11 – Desired outcomes and principles proposed by the Expert Working Group on Managed Retreat (2023)

Desired outcomes and principles proposed by the Expert Working Group on Manage Retreat (2023)

Desired outcome

1. People must be kept physically and psychologically safe.
2. People must have access to adequate and affordable places to live.
3. People must have the opportunity to build more secure and resilient futures and to maintain or enhance their wellbeing.
4. Socioeconomic inequalities must not be exacerbated and need not be preserved.
5. Risks from climate-related and other natural hazards should be reduced.
6. The rights and interests of Māori must be respected and given effect.
7. Environmental standards must be met, and ecological values must be protected.
8. Opportunities for improvement should be realised (e.g., in relation to housing, infrastructure, transport, and urban form).

Principles to achieve the desired outcomes:

1. Be informed by the best available evidence and expert advice.
2. Reflect important community values and aspirations.
3. Take a proactive and precautionary (i.e., cautious and risk-averse) approach to the timing and pace of relocation, despite the absence of perfect information.
4. Provide certain, timely, and predictable outcomes.
5. Be adaptable to meet the pace, scale, and variable circumstances of relocation.
6. Be simple to operate and minimise compliance costs.
7. Minimise moral hazard and other perverse incentives.
8. Give effect to te Tiriti o Waitangi (te Tiriti) and honour the intent of settlements.
9. Comply with the New Zealand Bill of Rights Act 1990 where applicable.
10. Maintain the sound functioning of markets (e.g., in relation to property, construction, insurance, and banking).

The specific recommendations of the EWG—which this report sees as a sensible starting point for further democratic debate—are as follows:

- Residential buildings that are the principal place of residence should be compensated based on market value, with a cap of $300,000.
- Separate compensation for land should be provided on a similar basis as under the Natural Hazards Insurance Act.
- Payment for commercial properties would be based on need.
- Payment for residential rental properties would be less than for owner-occupied properties.
- No compensation should be provided for second homes.
- Full compensation should be provided for not-for-profits.
- For iwi, hapū, and Māori property, compensation would be determined case by case via negotiations, but with a starting point of full compensation.

The EWG (*2023*) recommended that central government cover the compensation costs under the proposed model. This recommendation reflects the reality that climate change is a national issue, that it impacts people regardless of personal 'fault', and that losses are not distributed evenly across the country. In addition, many (or most) local councils would be unable to afford such a scheme.

The EWG's proposals are well reasoned and make an excellent basis for further discussions on how managed retreat should be undertaken and compensated. Agreeing a final model through democratic debate must be a priority (*Boston, 2024*).

Flood damaged housing estate surrounded by mounds of silt from Cyclone Gabrielle, Eskdale, Napier, Hawkes Bay



CHAPTER 3 RECOMMENDATIONS

INVEST IN CLIMATE RISK MITIGATION AND ADAPTATION TO KEEP RESIDENTIAL INSURANCE PREMIUMS ACCESSIBLE AND AFFORDABLE FOR LONGER.

- Ensure insurance market signals (such as the move to risk-based pricing) complement, rather than lead, the drive to adapt to climate change. The responsibility for deciding where people can live should rest with democratically elected officials.
- Avoid further developments in flood-risk areas that exceed agreed risk tolerances, for example by:
  - Giving councils greater powers to decline land-use consents in areas vulnerable to flooding and other climate change impacts. These powers could be set out within the new national direction of natural hazards.
  - Investigating options for insurance companies to provide input into consenting processes for new housing developments, as is the case in Switzerland, for example.
- Urgently invest in proactive flood-risk mitigation at the local level—though only where such mitigation is cost effective. Prioritise nature-based solutions and sponge cities approaches for flood mitigation in cities where appropriate.
- Prioritise flood-resilient design for new and existing homes in areas that may be vulnerable to flooding.
- Develop and agree a Climate Change Adaptation Act or equivalent, which sets out clear roles, responsibilities, and decision-making processes at national and local levels for how adaptation will be planned and implemented.
- Develop and agree a funding framework for adaptation, to provide clarity on how the full range of adaptation costs will be shared and met. Urgently provide funding for adaptation initiatives, for example through the establishment of one or several targeted national adaptation funds.
- Agree on national standards for natural hazard and climate change risk tolerance to:
  - Establish thresholds for acceptable community-level and property-level risk, based on the best available evidence.
  - Clarify actions that should be taken when property risk thresholds are exceeded (whether physical risk mitigation measures, planned relocation, or other action).
- Agree a framework and a funding model for planned relocation, as proposed by the Expert Working Group on Managed Retreat (*2023*). Consider planned relocation for homes in risky areas where other types of intervention are not cost-effective or technically viable.



CHAPTER 4

Some interventions in the insurance market to consider

SUBSIDISING THOSE WHO CANNOT AFFORD INSURANCE SHOWS PROMISE

AS DISCUSSED IN PREVIOUS CHAPTERS, RESIDENTIAL INSURANCE UPTAKE RATES ARE LIKELY TO DECREASE OVER TIME. THIS PRESENTS A FISCAL RISK TO THE CROWN, AS WELL AS PERSONAL SOCIAL AND ECONOMIC RISK TO THE INDIVIDUALS AND COMMUNITIES CONCERNED—SOME OF WHOM WOULD BE AT RISK OF FALLING INTO POVERTY SHOULD AN UNINSURED DISASTER OCCUR.

This report recommends further detailed analysis be undertaken into the costs and benefits of directly subsidising (and potentially means-testing) homeowners in high-risk areas to maintain high insurance penetration in the country. Subsidies may be a useful tool to support those homeowners who are faced with higher-than-average premiums, and /or those with lower-than-average incomes.

However, any such scheme must be designed so it does not subsidise or encourage homeowners to tolerate unreasonable or unsustainable levels of risk (and the corresponding costs of those risks). It will also be important to ensure the subsidies end up in the hands of those who need them, and do not inadvertently entrench inequities in the system (by subsidising major property owners, for example).

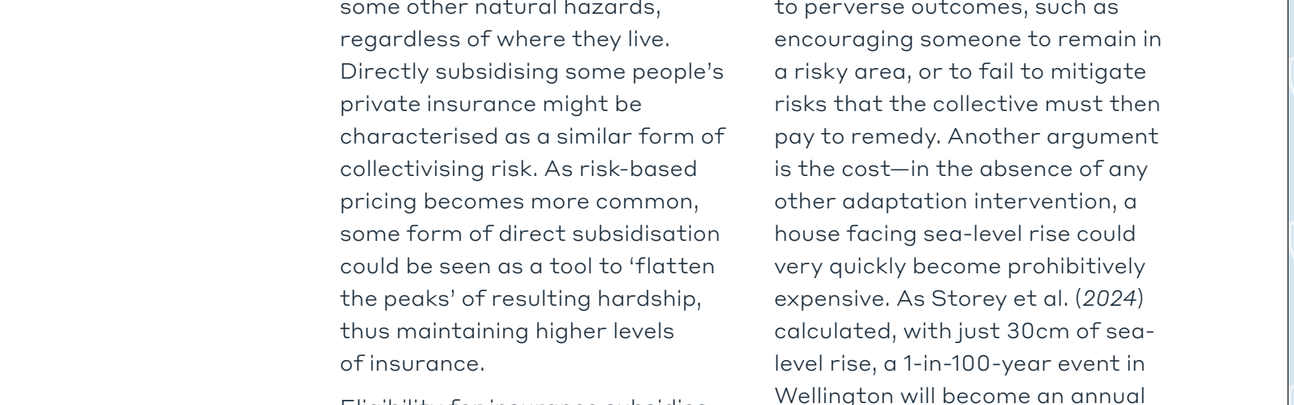
Aotearoa New Zealand has a long tradition of supporting people with the cost of essential services where there are affordability issues. Examples include winter energy payments and subsidies for health care through Community Service Cards. The Government also pays for many services centrally, rather than requiring individuals to cover their own costs—examples include hospitals and schools.

The public is already used to indirect subsidisation of natural-hazard risk: the Natural Hazards Commission charges a flat rate to all insured homeowners to cover earthquake risk and some other natural hazards, regardless of where they live. Directly subsidising some people's private insurance might be characterised as a similar form of collectivising risk. As risk-based pricing becomes more common, some form of direct subsidisation could be seen as a tool to 'flatten the peaks' of resulting hardship, thus maintaining higher levels of insurance.

Eligibility for insurance subsidies could be means-tested / based on affordability thresholds, such as those used by the Australian Actuaries Institute (*2022*) (see discussion on page 67). Alternatively, as with winter energy payments, there could be a fixed amount offered annually, with subsidies limited to specified groups such as beneficiaries and those receiving New Zealand Superannuation (*Boston, 2024*). Thought would need to be given to whether less well-off landlords should also be subsidised in some cases, to ensure high premiums are not passed onto tenants.

One of the strongest arguments against direct subsidisation of insurance—as with indirect subsidisation through community-based pricing—is that subsidisation could lead to perverse outcomes, such as encouraging someone to remain in a risky area, or to fail to mitigate risks that the collective must then pay to remedy. Another argument is the cost—in the absence of any other adaptation intervention, a house facing sea-level rise could very quickly become prohibitively expensive. As Storey et al. (*2024*) calculated, with just 30cm of sea-level rise, a 1-in-100-year event in Wellington will become an annual event. A house valued at $500,000 may then face annual expected losses of around $95,000.

That is an extreme scenario. Insurance companies could be expected to withdraw from covering any property well before it faced this level of damages. Homeowners facing these kinds of losses would ideally have been supported to move long since to a safer area.



A robust adaptation framework should ideally inform decision making about which levels of risk are socially tolerable, and which are not, as well as what should be done about it, when, and by whom. In this way, subsidies would only need to be offered on insurance policies where homes have been assessed as meeting pre-agreed risk-tolerance criteria. Owners of properties that do not meet this criterion would be required under the national adaptation framework to mitigate their risk, require their local authority to fulfil any protection obligations they may have under the framework, or move to another location.

In the absence of an adaptation framework, however, modest direct subsidies may not help much to keep prices affordable, while large subsidies would be unlikely to be politically popular.

Subsidising insurance policies could certainly cost a lot, depending on how the model was designed. For example, a subsidy of $1,000 given to 200,000 households would cost $200 million annually (*Boston, interviewed by Stock, 2024*). However, the cost of not subsidising people, and accepting ever lower uptake of insurance over time, may well be significantly more (*Boston, 2024*).

Erosion flood damage in Parnell, Auckland





Cooks Beach, Coromandel Peninsula

A different way to subsidise insurance policies could be for homeowners for whom affordability is an issue to take on cheaper insurance policies with higher excesses—which the government would then help to cover when a claim is made. The government could consider insuring themselves against the chance they could have to subsidise many excesses at once after a major disaster. This may well be a cheaper approach for the Crown than directly subsidising premiums. The impact on insurance premiums would have to be analysed to understand the impact of such a scheme, however.

Offering subsidies on insurance of various kinds would likely be complex to administer and come with high compliance costs. Depending on how high they are, subsidies may also not provide enough incentive for people to insure themselves anyway. Subsidies also will not provide a solution for all protection gaps—it will not help marae access insurance, for example. For this reason, subsidies are likely to be most useful as part of a package of interventions (*Boston, 2024*).

CAPPING PRIVATE INSURANCE PREMIUMS MAY BE PROBLEMATIC

As with subsidies, capping premiums may be one way to ensure insurance prices do not rise too high, too quickly, thus encouraging more people to remain insured. Capping prices would have the effect of somewhat muting the impact of risk-based pricing, while not removing it entirely. As an example of how the policy may work, insurance companies could be forbidden to charge more than (let's say) twice the amount in flood premiums they would charge for another house of similar size in a less risky area.

Should premiums be capped, all other policyholders would in effect be cross-subsidising homeowners in risky areas, regardless of how well-off they themselves were, and how well-off the subsidised homeowners were. This differs from the example of subsidies, which would likely be funded through general taxation (which is progressive). Offering subsidies may be a more equitable option than capping premiums because a greater part of the funding burden falls to those who can better afford it.

As is the case for subsidies, a robust adaptation framework would need to be in place for such a policy to work efficiently, and for it to be justified and publicly acceptable—if not, the collective would likely be forced to subsidise risks that could otherwise be mitigated through property-level protections. The collective would also in effect be subsidising those who are perfectly well able to afford high premiums.

Finally, one downside of capping premiums is that enforcing such a policy may require insurance companies to provide commercially sensitive pricing information to the government. That is unlikely to be popular. Insurance companies would need to be on board for the scheme to work—otherwise they may opt to leave the market entirely.

On balance, capping premiums appears to be a less promising approach than applying subsidies for those who need them. Again, it could be considered as part of a package of responses though—perhaps on a short-term basis during planned relocations, for example.

REQUIRING MANDATORY HOUSE INSURANCE IS LESS PROMISING

Making property insurance compulsory for all (or even just some) residential properties would, on the face of it, be a straightforward way to ensure Aotearoa New Zealand continues to enjoy the benefits of high residential insurance penetration.

There could be several ways to attempt to mandate insurance, including:

- Requiring every homeowner to purchase a residential policy.
- Requiring only some homeowners—such as those facing certain levels of flood risk, or those facing the prospect of planned relocation—to purchase residential policies.
- Requiring homeowners (some, or all) just to purchase policies that cover specific perils (such as flood risk).
- Requiring private insurers to offer insurance to all comers, whether they wish to or not.

None of these options are straightforward, and all would likely necessitate a comprehensive overhaul of the current insurance model (*Boston, 2024*). Schwarze & Wagner (*2007*) note that compulsory purchase is almost always linked with an obligation to the insurer to offer such insurance to interested buyers as long as they fulfil specific conditions.

In Switzerland, for example, most cantons (regions) have public insurance schemes, which operate as a monopoly and make natural-hazard insurance mandatory across the whole population at a fixed rate (*Jarzabkowski et al., 2023*). In the remaining cantons, private insurers are also obliged under statute to include natural-hazard protection with all residential policies issued (*Schwarze & Wagner, 2007)*.

In Aotearoa New Zealand, property insurance is not legally mandated (though banks do require proof of insurance when issuing a mortgage). Once a residential insurance policy is purchased from a private insurer, natural-hazard cover through NHC Toka Tū Ake becomes a compulsory addition. Many other countries, including France and Spain, also offer natural-hazard insurance as a compulsory addition to general policies.

A strong argument against expanding the concept of mandatory insurance within the current market framework is that it would likely require detailed and wide-ranging regulation. For example, there would need to be controls on pricing, to ensure everyone could afford to purchase insurance, and a public insurer (such as NHC Toka Tū Ake perhaps) would likely be required to insure any homes that insurance companies were not willing to cover (*Boston, 2024*).

One of the biggest issues with this approach may well arise around compliance. If a homeowner could not afford insurance cover, would they be forced to give up their home (*Boston, 2024*)? A final major issue is that, unless compelled under statute, insurers will likely not be prepared to offer residential insurance cover to all homeowners—some will come with risk profiles that make them commercially unattractive. If, on the other hand, insurers were legally obliged to accept all comers, this compulsion could challenge their 'risk appetite' and threaten their financial sustainability.

This happened in California, where companies were required to offer earthquake cover with home insurance. After a large earthquake in 1994, insurers realised they had been substantially under-pricing that risk. As they were not permitted to offer any insurance unless they also offered earthquake cover, the industry simply withdrew from the state (*Jarzabkowski et al., 2023*). California was forced to respond by establishing the California Earthquake Authority, a publicly managed, not-for-profit Protection Gap Entity (PGE) focused specifically on earthquake cover, with a remit to "get the residential property insurance market back" (*Jarzabkowski et al., 2023*).

Boston (*2024*) concludes that mandatory insurance policies would be highly contested, problematic, and that, overall, establishing a public PGE would likely be preferable to enforcing such a scheme.



FURTHER INVESTIGATE OTHER PROMISING CHANGES TO THE REGULATION AND SUPERVISION OF THE INSURANCE SECTOR

In addition to the options outlined above, there are several other policy areas or options that warrant further investigation. These include potential improvements to the current system that could help soften the blow of predicted negative developments in the insurance market. These are outlined here as areas for future policy development.

Investigate standardising insurance contracts

Interviewees for this report noted that insurance companies often manage many dozens (sometimes hundreds) of differently worded residential insurance contracts. Insurance contracts are complicated and most policy holders do not read them in detail. The Insurance & Financial Services Ombudsman (*2024*) notes that: "every year we see complaints from people disappointed that their insurance isn't covering them for what they thought it would".



In Canada, the government-established Task Force on Flood Insurance and Relocation (*2022*) summarised the importance of clear and standardised insurance contracts, noting especially that people have different abilities in English and different levels of financial and legal literacy:

> "Comprehensive flood insurance that covers all water infiltration (e.g., overland flooding, seepage, sewer back-up) could help make insurance policies more clear both pre- and post-event, by alleviating ambiguity and complexity around coverage amounts or responsibility for flooding based on its source and cause. Given that some high-risk areas tend to include higher than average proportions of people with lower incomes, Indigenous peoples, elderly residents, people with physical or mental disabilities, and people living alone, clear policy language can help to ensure adequate coverage for diverse populations."

Some interviewees for this report similarly suggested that standardising contracts—for example by requiring insurance companies to provide a standardised tick sheet setting out what is covered, and not covered—or by requiring consistent language be used in policies could provide much-needed clarity to consumers and would enable them to easily compare across different products. In Australia, a nationally standardised definition of flood, adopted by regulation, ensures clarity about what is included and what is excluded in all flood-insurance policies—a similar policy might be adopted here.

Consider making it easier to compare premium prices

In Aotearoa New Zealand, commentators including Consumer NZ have highlighted that it is not as easy to compare insurance providers and prices here as it is in some other countries, and that "there is a resulting lack of switching between insurance companies" (*Stevenson, 2023*).

Online price comparison sites are limited here. For them to be successful, companies need to be willing to provide their pricing data. A paper released by the Ministry of Business, Innovation and Employment (*2019*) noted that general insurers had actively discouraged the development of comparison websites, "suggesting that regulation might be required before a general insurance comparison website could be established".

In other jurisdictions there is a legal requirement to disclose relevant information to allow online comparisons, and comparison sites to function (*Stevenson, 2023*). A similar law may be worth investigating here, especially given the Aotearoa New Zealand insurance market is heavily concentrated in a few companies.

Regularly monitor insurer conduct and value for money in insurance cover

A review of the insurance sector by the Financial Markets Authority in 2021 noted shortfalls in some insurer conduct and culture. In particular, the review found insurers were not putting in place systems and processes to ensure consumers were treated fairly, with some insurers demonstrating that they did not see conduct and culture as relevant to their organisation.

The review led to the introduction of the Financial Markets (Conduct of Institutions) Amendment Act 2022 (the CoFI Act) (*FMA, 2024*). The Act aims to ensure financial institutions treat consumers 'fairly', including by requiring those institutions to establish, implement, maintain, and comply with effective fair conduct programmes. The scheme commences on 31 March 2025, but will require ongoing monitoring to track how insurers comply.

Similarly, regularly monitoring 'value-for-money' in residential insurance contracts may be worthwhile, especially as climate change impacts begin to create significant changes in the market.



Consider addressing transparency of decision making around risk-based pricing

The media recently reported that some residential policy holders have been surprised and confused about recent steep rises to their premiums, but have been unable to get clear explanations of how increases have been calculated (*Newton, 2024b*).

This raises questions about what level of transparency consumers are entitled to around how premium prices for their properties are set (for example, which hazard is costing them the most, and what the specific risk is). Customers wishing to reduce the price of premiums by taking remedial action may also struggle to get clarity about how to impact their premiums positively. Perhaps even more importantly, customers who are denied cover at all will likely wish to understand exactly why that is, and whether they can do anything about it.

Again, this is a tricky policy area. Requiring more transparency from insurers would likely oblige them to divulge more about their pricing models than they would otherwise wish to, with potential commercial ramifications. It may be that any policy recommendations in this space would have to be limited to establishing guidelines for the type of information insurers must share to qualify as acting 'fairly' (under the CoFI Act for example).

Anticipate that insurers will begin to 'unbundle' specific perils from residential policies

As noted earlier in this report, insurers in Aotearoa New Zealand will likely move at some point to 'unbundle' specific risks from what have previously been offered as comprehensive residential insurance policies. For example, they may continue to offer insurance for fire damage, but not for flood. This may happen only in certain risk-prone locations, or across the whole country.

Countries take different approaches to how they handle this issue, as set out here by Boston (*2024*):

> “In some jurisdictions, such as Denmark, France, Iceland, Norway, and Switzerland, flood insurance is typically an integral part of residential (and other) property insurance policies and in some cases is compulsory. By contrast, in other countries, such as Canada and the United States, standard residential property insurance does not include (or only sometimes includes) damage from flooding or storm surges, because such risks are regarded as too high by insurers. As a result, flood insurance is either unavailable or is provided in one way or another by federal or state governments.”

Bundling has the advantage of contributing to affordability and availability, because it can help spread the cost of all types of hazard more evenly among a bigger number of policyholders (who cannot opt out of specific types of cover).

Removing some types of peril from insurance policies may leave people making the choice not to take out insurance against the risk they are most vulnerable to, as that will be the most expensive component of their insurance. This trend will not be helped by the fact that humans are famously bad at assessing risk (*Kahneman & Tversky, 2013*). Unbundling policies could also increase confusion among policyholders about what they are covered for, and what they are not covered for, leaving them less resilient than they expect. These factors combined could cause a significant reduction in essential coverage.

There are limited advantages to unbundling, though. It can help ensure insurance (and reinsurance) companies remain financially viable, and keep them offering (limited) insurance in locations they may otherwise withdraw from. A person who is no longer able to get flood insurance, for example, would still be able to find cover for fire and other types of damage. Unbundling can also increase transparency in pricing, by allowing customers to see what each component of their policy costs.

Given unbundling in some form is likely in the near future in Aotearoa New Zealand (*Tower, 2023*), it will be important to have a response ready. The government could move to legislate against it, for example. Alternatively, it might allow unbundling to happen, but recognise that some form of public protection for certain hazards may need to be established, to fill any resulting protection gaps. Either way, consideration must soon be given to the options.

Ensure the market is, and remains, sufficiently competitive

As insurance companies withdraw from some risky areas entirely, homeowners will be left with fewer and fewer insurance companies to choose from, or none. Aotearoa New Zealand already has a small insurance market, largely dominated by the two main players, IAG and Suncorp, and ensuring the market remains competitive will be increasingly important to keep prices down.

A market study led by the Commerce Commission with delegated powers of inquiry would be the best way to gain a comprehensive understanding of insurance pricing and competition (*Treasury, 2022a*).

September 1988 Grey River flood, Greymouth
Image by John Charlton, CC BY-SA 4.0, via Wikimedia Commons



One factor that likely deters new entrants to the insurance market is that Aotearoa New Zealand has particularly high solvency requirements:

> "Our risk appetite is set out in the standard, and outlines that we aim to ensure insurers' capital is adequate for contingencies in 199 years out of 200 for most risks and 999 out of 1000 years for seismic risk."

The high solvency requirements push up premiums but are likely justified by the country's high level of natural-hazard risk. They ensure the country remains resilient to a major disaster.

There are several tools that could increase competition and encourage new entrants to the insurance market. For example, the government could consider reducing solvency requirements temporarily for new entrants to the market, to allow them to gain a foothold. Alternatively, new entrants could be allowed to count reinsurance cover towards their solvency requirements for a certain period. Or the government could establish a state-owned insurance company or expand the role of NHC Toka Tū Ake (discussed further in Chapter 5).

Interior of a house destroyed by flooding from Cyclone Gabrielle, Eskdale, Napier, Hawkes Bay



CONSIDER WHETHER BANKS SHOULD HAVE A BIGGER ROLE TO PLAY

Several interviewees for this report noted that banks might play a bigger role in establishing the long-term risks faced by a property when they are preparing to issue a long-term mortgage. Banks will often issue a 30-year mortgage, with a contractual condition that the property remains insured throughout the full 30 years. However, there are no requirements for banks to first establish that the property is likely to be insurable for that whole period.

In a recent review, the Reserve Bank (*2024*), noted:

> "Banks need to be conscious of the ongoing insurability of the properties against which they lend. This will require more scrutiny in their lending decisions than currently. Banks also need to pay closer attention to insurance coverage given the risks of underinsurance for high-risk properties over time in the face of rising premiums."

As an example of how this could play out in the real world, a bank could issue a mortgage for a property that then floods soon after. If insurers withdraw from that property or neighbourhood as a result, the bank would be entitled to call the mortgage in and the owner would likely have to sell the house. The property would inevitably sell for well under its previous market value (due to being uninsurable), leaving the homeowner without a house but still paying back the mortgage. Sadly, some of those affected by the severe North Island flooding in 2024 experienced a situation like this and ended up in negative equity after property buy-outs did not cover their full value (*Ternouth, 2024*).

PARAMETRIC INSURANCE—A GOOD OPTION TO IMPROVE COMMUNITY RESILIENCE?

As the technology available to insurers has become more sophisticated, non-traditional insurance products have begun to emerge. Parametric insurance is one example, in which a policy holder receives a payout only when a predefined event occurs within certain parameters. To receive the payment, no demonstrable damage to physical assets must have occurred (*Swiss Re, 2023*). As one example, the Pacific Insurance and Climate Adaptation Programme offers 'high wind speed cover', meaning that policyholders receive a payout when a pre-agreed threshold for wind speeds has been surpassed (*Pritesh, 2024*).

The main advantage parametric insurance has over traditional insurance policies is its efficiency and flexibility. Because payments are made based on an external 'trigger' event, the insured party receives their settlement much faster than they would if damages needed to be assessed. However, there is a trade-off: the payout will often not match the losses incurred. Where the pre-agreed event parameters have not been met, the policyholder is left with nothing, even if major damages have been sustained to the property (*Sengupta & Kousky, 2020*). This may come as a shock to less discerning policyholders who have not fully understood how parametric insurance works. For these reasons, parametric insurance should not be considered as a replacement for standard individual residential policies.

Parametric insurance may however present a promising option for building community resilience. In New York City, a 'community-based' parametric insurance programme was successfully piloted to improve outcomes for flood recovery, by rapidly allocating funds post-disaster to low and middle-income households (*Kousky, 2023*).

In Aotearoa New Zealand, a local authority or iwi could consider taking out parametric cover to help underinsured communities weather the transition period after a disaster, allocating the payouts where the need is greatest.

CHAPTER 4 RECOMMENDATIONS

CONSIDER INTERVENTIONS IN THE RESIDENTIAL INSURANCE AND FINANCIAL MARKETS TO MAINTAIN HIGH LEVELS OF INSURANCE PENETRATION.

- Consider subsidising premiums for those who struggle to afford them, as part of a package of responses. This will be most effective within a robust adaptation framework that identifies tolerable risk thresholds for properties and provides public assistance for planned relocation where appropriate.
- Further investigate the viability of a range of promising policy options, including:
  - Standardising and simplifying insurance contracts to make it clearer what is covered and what is not.
  - Monitoring insurer conduct and value for money in insurance contracts.
  - Agreeing on the level of transparency that is expected from insurance companies about how they make decisions affecting insurance accessibility and affordability. Insurers could for example be required to make available the hazard information and data used by them to inform a risk-based premium increase or discount on a homeowner's policy.
  - Monitoring and promoting competition in the insurance market.
- Develop policies to respond to the future likely 'unbundling' of perils from insurance contracts.
- Consider requiring banks and other financial institutions to undertake due diligence on long-term insurability of properties when granting mortgages.



CHAPTER 5

Does Aotearoa New Zealand need a public insurance scheme for floods?

A PUBLIC INSURANCE SCHEME MAY BE REQUIRED TO FILL UNDESIRABLE GAPS IN COVERAGE

WHEN A SPECIFIC PERIL IS, OR IS LIKELY TO BECOME, UNINSURABLE, A GOVERNMENT CAN DECIDE TO FORM A PROTECTION GAP ENTITY (PGE). A PGE IS A NOT-FOR-PROFIT INSURANCE ENTITY BROUGHT ABOUT THROUGH GOVERNMENT LEGISLATION, TO PROVIDE INSURANCE PROTECTION TO FILL THE EXISTING PROTECTION GAP.

NHC Toka Tū Ake is an example of a PGE, as are the UK scheme Flood RE and the French Catastrophes Naturelles (CatNat). In short, PGEs "enable insurance provision under some mix of government and insurance industry interaction" (*Jarzabkowski et al., 2023*).

Chapter 2 highlighted several current or expected future protection gaps in this country. These include:

- An expected steep rise in insurance premiums in flood-prone areas in the short term (probably within several years)—as well as a gradual rise in premiums across the country in the longer term—resulting in premiums becoming increasingly unaffordable and growing levels of under- or non-insurance.
- Partial and full insurance retreat from some areas within a decade.
- An increasing number of homes made unliveable by sea-level rise (which is not covered by insurance).
- A gap likely arising in insurability between the announcement of a process of planned relocation or a risk mitigation project (such as building a sea wall for example), and its completion.

- The future expected ‘unbundling’ of some perils (such as flooding) from some, or all, insurance contracts, resulting in underinsurance for those perils.
- Temporary or permanent insurance retreat from an area after a major disaster, as happened for Category 3 designated properties after the Auckland Anniversary Day flooding and Cyclone Gabrielle.
- Increasing intensity of weather events leading to more houses being ‘red stickered’ due to floods, coastal erosion, and landslips. Such houses are sometimes not covered, or only partially covered, by insurance payouts because the house itself has remained standing, even though the land is no longer safe to inhabit.

This report argues that establishing a new PGE, or enhancing the function of NHC Toka Tū Ake, to cover flooding could help fill some of those expected gaps, enabling more homeowners to remain protected, for longer. This is because even the most promising policy interventions discussed in the previous chapter—which included subsidising premiums and making various changes to how the insurance market is supervised and regulated—will not address partial and full withdrawal of coverage by insurance companies of the kind set out above.

A CANADIAN ANALYSIS SUGGESTS PUBLIC INSURANCE SCHEMES CAN BE MORE EFFECTIVE AND GIVE BETTER VALUE FOR MONEY THAN OTHER INTERVENTIONS

In 2022, Canada’s Task Force on Flood Insurance and Relocation (*2022*) analysed several different options for interventions in the market to help with flood protection, including subsidising those at higher risk (with lower incomes) and requiring mandatory coverage for all. The taskforce concluded the two options that would likely afford the highest rates of residential coverage (for both those at high risk of flooding, and those at lower risk) were:

- Establishing a public insurer, where a Crown corporation would underwrite comprehensive flood insurance for all—not just those at higher risk. Both offer and purchase of flood insurance would be mandatory in the scenario they tested, and premiums would be risk-based, but with an income subsidy to improve affordability.
- Establishing a public reinsurer. The provision of flood insurance would occur in two ‘layers’ in this model: the first layer would provide the homeowner the option to purchase insurance at the full risk-based price from the private market, which must offer coverage up to a modest limit ($25,000); the second layer would comprise the mandatory purchase of flood insurance above this coverage limit up to a high limit ($300,000) from the insurance industry. The Crown corporation would sell subsidised reinsurance to private insurers, and reimburse insurers for losses covered in the second layer. For the mandatory element of the cover, there would be a premium cap and subsidies for low-income homeowners.

The taskforce calculated that these two options, both of which require a public protection gap entity to be created, would lead to higher insurance coverage overall than lesser interventions in the insurance market, such as capping premiums and offering subsidies. While the protection gap options would cost more, they found this would be offset by lower rates of ‘residual risk’ in the system, as a higher proportion of homeowners would be covered at all risk levels.

In Aotearoa New Zealand, the percentage of people facing flood risks and the current rate of insurance penetration will differ from that of Canada. The scenarios tested by the taskforce may also not be the preferred models in Aotearoa New Zealand. Nevertheless, the Canadian analysis and calculations are useful, because they demonstrate how choosing a more expensive (and more interventionist) scheme might actually save money overall, and therefore offer the best way forward from a long-term societal perspective.

Interestingly, the Canadian Government appears to have ignored the taskforce’s advice and instead allocated CA$31.7 million over three years to implement a flood-insurance programme, backed by the federal treasury, to insure high-risk homes only. Premiums will be subsidised for some households.



PROTECTION GAP ENTITIES COME IN MANY FORMS

There are several options for how a Protection Gap Entity might be set up here. There are multiple international examples, covering different risks, and each operates differently from one another. Aotearoa New Zealand can learn from the experiences of other countries that cover flood hazards, while also noting that we already have a successful PGE (NHC Toka Tū Ake) covering other types of natural hazards.

NHC Toka Tū Ake is admired internationally and has brought the country through several major disasters. The existing structure could potentially be extended or altered to accommodate existing and future protection gaps. Alternatively, a brand-new entity could be created. The report focuses here on residential flood-hazard damage, as the most pressing need to address, but damage from other hazards, such as erosion, slips, and wildfires could also be included. Some potential options include:

1. A public insurer (whether NHC Toka Tū Ake or another entity) could offer flood protection in limited circumstances to fill protection gaps. For example, it might offer insurance to people at high risk of regular small-scale flooding (at a level that had not yet reached a risk tolerance threshold), or who are facing a process of planned relocation that has not yet happened. Premiums might be paid directly to the public insurer, or collected via private insurers.
2. A public insurer (whether NHC Toka Tū Ake or another entity) could offer flood protection for all homeowners—in a similar way that NHC currently offers earthquake and other cover—with premiums collected by private insurers.
3. A new publicly mandated but privately run insurer could be established to cover properties at high risk of flooding, as with Flood Re in the United Kingdom (discussed further on page 123). Flood Re is a not-for-profit organisation, owned and managed by the insurance industry. Insurers pay into the scheme based on their share of the residential property market, and use Flood Re to underwrite the flood-risk part of high-risk insurance policies.
4. A public insurer could be established to take on losses from floods or other hazards over a certain cap. Private insurers currently insure all flood-damage losses. In this scenario, a PGE would take on any losses that reach and exceed a predetermined 'cap'. Note that this is the reverse of how NHC operates—it currently takes on first loss damages from most natural hazards (but not flooding), up to a cap of $300,000. In this scenario it would be taking on the higher, more volatile risks above the cap, saving insurance companies reinsurance costs. NHC could be adapted to take on this role, or a new agency set up.
5. A public reinsurer could be established to provide cheaper reinsurance to insurers, with the goal of reducing premiums for homeowners.

Note that these options are not necessarily mutually exclusive. The French system includes both a public insurer and a public reinsurer, for example (see page 131 for more on this).

Once a decision is made on the form the PGE should take, there would be many further important questions to decide, including:

- Who may access the cover—anyone in a flood zone, or only those at the highest level of risk? Or all policyholders, irrespective of whether they are in a flood zone?
- How should levies be set—at a flat rate per dollar of insurance cover, as earthquake levies are set under NHC? Or partly/fully based on actual risk?
- Should levies be capped? If so, should this cap be means-tested? And should subsidies be part of the scheme? As an example, the current cap for NHC levies is $480 per property. If NHC were to take on flood cover, the levy would need to be much higher, if shared equally among all policy holders.
- Should cover be mandatory for all flood-prone properties—or for all homeowners regardless of flood risk?
- Should protection be temporary or permanent for houses that are at increasing risk? If temporary, what will happen when the cover ends? Will planned relocation be enforced?
- Should the scheme be permanent, or phase out after a certain period? Flood Re in the UK is due to end in 2039, for example—by which point the government expects people will be ready to accept full risk-based pricing (this seems overly hopeful).
- How will the scheme incentivise adaptation measures and risk resilience, and how will it minimise moral hazard?
- Should the scheme be limited to residential properties, as in the UK, or extended beyond residential properties to include all commercial, industrial, and other properties, as in France?

THERE ARE SEVERAL POTENTIAL ADVANTAGES TO PGES

The main arguments for and against further intervention in the insurance market were discussed at length in Chapter 2 and apply equally to the creation of PGEs. In summary, high insurance penetration is important to maintain the financial and societal resilience of individuals, communities, and the country as a whole. There are also important issues of equity to consider: allowing insurance coverage rates to dwindle would contribute to growing social inequities and greatly hamper adaptation efforts, such as planned relocation (*Boston, 2024*).

Letting climate change take its course and leaving homeowners to fend for themselves is also not a good political strategy. After large natural-hazard events in the past, governments and local authorities have felt compelled to support affected communities from rates and taxpayer funds and this is unlikely to change in the future. It is a natural human instinct to want to help after a disaster.

One strong advantage of PGEs in comparison to relying solely on the private insurance market, is that their public function allows them to fulfil several roles in addition to offering insurance or reinsurance. For example, Middleton (*2024*) proposes an extended role for NHC in bringing together a coordinated approach to mitigating and limiting future climate-related risks. Such roles may include:

- A research and public education function.
- A responsibility to prevent development in at-risk areas—for example by being involved in consent processes for significant developments.
- Funding or co-funding some protective and defensive structures (but only if strict criteria are met).
- Partially funding the cost of, and compensation for, planned relocation.
- Undertaking a regulatory role in relation to private insurers, such as requiring standard contracts for some types of coverage.

Taking a contrary view, if a new PGE were to be established to take on flood hazards (or the role of NHC extended to cover floods), but a well-designed adaptation framework remained lacking, the cost of such a scheme could be untenable. There will need to be very strict rules about the level of risk the scheme would be willing, and able, to tolerate, so costs do not become too high. Because a public insurance scheme inevitably requires some subsidisation of risk, the government would have to be clear what level of subsidy is acceptable, and have good scientific and cultural processes to determine where agreed risk thresholds have been exceeded.

Similarly, there will need to be careful consideration of how to avoid perverse outcomes—such as people building in risky areas, believing they will be subsidised in the future. In setting up a PGE, a key priority would be to make sure the scheme does not repeat mistakes of other countries, which have been shown to lead to poor outcomes. The Flood Re scheme, discussed below, provides useful examples of some policy choices to avoid.





Flooded Thames at Wallingford, 2012
Image by Bill Nicholls, CC BY-SA 2.0, via Wikimedia Commons

Case Study: Flood Re: The UK's response to high premiums and insurance retreat

As in Aotearoa New Zealand, the take-up rate for residential property insurance in the United Kingdom is high (around 95%), and typically includes cover for floods (*Surminski, 2018*).

During the early years of this century, property owners in flood-prone areas of the UK were faced with rising insurance premiums, along with an increasing prospect of insurance retreat. In response, the insurance industry, in collaboration with the UK Government, developed a subsidised reinsurance scheme for residential properties known as 'Flood Re' (short for 'flood reinsurance') (*Flood Re, 2024; Jarzabkowski et al., 2023; Surminski, 2018*).

Flood Re is a not-for-profit organisation, owned and managed by the insurance industry, with two main aims. The first is to make flood insurance more affordable, and thus more widely available for residential properties in locations experiencing significant flood risk (i.e., with a 1-in-75-year probability of flooding). Non-residential properties are not covered. Second, the scheme aims to manage a transition to risk-reflective insurance premiums for at-risk properties. To that end the scheme is supposed to terminate in 2039.

Under Flood Re, every home insurance company in the UK must contribute to the scheme via a modest levy reflecting their overall market share. In return, insurers can use Flood Re to underwrite the flood-risk part of an insurance policy. When properties insured by the scheme are damaged by floods, insurers oversee the claims process and undertake repair work in the usual manner. They then seek reimbursement from Flood Re for part of the costs incurred.

Currently, Flood Re insures almost 2% of UK homes (around 500,000 dwellings). Homes built after 1 January 2009 are ineligible for cover—an exclusion designed to disincentivise construction in flood-prone areas and limit the scheme's scope.

To enhance the affordability of insurance premiums, subsidies for eligible homeowners reflect local council tax bands rather than being risk-rated. On average, premiums are estimated to cost less than half what they otherwise would do. Without question, the scheme has significantly enhanced the accessibility, availability, and affordability of insurance for flood-prone homes.

Other homeowners, of course, bear the costs. But because Flood Re insures only a small fraction of residential properties, the cross-subsidies paid by all other policyholders are small: insurance premiums are estimated to be about £10.50 higher annually than otherwise (*Elliott, 2022*).

In response to a review of the scheme in 2019, various initiatives were implemented to minimise moral hazard, reduce flooding in high-risk areas, enhance climate-related resilience, and enable the betterment of flood-affected properties. For instance, a 'build back better' scheme was launched in 2021, which enables insurers to subsidise flood-hit customers to install protection measures and claim the funds back from Flood Re (*Flood Re, 2024*).

Flooding in the UK after Storm Eunice, 2022



Limitations and future problems of the scheme

While Flood Re has helped many high-risk properties retain affordable flood-insurance cover, it has not sufficiently encouraged better flood-risk management or efforts to reduce risks. In fact, it has likely disincentivised both public and private risk-reduction measures. Some potential policy responses to several limitations of the scheme for an Aotearoa New Zealand model to follow are set out on this page.

In summary, the Flood Re scheme has several significant limitations but all these can be mitigated to some extent with adequate policy design. If Aotearoa New Zealand were to implement such a scheme, it would be imperative to establish an integrated policy framework with proper coordination of public and private measures, including enhanced risk assessments, better planning, greater investment in flood protection (including nature-based solutions and more effective drainage systems), and provision for the relocation of properties where protection is neither viable nor cost-effective (*Surminski et al., 2023*).

Flood Re model	*Potential policy response for an Aotearoa New Zealand scheme*
By subsiding the insurance of flood-prone homes, including mansions on the banks of major rivers, Flood Re has encouraged people to continue to live and purchase properties in high-risk locations, thereby entrenching risk and inhibiting the adjustment of property prices to reflect changing hazards. In fact, there is evidence that since the introduction of the scheme, there has been an increase in the prices and transaction volumes of flood-prone properties (*Garbarino et al., 2022*).	*An Aotearoa New Zealand scheme could aim to avoid similar problems by developing stricter regulations against building in risky areas, and situating any new scheme within an adaptation strategy. This could, for example, set out a clear risk threshold beyond which homeowners would not be allowed to sell at-risk properties, other than to local authorities.*
The scheme does not appear to have improved awareness of flood risks among the owners of high-risk properties. This is partly because the implicit subsidies received through Flood Re lack transparency to homeowners.	*As discussed above, a public scheme here could take on an educational role. Premiums could be partly subsidised but still reflect some risk-pricing, if that was thought desirable (though this may be complex to implement).*
Unsurprisingly, many properties insured by Flood Re have suffered repeat flood events since 2016: one in ten claims are for repeat flooding (*Flood Re, 2024*), and the average cost of flood-related claims has increased substantially in recent years.	*Policy responses to this issue could include assigning a maximum amount the scheme would pay out through the lifetime of the policy (rather than annually); or establishing rules about how many times a house could be flooded, and/or how seriously, before it would no longer be covered by the scheme, and beyond which planned relocation would be mandatory.*
An important political bargain underpins Flood Re: in exchange for insurers providing affordable cover to flood-prone residential properties, the government is supposed to invest in risk-reduction measures, including new and better flood protection and improved maintenance of existing flood defences. But many observers in the UK believe that the level of public investment has been insufficient. The existence of Flood Re may have instead reduced the political pressure for such investment because many of the properties most at risk of flooding now qualify for compensation in the event of flood damage.	*This demonstrates the need for a clear adaptation strategy to accompany any flood insurance scheme, with legally defined expectations about risk mitigation, and the consequences for not meeting them.*
Flood Re is limited to providing funds for repairs and improved flood resilience; it does not fund relocation, even in circumstances when the cost-effectiveness of repairing a flood-damaged home is questionable. Nor does it fund research on relocation. The scheme may also have reduced the political incentive for central and local governments to give proper attention to the option of planned relocation.	*As above, an Aotearoa New Zealand scheme must be developed alongside a strategy for planned relocation, and further incentivise it in the way payouts are devised. For example, the EWG (2023) proposes that if a house has already sustained a certain amount of damage, future payouts must go to relocating immediately, rather than rebuilding. This would likely have to be made legally enforceable.*
Flood Re is due to be phased out by 2039 with risk reflective premiums applied from then on. But without much greater public investment in adaptation the termination of Flood Re would inevitably result in hundreds of thousands of homes becoming too costly to insure—if insurance is even available. Extending the eligibility criteria after that point however would place ever-greater financial burdens on the owners of low-risk properties.	*A homegrown scheme should recognise that the impacts of climate change will continue, and indeed increase, over time, and not be tempted to set a time limit for cover. Proper attention to risk mitigation must be an essential component of any scheme, to keep premiums more affordable, for longer.*
The fact that homes built after 2009 (roughly 11% of the UK housing stock in 2024) are ineligible for cover by Flood Re has not prevented tens of thousands of homes being built in flood-prone areas.	*The ability to gain insurance could become part of the consenting process for new homes, as discussed in Chapter 4.*

Should a public scheme cover flood risk for all residential policyholders or just those at high risk?

A public insurance scheme could offer cover just to those at high risk of flooding, or it could extend cover to all policyholders. The former option would create less liability for the government, but the latter would have the advantage of distributing costs across a wider pool of policyholders to better promote affordability and accessibility. However, taking such a large portion of the flood insurance function away from private insurers would also constitute a significant intervention in the market and would likely face strong pushback from insurers.

Canada's Task Force on Flood Insurance and Relocation (2022), mentioned above, analysed a model of a public insurance scheme that would cover flood risk for all properties, not just those at high risk—and found it could provide good outcomes for the country in terms of the proportion of homeowners who would be likely to retain insurance coverage as a result of the scheme, and thus the value for money of the scheme overall.

If NHC were to extend its cover of natural hazards to include damage from flood hazards, there may need to be some changes in how it offers cover. This is because of the way the existing cap on both levies and payouts works. Currently, NHC covers the first $300,000 of natural-hazard damage under the scheme, and private insurers cover the losses over that amount. Losses over $300,000 happen rarely, but when they do, this is usually part of a very big loss event. Insurers therefore reinsure themselves against that risk.

Large-scale floods that cause total losses to many people are infrequent, so if this same model (capped at losses up to $300,000) was used for flood risk, private insurers would be limited to covering just a small and volatile (and thus expensive) portion of the risk. Reinsurers may not be willing to support them in insuring just that portion, and there would likely be strong push back. If NHC were to take on flood risk, therefore, it may have to be without the existing cap on payouts. Alternatively, NHC could provide first loss cover for a lesser amount.

> "I consider that the House should explore every possibility in order to provide for the people who are faced with ruin as a result of widespread floods. I consider that these people should have recourse to a fund and be able to ask for payments without feeling that they were under an obligation to anybody."
>
> **Peter Fraser, PM (Parliamentary Debates, 1944)**

NHC (or a new PGE) taking on full flood insurance cover would fundamentally change the current property insurance market, and may negatively impact the broader attractiveness of the market for insurers. The government would therefore need to be sure such an intervention was justified. While it may believe the current market does not require such an intervention while insurance cover is still broadly available, within a few years the situation may well be different.

A 'TOTAL LOSS' OPTION FOR PUBLIC INSURANCE SHOWS PROMISE

Middleton (*2024*) proposes a promising model for public reinsurance in this country that involves a remodel of the existing NHC so that the scheme covers only total loss of a property:

> "The national insurance scheme could be transformed to one that was triggered only by a home being rendered uninhabitable, but which then catered comprehensively for the needs of those made homeless, including the cost of temporary accommodation, until the claimant and family were once more in permanent housing."

Middleton (*2024*) proposes this as an option for all natural hazards currently covered by NHC; however, such a scheme could equally be set up to cover flood hazard damage alone, leaving earthquakes and other natural hazards covered as they currently are.

An appealing aspect of the scheme is that it could in theory be extended to cover other protection gaps that currently exist. For example, it could be designed to address the protection gaps experienced by those whose houses remain undamaged after an event, but are nevertheless 'red stickered', due to landslip or subsidence, for example. It could be extended to cover any kind of land damage that leaves a property unable to be lived in. It could even potentially be extended to cover coastal erosion and inundation from sea-level rise—though these losses would likely be more practically compensated through a national adaptation and funding framework.



Such a scheme could be set up with the objective of getting people back into their homes as quickly as possible following a natural-hazard event. For example, it could be mandated to meet the costs of making homes safe, sanitary, and secure, it could provide an emergency cash allowance for displaced people to reduce stress and hardship, and it could cover temporary accommodation expenses (*Middleton, 2024*). Because the scheme would be public, rather than private, it could be designed with a central goal to protect and enhance public wellbeing after a disaster.

This option may be more appealing for private insurance companies than a public insurer covering first losses for all flood-hazard damage because their risk exposure would be lower. Insurance companies would not be required to reinsure themselves for total losses (which is expensive), but would instead be responsible for the more predictable small-scale losses resulting from less severe flooding.

NHC OR ANOTHER ENTITY COULD ALSO PROVIDE REINSURANCE

Middleton (*2024*) also sets out options for NHC to take on a role as a public reinsurer. A reinsurance scheme in this country could operate either instead of, or addition to, a first loss insurance scheme such as those outlined above, and could either sit within an expanded NHC, or could be run by a whole a new entity. The idea behind a public reinsurance scheme is that it can pass on cost savings, meaning more homeowners can afford insurance (*Middleton, 2024*).

Such a scheme could build on the example of the CCR in France for example, or the Australian Cyclone Pool. Both these reinsurance schemes take some of the risk off private insurance companies operating in the market, and pass on cost savings because—unlike private reinsurers—they are not required to make a profit. They can also use tax exemptions and captive markets (through an element of compulsion) to provide reinsurance to private insurance companies that can be as much as a quarter to a third lower in cost than the commercial market (*Middleton, 2024*).

In the example of the Australian Cyclone Pool, insurance companies transfer their risk for cyclones and cyclone-related flood damage to a reinsurance pool, backed by an annually reinstated $10 billion government guarantee. Insurers are required to reinsure all eligible cyclone losses with the pool. Premiums are expected to be lower than the private market rate both because the pool does not have a profit margin, and because the government guarantee provides an important backstop (*ARPC, 2023*).

Initial results suggest the cyclone reinsurance pool is indeed helping to reduce the price of insurance for some consumers in regions of medium-to-high cyclone risk, although premiums are still very high (*Australian Competition and Consumer Commission, 2024*).

The Australian scheme has less impact on premium prices for those properties at highest risk than a scheme such as Flood Re in the UK, or the CCR scheme in France (discussed below), because it uses risk-based pricing and does not subsidise premiums. Instead, it relies on reducing commercial costs to keep prices low. The impact of the Australian scheme on affordability over time remains to be seen, bearing in mind the risk of damage from cyclones and sea-level rise is likely to increase over the coming decades.

Flooding in West End, Brisbane, Australia





Flooded Seine River, France, 2018

Case Study: The French natural-hazard insurance scheme includes insurance, reinsurance, and risk mitigation

Another possible policy option is the French model, where separate PGEs have been established both to insure, and to reinsure, natural hazard risk.

France established a government-backed natural-hazard insurance scheme, Catastrophes Naturelles (CatNat) in 1982, prompted by the high proportion of properties that could not be insured for natural-hazard damage, especially floods (*Barry, 2023; Jarzabkowski et al., 2023*). The compensation scheme is underpinned by three key policy principles:

1. **National solidarity.** The scheme is founded upon the idea that the risks and costs generated by natural hazards should be shared collectively by all citizens.
2. **Prevention.** Responsibility for risk prevention and risk management lies primarily with local government, which as part of the scheme is required to develop and implement plans to mitigate natural-hazard risk.
3. **Partnership.** The scheme reflects a strong commitment to a partnership between the public and private sectors. Rather than replacing private insurers, it enables them to operate competitively, while also enabling the provision of comprehensive natural-hazard damage cover at affordable rates.

The CatNat scheme entails significant government regulation of the domestic insurance market. While property insurance is voluntary in France, insurers must provide policyholders with comprehensive (i.e., bundled) natural-disaster cover, without limits to their liability. There is substantial cross-subsidisation of higher-risk properties through a standardised premium surcharge, and all property types (i.e., residential, non-residential, etc.) are eligible for natural-hazard damage cover—unlike the cover provided by Flood Re in the UK or NHC.

As a result, insurance cover is almost universally available and relatively affordable in France. Despite the voluntary nature of property insurance, the penetration rate is very high—estimated at around 98%.

The French reinsurance and re-reinsurance schemes

The CatNat scheme is overseen by a state-owned reinsurance company called Caisse Centrale de Reassurance (CCR), which must provide unlimited state-guaranteed reinsurance coverage for all property-related insurance policies against natural-hazard damage. It also has a mandate to undertake research and education on natural hazards and contribute to the prevention of disaster risks.

Insurers may seek reinsurance elsewhere if they prefer, but those who buy from the CCR pay a premium in exchange for unlimited reinsurance cover. When a disaster is formally declared, the CCR covers 50% of the assessed insurance losses, and 100% beyond a specified threshold, which is set annually. In this way, the risks of a natural-hazard event are shared across the private insurance industry and the state, via the CCR.

As in Aotearoa New Zealand, all insurers providing property-related insurance cover are required to offer natural disaster insurance and there is a separate compulsory levy for natural disaster cover, set by the government. However, in France, the CatNat levy is set as a percentage of the overall insurance premium, regardless of natural-hazard risk, and is uncapped. The rate of the levy will increase gradually every year to reflect the growing costs of climate change.

Because premiums are not risk based, risk-reduction goals are primarily achieved through land-use planning, urban planning, and the regulation of building standards (*Barry, 2023*). The CatNat scheme also embraces features designed to reduce the risks of natural disasters and lower the long-term costs of the scheme.

First, as mentioned previously, France also has a standalone fund (the Barnier Fund) to support adaptation measures, which is funded by a levy on property insurance (the equivalent of about €4–€5 per residential property).

Second, to incentivise proper risk-based planning, the CCR can impose higher compulsory excess charges in areas where local councils have failed to develop a risk prevention plan, and several disasters have occurred. Such arrangements appear to have enhanced flood prevention and resilience, but not to the extent needed (see *Guillier, 2017; Poussin et al., 2013*).

Flooded Seine River, France, 2018

Overall assessment of the French scheme

The CatNat scheme is regarded as having been relatively successful in achieving multiple objectives—though it has almost certainly been better at ensuring insurance affordability and availability than in enhancing long-term resilience, adaptation, and vulnerability reduction (*Barraqué & Moatty, 2019; Guillier, 2017*).

One advantage of the French approach is that property owners are not penalised for risks over which they have little or no control—such as older properties in areas that were previously safe but have become increasingly flood prone over time (known as 'legacy risks').

The CatNat scheme has many positive features, including a twin focus on compensation and prevention and the comprehensive bundling of perils. However, it is less clear how it will cope with the challenges posed by rapidly increasing climate-related risks. While the rate of the premium surcharge can be steadily increased so the CCR remains financially sustainable, important adaptation issues will need to be addressed. For example, large-scale relocations in many vulnerable coastal areas will be required, but adequate resources have not been made available to support relocations on such a scale.

Another issue is that second homes in France owned by better-off households have a relatively high exposure to flood risk compared to owner-occupied dwellings, rented properties, and social housing (*Bézy, 2023*). If the main parameters of the current CatNat scheme remain unchanged, this will gradually result in better-off property owners enjoying disproportionate benefits (*Charpentier et al., 2022*).

As in Aotearoa New Zealand, this raises a serious question of fairness: whether it is justified to subsidise the owners of vulnerable second homes on the same basis as the owners of vulnerable homes that are a principal place of residence.



CAN AOTEAROA NEW ZEALAND AFFORD PUBLIC FLOOD INSURANCE?

Premiums for some properties, particularly coastal properties, are expected to skyrocket very quickly thanks to sea-level rise and coastal erosion. This points to the conclusion that it would not be financially feasible to subsidise all at-risk properties indefinitely.

In particular, any public insurance scheme should not be set up in such a way that will allow repeated rebuilds in risky locations. The debt-ridden National Flood Insurance Program (NFIP) in the United States, for example, has been troubled by poor design in this regard—a quarter of all claims paid by NFIP have been for "repetitive loss properties" (*Surminski et al., 2023*)—defined as those that are repeatedly damaged by flooding and qualify for claims of more than US$1,000 in any 10-year period. In one infamous case, a US$69,000 house in Mississippi has flooded 34 times in 32 years, accruing US$663,000 in claims. Allowing repeated rebuilds will push up the premium price for all and is not sustainable.

In all likelihood, some properties would only be able to be covered by public flood insurance for a certain period, after which time the cost involved in supporting them would be too great. Options for mitigating repeated rebuilds include agreeing a maximum sum to be paid out on each property during the lifetime of the coverage, beyond which the property must be relocated, or agreeing a maximum number of separate flood events that will be covered.

EXPLORE OTHER WAYS TO COVER COSTS

This report has focused on how policyholders should best spread the costs of increasing premiums—whether under a model of individual risk-based or community-based premiums. This requires a decision about what is 'fair': to what extent should policyholders facing lower risks be required to subsidise policyholders facing higher risks?

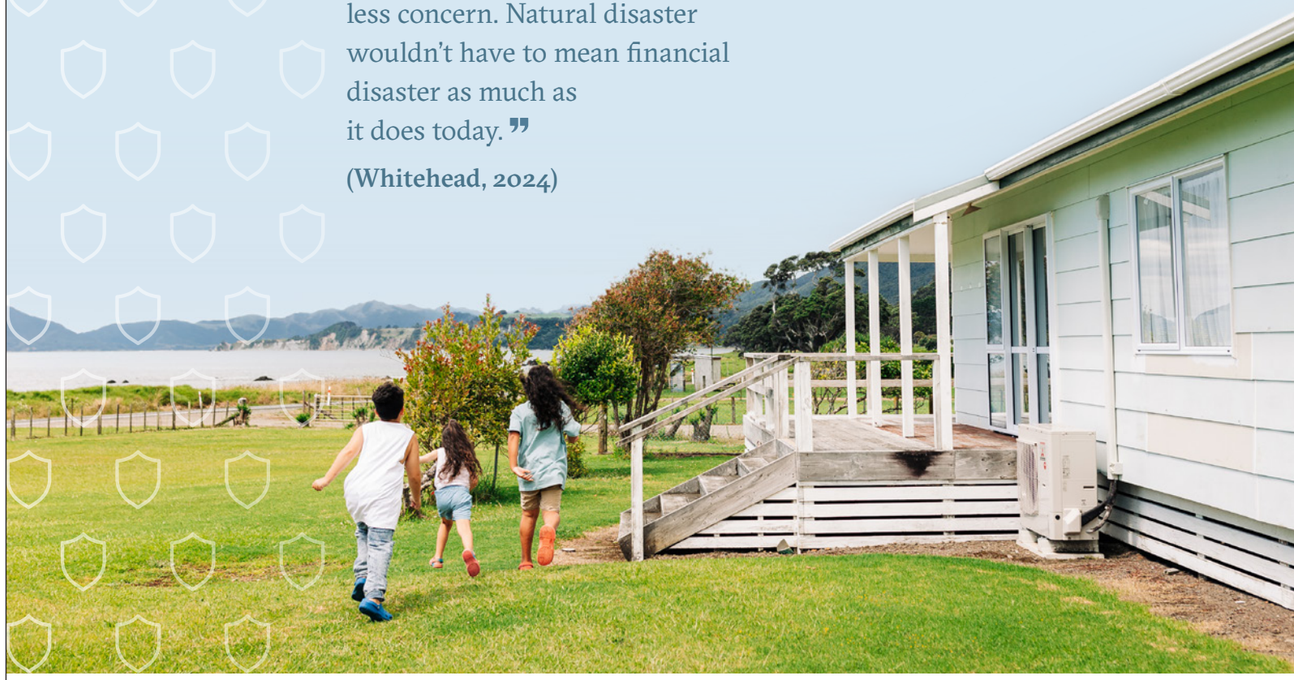
However, thinking seriously about questions of fairness may also require thoughts to turn to those who have contributed (and continue to contribute) more to global warming than others. For example, Oxfam (*Ryder, 2023*) reports that the richest 1% of New Zealanders cause more consumption emissions than the 30% of the population with the lowest incomes combined. Yet it is the New Zealanders with the lowest incomes who will bear the biggest burdens proportionally from increasing premiums. This group will also be the most vulnerable to falling into poverty should they lose an uninsured home.

Treating this matter as an issue of equity may suggest different funding approaches. For example, rather than requiring policyholders to cross-subsidise each other, some of the cost may be funded through taxation. Some forms of taxation are progressive, meaning those who can most afford to pay more are required to do so. The country could explore different taxation options designed to support climate adaptation efforts without disproportionally impacting those least able to pay.

Finally, an important reason Aotearoa New Zealand is so vulnerable to any decrease in insurance penetration is that houses are very expensive by international standards:

> "If New Zealanders wishing to own their homes didn't have to invest as much of their money in housing as they do, the risk of damage to housing might be of less concern. Natural disaster wouldn't have to mean financial disaster as much as it does today."
>
> **(Whitehead, 2024)**

The price of housing is not usually seen as an insurance issue, and it is outside the scope of this report to propose how a reduction in house prices could best be achieved. However, if New Zealanders were in a position to invest more of their wealth in assets other than residential property, that could well make the country as a whole more resilient to climate shocks.

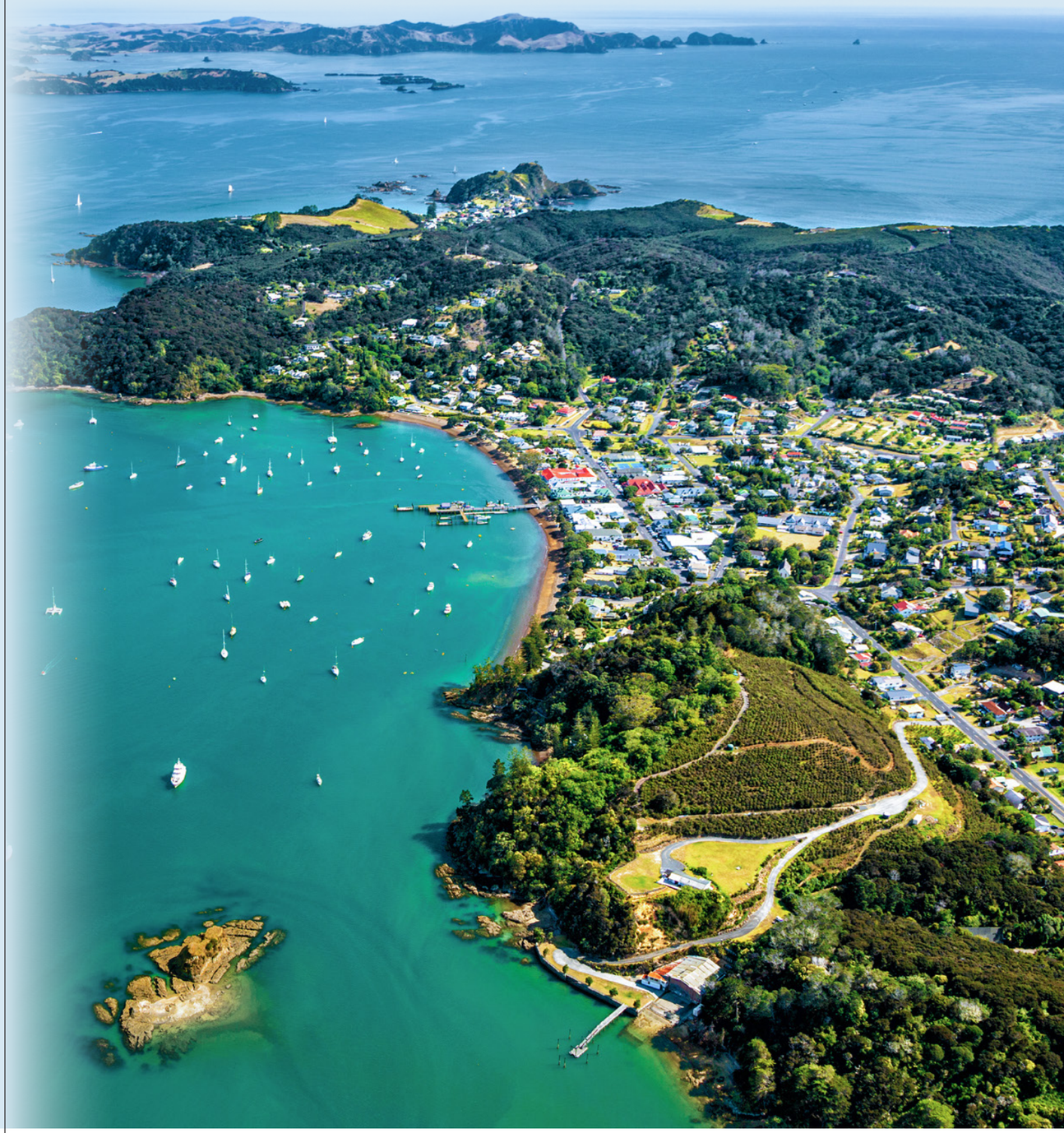


CHAPTER 5 RECOMMENDATIONS

URGENTLY CONSIDER THE POSSIBLE ROLES OF ONE OR MORE PUBLIC PROTECTION GAP ENTITIES (PGES) TO FILL EXISTING AND FUTURE GAPS IN INSURANCE COVERAGE, ESPECIALLY FOR FLOOD RISK. ACT NOW TO DESIGN OPTIONS.

- Further explore policy options for a public insurance scheme to provide cover for some elements of flood hazards. Coverage could be offered only to at-risk properties, or (probably more sensibly) to all properties. NHC could be adapted to take on an extended role, or a new entity established.
- Consider whether such an entity should cover first losses up to a cap—as NHC currently does for natural hazard damage other than flooding—or should rather focus on providing total loss cover for flooding (and potentially also for other natural hazards). The latter approach may help close a number of existing insurance gaps (such as providing assistance for those who are red-stickered but cannot access insurance payouts, or those who are threatened by coastal erosion, for example).
- Further explore policy options for the design of a public reinsurance scheme for flood hazard damage, to keep premiums lower, for longer. The existing NHC Toka Tū Ake could be adapted to take on this role (instead of, or in addition to, a public insurance role), or a new entity established.
- Learn from other countries that have established PGEs. Ensure any scheme established here promotes risk reduction and adaptation and does not encourage poor practices.
- Decide on the best balance between two broad conceptual approaches for a new entity:
  - Continuing an individualistic, risk-based approach to flood insurance, where those who face greater risks pay higher premiums (noting this will negatively impact historically high insurance penetration rates, and therefore risks entrenching poverty and inequitable outcomes in the aftermath of an underinsured disaster).
  - Adopting a more collective-minded community-based pricing model that shares the risk of flooding more evenly across policyholders as for other natural-hazard risks via NHC (noting this approach may 'mute' economic signals to undertake risk mitigation and requires some policyholders to cross-subsidise others, which may be perceived as unfair).

The town of Russell, Northland



Report conclusions

As discussed in this report, Aotearoa New Zealand will face unprecedented climate-related risks in the coming decades and beyond. One of the key challenges—largely under-recognised to date—will be the issue of accessibility and affordability of residential insurance as climate change-related impacts become ever more pronounced.

The economic, social, and psychological benefits of high residential insurance penetration are clear. Insurance enables families and communities to bounce back more quickly after a disaster, minimising financial hardship and protecting the most vulnerable in our society from falling into poverty in the aftermath of an event. Because insurance pools risk, it spreads the costs of major disasters across the country (and globally via reinsurance), transferring the financial risk from individuals to financial markets. Insurance also reduces fiscal risk to the government by lessening the need to provide financial assistance to those who suffer significant property losses after a natural-hazard event.

Although expensive compared to many countries, insurance currently remains largely affordable in Aotearoa New Zealand. However, 'insurance retreat' (partial and full) is expected to begin within a decade for households in more risky locations, such as those facing coastal erosion from sea-level rise.

Now is the right time for government to begin robust and detailed analysis into a range of policy options to keep insurance accessible and affordable for the long term. Some of these options have been outlined in this report. The most promising include:

- Targeted subsidisation for homeowners whose insurance premiums surpass pre-defined measures of affordability.
- The establishment of a public insurance and/or public reinsurance scheme to make cover for flood hazards available and affordable for those who will not otherwise be able to access cover, and to keep prices down for all policyholders.

One of the crucial decisions for the government will be to what extent the country should rely on risk-based pricing to determine premiums for flood-hazard cover, compared with a more community-based pricing model. The latter is the approach taken by NHC for earthquake and other natural-hazard cover. However, unlike the risk of earthquakes, the impacts of climate-change are expected to grow over time. In the absence of other interventions, this would make a public insurance scheme increasingly unaffordable.

For this reason, any public intervention into the private insurance market scheme must be situated within, and mutually reinforce, a clear and legally enforceable adaptation strategy. Such a strategy should reduce the costs of insurance by setting out the country's plan for climate change risk mitigation, including both physical protections for communities, and planned relocation where risk mitigation will not be cost-effective. This approach, alongside rigorous land-use planning, enhanced building standards and so on, will help insurance markets work more efficiently for the benefit of all.

Most important, if Aotearoa New Zealand does not plan and make strategic decisions very soon about how it means to respond to climate change, outcomes will be regionally inconsistent and driven by decisions made by private businesses rather than by policy decisions made in the public interest. This will inevitably lead to inequitable outcomes, further entrenching inequality and making individuals, communities, and the country as a whole less resilient and less prepared for the future.

References

Actuaries Institute. (2022). Home insurance affordability and socioeconomic equity in a changing climate. Green Paper. Australia. https://actuaries.asn.au/Library/Opinion/Generalinsurance/2022/HIAGreenPaper.pdf

Aib Group Insured. (2024). NZ general insurance market update – June 2024. https://www.aibgroup.co.nz/news/article/nz-general-insurance-market-update-june-2024

Allianz. (2024). Allianz to introduce flood cover as standard in home insurance policies. https://www.allianz.com.au/about-us/media-hub/allianz-to-introduce-flood-cover-as-standard-in-home-insurance-policies.html

Aon. (2018). A flood exposure and socio-economic assessment for New Zealand. https://www.treasury.govt.nz/sites/default/files/2023-03/oia-20220446.pdf

Aon. (2021). A national flood risk assessment of NZ. https://www.treasury.govt.nz/sites/default/files/2023-03/oia20220092.pdf

Araullo, K. (2024a). Reinsurers safe from severe catastrophe losses as threats continue to rise – S&P. Insurance Business. https://www.insurancebusinessmag.com/nz/news/reinsurance/reinsurers-safe-from-severe-catastrophe-losses-as-threats-continue-to-rise--sandp-500871.aspx

Araullo, K. (2024b). Global insured nat cat losses for H1 2024 well above average – Gallagher Re. Insurance Business. https://www.insurancebusinessmag.com/uk/news/reinsurance/global-insured-nat-cat-losses-for-h1-2024-well-above-average--gallagher-re-497579.aspx

Association of British Insurers. (2024, February 7). The cost of home insurance rises as insurers support customers and battle cost pressures. https://www.abi.org.uk/news/news-articles/2024/2/the-cost-of-home-insurance-rises-as-insurers-support-customers-and-battle-cost-pressures/

Australian Competition & Consumer Commission. (2024, 19 September). Cyclone reinsurance pool begins delivering some savings. https://www.accc.gov.au/media-release/cyclone-reinsurance-pool-begins-delivering-some-savings#:~:text=Reinsurance%20pool%20leads%20to%20premium%20relief%20for%20some%20consumers&text=Of%20the%20combined%20home%20and,cent%20experienced%20a%20premium%20decrease.

Australian Reinsurance Pool Corporation. (2023). ARPC Annual Report 2022–23. https://arpc.gov.au/wp-content/uploads/2023/10/Annual-Report-2023-WEB-FINAL.pdf

Bailey-Winiata, A. P., Gallop, S. L., White, I., Wotherspoon, L., Fa'aui, T., Dickson, M., & Ellis, J. (2024). Looking backwards to move forwards: Insights for climate change adaptation from historical Māori relocation due to natural hazards in Aotearoa New Zealand. Regional Environmental Change, 24(2), 80. https://doi.org/10.1007/s10113-024-02240-5

Bankrate. (2024). Homeowners insurance cost. United States of America. https://www.bankrate.com/insurance/homeowners-insurance/homeowners-insurance-cost/#:~:text=The%20national%20average%20cost%20of,individual%20homeowners%2C%20so%20will%20costs

Barraqué, B., & Moatty, A. (2019). The French Cat' Nat' system: Post-flood recovery and resilience issues. Environmental Hazards, 19(3), 285–300. https://doi.org/10.1080/17477891.2019.1696738

Barry, L. (2023). The moral economies of natural disasters insurance: Solidarity or individual responsibility? Journal of Cultural Economy, 17(1), 39–54. https://doi.org/10.1080/17530350.2023.2258909

Barth, J., Bond, S., & Vincent, N. (2019). Local authorities and community engagement on climate change adaptation. University of Otago Centre for Sustainability. https://ourarchive.otago.ac.nz/esploro/outputs/report/Local-Authorities-and-Community-Engagement-on/9926479986101891/filesAndLinks?index=0

BECA Limited, NIWA, GNS Science, Lawrence, J., & Noy, I. (2024). Wellington Regional Climate Change Impact Assessment. BECA. https://wrlc.org.nz/wp-content/uploads/2024/06/WRCCIA-Final-Report-Public.pdf

Bell, K., Booth, P., Walsh, P., & Letica, S. (2024). How fair is actuarially fair flood insurance pricing? SSRN. https://dx.doi.org/10.2139/ssrn.4867552

Bézy, T. (2023). Is it a good idea to subsidize flood insurance? https://www.ccr.fr/documents/35794/1071752/20240627_RAPPORT_ESG_CCR_GB_LP.pdf/0dd7010d-5f92-29cb-fc57-958ea0367f4a?t=1721922140127

Boston, J. (2023). Funding managed retreat. Environmental Defence Society. https://eds.org.nz/wp-content/uploads/2022/11/Jonathan-Boston-Funding-Managed-Retreat-Final.pdf

Boston, J. (2024). A radically different world: Preparing for climate change. Bridget Williams Books. New Zealand. https://www.bwb.co.nz/books/a-radically-different-world/

Boston, J. (2024a). Options for the future of residential property insurance in NZ. 20 August 2024. Unpublished.

Botting, S. (2024, 28 June). Northland's most flood-prone marae to receive resilience boost. RNZ. https://www.rnz.co.nz/news/ldr/520790/northland-s-most-flood-prone-marae-to-receive-resilience-boost

Canada's Task Force on Flood Insurance and Relocation. (2022). Adapting to rising flood risk: An analysis of insurance solutions for Canada. https://www.publicsafety.gc.ca/cnt/rsrcs/pblctns/dptng-rsng-fld-rsk-2022/dptng-rsng-fld-rsk-2022-en.pdf

CCR. (2023). A responsible investor. 2023 responsible investment report. https://www.ccr.fr/documents/35794/1071752/20240627_RAPPORT_ESG_CCR_GB_LP.pdf/0dd7010d-5f92-29cb-fc57-958ea0367f4a?t=1721922140127

Charpentier, A., Barry, L., & James, M. R. (2022). Insurance against natural catastrophes: Balancing actuarial fairness and social solidarity. The Geneva Papers on Risk and Insurance – Issues and Practice, 47(1), 50–78. https://doi.org/10.1057/s41288-021-00233-7

Climate Change Commission. (2024). Progress report: National Adaptation Plan – Assessing progress on the implementation and effectiveness of the Government's first national adaptation plan. https://www.climatecommission.govt.nz/public/Monitoring-and-reporting/NAPPA-2024/CCC-NAPPA_bookmarked2.pdf

Clough, P. (2023) Investment in natural hazards mitigation; Updating inputs from a 2020 report to cover damage claims from recent events. New Zealand Institute of Economic Research (unpublished).

Coastal Change. (2024). Coastal change. https://coastalchange.nz/about/faq/

Consumer. (2024). What our house and contents insurance survey found. https://www.consumer.org.nz/services/house-and-contents-insurance/how-we-test

Consumer. (2024a). Sentiment Tracker. Unpublished (via personal correspondence).

Coughlan, T. (2024a, 20 September). Government announces plans to axe RMA and replace it with two new laws. The New Zealand Herald. https://www.nzherald.co.nz/nz/politics/government-announces-plans-to-axe-rma-and-replace-it-with-two-new-laws/53ZZQS5B2ZEYVE5KPT44TPAFCQ/

Coughlan, T. (2024b, 30 September.). Insurers want RMA replacement to prevent people building in 'dumb places'. The New Zealand Herald. https://www.nzherald.co.nz/nz/politics/insurers-want-rma-replacement-to-prevent-people-building-in-dumb-places/HBO2KF7R4JEOFE5PHE53YBEDQE/

Deep South Challenge. (n.d.). Climate change and coastal Māori communities. https://deepsouthchallenge.co.nz/research-project/climate-change-coastal-maori-communities/

Elliott, R. (2022). Stopping the flow: The aspirational elimination of flood insurance cross subsidies in the United States and the United Kingdom. In Climate, society and elemental insurance (pp. 59–69). Routledge. https://doi.org/10.4324/9781003157571-7

European Commission: Directorate-General for Climate Action, Kuik, O., Ruig, L., Persson, M., Benoist, A. et al. (2017). Insurance of weather and climate-related disaster risk – Inventory and analysis of mechanisms to support damage prevention in the EU – Final report. Publications Office. https://data.europa.eu/doi/10.2834/40222

Expert Working Group on Managed Retreat (EWG). (2023). Report of the Expert Working Group on Managed Retreat: A proposed system for Te Hekenga Rauora/planned relocation. Ministry for the Environment. https://environment.govt.nz/assets/publications/climate-change/Report-of-the-Expert-Working-Group-on-Managed-Retreat-updated-08-24.pdf

Field, C. B., Barros, V. R., Dokken, D. J., Mach, K. J., Mastrandrea, M. D., Billir, T. E., Chatterjee, M., Ebi, K. L., Estrada, Y. O., Genova, R. C., Girma, B., Kissel, E. S., Levy, A. N., MacCracken, S., Mastrandrea, P. R., & White, L. L. (2014). Climate Change 2014 –Impacts, adaptation and vulnerability. Part A: Global and Sectoral Aspects. Cambridge University Press. https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-FrontMatterA_FINAL.pdf

Filippova, O., Nguyen, C., Noy, I., & Rehm, M. (2020). Who cares? Future sea level rise and house prices. Land Economics, 96(2), 207. https://le.uwpress.org/content/96/2/207

Finance and Expenditure Committee (FEC). (2024). Inquiry into climate adaptation. New Zealand House of Representatives. https://selectcommittees.parliament.nz/view/SelectCommitteeReport/73e0779f-249d-4067-9ec8-08dce18146d9

Financial Markets Authority. (2021). Insurance conduct and culture: Fire and general insurers update. https://www.fma.govt.nz/assets/Reports/Insurance-conduct-and-culture-fire-and-general-insurers-update.pdf

Financial Markets Authority. (2024, 14 June). Conduct of Financial Institutions (CoFi) legislation. https://www.fma.govt.nz/business/legislation/conduct-of-financial-institutions-cofi-legislation/

Finity Consulting, & The Treasury. (2024). Insurance data collection. https://www.treasury.govt.nz/sites/default/files/2024-07/insurance-data-collection-report-may24.pdf

Fire Emergency New Zealand. (2024). Climate change and wildfire risk. https://www.fireandemergency.nz/about-us/our-commitments/our-climate-is-changing/#:~:text=In%20Aotearoa%2C%20most%20wildfires%20are,most%20over%20time%20and%20space.

Flood Re. (2024). The quinquennial review. https://www.floodre.co.uk/wp-content/uploads/Flood-Re_QQR-2024_Digital.pdf

Forsyth, J. (2005). 1999 Queenstown Floods. Planning Quarterly. March 2005. https://www.qualityplanning.org.nz/sites/default/files/1999%20Queenstown%20Floods.pdf

French Senate. (2019, July 19). Senate report number 628. https://www.senat.fr/rap/r18-628/r18-6281.pdf

Garbarino, N., Guin, B., & Lee, J. (2022). The effects of subsidised flood insurance on real estate markets. Bank of England. https://bankofengland.co.uk/-/media/boe/files/working-paper/2022/the-effects-of-subsidised-flood-insurance-on-real-estate-markets.pdf

Gibson, E., & Rodrigues, F. (2022). Ngā marae mōrearea: Marae at risk. https://interactives.stuff.co.nz/2022/06/sinking-marae-at-risk-morearea/

Global Center on Adaptation (GCA). (2019). Adapt now: A global call for leadership on climate change. https://gca.org/reports/adapt-now-a-global-call-for-leadership-on-climate-resilience/

Guillier, F. (2017). French insurance and flood risk: Assessing the impact of prevention through the rating of action programs for flood prevention. International Journal of Disaster Risk Science, 8(3), 284–295. https://link.springer.com/article/10.1007/s13753-017-0140-y

Hudson, P. (2017). A comparison of definitions of affordability for flood risk adaptation measures: A case study of current and future risk-based flood insurance premiums in Europe. Mitigation and Adaptation Strategies for Global Change, 23(7), 1019–1038. https://link.springer.com/article/10.1007/s11027-017-9769-5

IAG. (2023). Land categorisation and insurance. https://www.iag.co.nz/newsroom/news-releases/land-categorisation-and-insurance

IAG. (2024). Focus on risk. Climate change survey results 2024. https://www.iag.co.nz/content/dam/corporate-iag/iag-nz/nz/en/documents/corporate/climate-change-survey-2024.pdf

Insurance Business. (2024). Munich Re: Everything you need to know. https://www.insurancebusinessmag.com/nz/companies/munich-re/61671/

Insurance Council of New Zealand (ICNZ). (n.d.). House & contents. https://www.icnz.org.nz/individuals/house-contents/

Insurance Council of New Zealand (ICNZ). (2023). Cost of natural disasters. https://www.icnz.org.nz/industry/cost-of-natural-disasters/

Insurance & Financial Services Ombudsman Scheme. (2024). Insurance doesn't cover everything. https://www.ifso.nz/media-releases/insurance-doesnt-cover-everything

IPCC. (2023). Climate Change 2023: Summary for Policymakers. https://www.ipcc.ch/report/ar6/syr/summary-for-policymakers/

Jarzabkowski, P., Cacciatori, E., & Chalkias, K. (2022). Disaster insurance in Switzerland: The cantonal public sector insurance system. City University of London. Bayes Business School. https://espace.library.uq.edu.au/view/UQ:a1c4b99

Jarzabkowski, P., Chalkias, K., Cacciatori, E., & Bednarek, R. (2023). Disaster insurance reimagined: Protection in a time of increasing risk. Oxford University Press. https://doi.org/10.1093/oso/9780192865168.001.0001

Kahneman, D., & Tversky, A. (2013). Prospect theory: An analysis of decision under risk. In L. MacLean & W. T. Ziemba (Eds.), Handbook of the fundamentals of financial decision making: Part I (pp. 99–127). World Scientific. https://worldscientific.com/worldscibooks/10.1142/8557#t=aboutBook

Keucheyan, R. (2023). The "environment making state" and climate change: The French "Cat Nat" reinsurance scheme under strain. Antipode, 55(2), 506–526. https://doi.org/10.1111/anti.12901

Kousky, C. (2019). The role of natural disaster insurance in recovery and risk reduction. Annual Review of Resource Economics, 11(1), 399–418. https://www.annualreviews.org/content/journals/10.1146/annurev-resource-100518-094028

Kousky, C. (2023). A new pilot launches to support equitable flood recovery in NYC. Environmental Defense Fund. https://blogs.edf.org/markets/2023/03/01/a-new-pilot-launches/

Lamond, J., & Penning-Rowsell, E. (2014). The robustness of flood insurance regimes given changing risk resulting from climate change. Climate Risk Management, 2, 1–10. https://doi.org/10.1016/j.crm.2014.03.001

Maketu Climate Plan. (2022). Turning a threat into an opportunity. Maketu Iwi Collective. https://maketuclimateplan.iwi.nz/

Mercier, K. (2023). Sponge cities: Can they help us survive more intense rainfall? The Helen Clark Foundation and WSP New Zealand. https://helenclark.foundation/publications-and-medias/sponge-cities/

Meyer, H., & Hartmann, T. (2023). The FLOODLABEL as a social innovation in flood risk management to increase homeowners' resilience. Journal of Flood Risk Management, e12962. https://doi.org/10.1111/jfr3.12962

Middleton, D. (2024). Submission on the Earthquake Commission/Natural Hazards Commission, Toka Tū Ake to The New Zealand Treasury (unpublished).

Miller, D. (2007). National responsibility and global justice. Oxford Political Theory. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199235056.001.0001

Milne, J. (2024). A mayor's decision whether to flood his own city. Newsroom. https://newsroom.co.nz/2024/08/30/a-mayors-decision-whether-to-flood-his-own-city/?utm_source=Newsroom&utm_campaign=7dd12b2daa-Week+In+Review+31.08.2024&utm_medium=email&utm_term=0_71de5c4b35-7dd12b2daa-98007622&mc_cid=7dd12b2daa&mc_eid=4c7867e5b5

Ministry for the Environment. (n.d.). New Zealand climate projections dataset. New Zealand Government. https://climatedata.environment.govt.nz/

Ministry for the Environment. (2020). National climate change risk assessment for New Zealand – Main report. https://environment.govt.nz/assets/Publications/Files/national-climate-change-risk-assessment-main-report.pdf

Ministry for the Environment. (2022). Aotearoa New Zealand's first national adaptation plan. https://environment.govt.nz/assets/publications/climate-change/MFE-AoG-20664-GF-National-Adaptation-Plan-2022-WEB.pdf

Ministry for the Environment. (2024). Understanding climate variables and scenarios used in the projections. https://environment.govt.nz/facts-and-science/climate-change/climate-change-projections/understanding-climate-variables-and-scenarios-used-in-the-projections/

Ministry of Business, Innovation and Employment. (2019). Options paper: Conduct of financial institutions. https://www.mbie.govt.nz/dmsdocument/5154-conduct-of-financial-institutions-review-options-paper

MinterEllisonRuddWatts. (2023). The future of insurance cover for weather-related natural disasters. https://www.minterellison.co.nz/insights/the-future-of-insurance-cover-for-weather-related

Moneyhub. (2024, June). The average cost of car, house, and contents insurance in New Zealand. https://www.moneyhub.co.nz/average-cost-of-car-house-contents-insurance.html

Morton, J. (2022, May 1). Rising risk: How our coast will be transformed. The New Zealand Herald. https://www.nzherald.co.nz/nz/rising-risk-how-our-coast-will-be-transformed/R24X3UURX7ESXCLKCGDSHFU2EU/#google_vignette

Morton, J. (2024). Climate change: 80% of Kiwis against development in risky areas. The New Zealand Herald. https://www.nzherald.co.nz/nz/climate-change-80-of-kiwis-against-development-in-risky-areas/WSRJWAAHUFAITA467ZMTGSTASA/

National Academies of Sciences, Engineering, and Medicine. (2024). Challenges and opportunities for policy. In Community-driven relocation: Recommendations for the U.S. Gulf Coast region and beyond (p. 590). The National Academies Press. https://doi.org/10.17226/27213

Natural Hazards Commission Toka Tū Ake. (2023). Risk Tolerance Methodology. NZ Government. https://www.naturalhazards.govt.nz/assets/Research/Risk-Tolerance-Methodology-v2.pdf

Natural Hazards Commission Toka Tū Ake. (2024). Guide to natural hazards cover. https://www.naturalhazards.govt.nz/assets/Publications-Resources/Guide.to.natural.hazards.cover.pdf

New Zealand Productivity Commission. (2019). Local government funding and financing: Final report. https://www.treasury.govt.nz/sites/default/files/2024-05/pc-inq-lgff-final-report-local-government-funding-and-financing.pdf

New Zealand Productivity Commission. (2024). Improving economic resilience: Report on a productivity commission inquiry. https://www.treasury.govt.nz/sites/default/files/2024-05/pc-inq-ier-nzpc-improving-economic-resilience-inquiry-report.pdf

Newton, K. (2024a, January 26). 1415 new homes consented on Auckland flood plains in the year since flooding disaster. RNZ. https://www.rnz.co.nz/news/in-depth/507562/1415-new-homes-consented-on-auckland-flood-plains-in-the-year-since-flooding-disaster

Newton, K. (2024b). How homeowners are responding to huge insurance premium hikes. RNZ. https://www.rnz.co.nz/news/in-depth/513869/how-homeowners-are-responding-to-huge-insurance-premium-hikes

NIWA (n.d.). Climate change scenarios for New Zealand. https://niwa.co.nz/climate-and-weather/climate-change-scenarios-new-zealand

Noy, I. (2018). An economic investigation of disaster insurance. National Science Challenges. https://resiliencechallenge.nz/an-economic-investigation-of-disaster-insurance/

NZIER. (2024). NZIER Insight: Incentivising resilience to adverse climate change events. https://www.nzier.org.nz/hubfs/Public%20Publications/Insights/NZIER%20Insight%20109%20Incentivising%20investment%20in%20climate%20resilience_FINAL.pdf

NZ Sea Rise. (2024). NZ SeaRise: Predicting sea-level rise for Aotearoa New Zealand. https://www.searise.nz/

Otago Daily Times. (2024, September). Buoys to help increase safety and understand erosion. https://www.odt.co.nz/news/dunedin/buoys-help-increase-safety-and-understand-erosion

Parliamentary Commissioner for the Environment (PCE). (2015). Preparing New Zealand for rising seas: Certainty and uncertainty. https://pce.parliament.nz/media/fgwje5fb/preparing-nz-for-rising-seas-web-small.pdf

Paulik, R., Craig, H., & Collins, D. (2019a). New Zealand fluvial and pluvial flood exposure. Prepared for the Deep South Challenge. NIWA. https://climateandnature.org.nz/wp-content/uploads/2020/05/NIWA-Flood-Exposure.pdf

Paulik, R., Stephens, S., Wadhwa, S., Bell, R., Popovich, B., & Robinson, B. (2019b). Coastal flooding exposure under future sea-level rise for New Zealand. Prepared for the Deep South Challenge. NIWA. https://docs.niwa.co.nz/library/public/2019119WN.pdf

Peart, R. (2024). Design recommendations for a climate adaptation act. https://eds.org.nz/wp-content/uploads/2024/07/EDS_Climate-Adaptation-Final.pdf

Poussin, J. K., Botzen, W. J. W., & Aerts, J. C. J. H. (2013). Stimulating flood damage mitigation through insurance: An assessment of the French CatNat system. Environmental Hazards, 12(3–4), 258–277. https://www.tandfonline.com/doi/abs/10.1080/17477891.2013.832650

Préfet de la Somme. (n.d.) Fonds de prévention des risques naturels majeurs (FPRNM). https://www.somme.gouv.fr/Actions-de-l-Etat/Risques/Risques-naturels/Fonds-de-prevention-des-risques-naturels-majeurs-FPRNM

Pritesh, P. (2024). The Pacific Insurance and Climate Adaptation Programme. UNCDF. https://www.uncdf.org/pacific-insurance-and-climate-adaptation-programme

Queensland Reconstruction Authority (QRA). (2021). Queensland Flood Risk Management Framework. Queensland Government. https://www.qra.qld.gov.au/sites/default/files/2021-06/queensland_flood_risk_management_framework_2021_qfrmf_0.pdf

Quinto, C. (2012). Insurance systems in times of climate change: Insurance of buildings against natural hazards. Springer Verlag.

Radio NZ. (2023). Climate change 'challenge of our lifetime' - Ngāi Tahu. RNZ. https://www.rnz.co.nz/news/te-manu-korihi/499130/climate-change-challenge-of-our-lifetime-ngai-tahu

Reserve Bank of New Zealand (RBNZ) (2022, October). Interim Solvency Standard non-technical summary. https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/consultations/insurers/iss-review/insurance-solvency-standard-non-technical-summary-oct-2022.pdf

Reserve Bank of New Zealand (RBNZ) (2024). Financial Stability Report, May 2024. https://www.rbnz.govt.nz/hub/publications/financial-stability-report/2024/may-2024/financial-stability-report-may-2024

Rodriguez, M. (2024). Central Europe floods could hit €3 billion in insured losses. Insurance Business. https://www.insurancebusinessmag.com/ca/news/reinsurance/central-europe-floods-could-hit-3-billion-in-insured-losses-507877.aspx

Ryder, B. (2023, 20 November). Richest 1% emit as much planet-heating pollution as two-thirds of humanity. Oxfam Aotearoa. https://www.oxfam.org.nz/news-media/richest-1-emit-as-much-planet-heating-pollution-as-two-thirds-of-humanity__trashed/#:~:text=Climate%20breakdown%20and%20inequality%20are,in%20turn%20increase%20the%20divide.

Schwarze, R., & Wagner, G. G. (2007). The political economy of natural disaster insurance: Lessons from the failure of a proposed compulsory insurance scheme in Germany. European Environment, 17(6), 403–415.

Sengupta, R. and Kousky, C. (2020). Parametric Insurance for Disasters. Wharton Risk Center Primer, University of Pennsylvania.

Small, J. (2017, 2 August). Quake outcasts decision: 'Unlawful' for Govt to discriminate in red zone buyout. Stuff. https://www.stuff.co.nz/the-press/business/the-rebuild/95319282/quake-outcasts-decision-unlawful-for-govt-to-discriminate-in-red-zone-buyout

Somers, E. (2024, 29 July). Who pays when it comes to climate adaptation is a distribution issue, according to the Reserve Bank. interest.co.nz. https://www.interest.co.nz/banking/128942/who-pays-when-it-comes-climate-adaptation-distribution-issue-according-reserve-bank

Soyka, T., & Sinai, D. (2023). How extreme events reframe our thinking on weather-related perils in New Zealand. Swiss Re. https://www.swissre.com/australia_newzealand/insights/how-extreme-events-reframe-our-thinking-on-weather-related-perils-in-new-zealand.html

Stevenson, R. (2023, 23 May). After banking, insurance? Treasury email hints at potential of Commerce Commission market study. interest.co.nz. https://www.interest.co.nz/insurance/121077/after-banking-insurance-treasury-emails-hint-potential-commerce-commission-market

Stock, R. (2024, 11 August). Govt will have to act to stop house insurance being 'luxury good' only for rich. The Press. https://www.thepress.co.nz/business/350369141/govt-will-have-act-stop-house-insurance-being-luxury-good-only-rich

Storey, B., Noy, I., Owen, S., Townsend, W., Kerr, S., Salmon, R., Middleton, D., Filippova, O., & James, V. (2017). Insurance, housing and climate adaptation: Current knowledge and future research. Motu Economic and Public Policy Research. https://www.motu.nz/assets/Documents/our-work/environment-and-agriculture/climate-change-impacts/Insurance-Housing-and-Climate-Adaptation.pdf

Storey, B., Owen, S., Noy, I., & Zammit, C. (2020). Insurance Retreat. Sea level rise and the withdrawal of residential insurance in Aotearoa New Zealand. Climate Sigma. https://deepsouthchallenge.co.nz/wp-content/uploads/2021/01/Insurance-Retreat-December-2020-Final-Report.pdf

Storey, B., Owen, S., Zammit, C., & Noy, I. (2024). Insurance retreat in residential properties from future sea level rise in Aotearoa New Zealand. Climatic Change, 177(3), 44. https://doi.org/10.1007/s10584-024-03699-1

Surminski, S. (2018). Fit for purpose and fit for the future? An evaluation of the UK's new flood reinsurance pool. Risk Management and Insurance Review, 21(1), 33–72. https://doi.org/https://doi.org/10.1111/rmir.12093

Surminski, S., Saffioti, C., & Kannangath, A. (2023). Staying above water: A systemic response to rising flood risk. Marsh Mclennan. https://www.marshmclennan.com/assets/insights/publications/2023/february/marshmclennanstayingabovewater.pdf

Swiss Re. (2023). Comprehensive guide to parametric insurance. https://corporatesolutions.swissre.com/dam/jcr:0cd24f12-ebfb-425a-ab42-0187c241bf4a/2023-01-corso-guide-of-parametric-insurance.pdf

Tan, R. (2024). General insurance in New Zealand – Market research report (2014–2029). IBIS World. https://www.ibisworld.com/nz/industry/general-insurance/526/

Ternouth, L. (2024). Auckland floods: Some damaged properties now worth less than owner's mortgage. NZ Herald. https://www.nzherald.co.nz/nz/auckland-floods-some-damaged-properties-now-worth-less-than-owners-mortgage/7XKLZ6NHHNHZLFZZRCCGPJYFQM/

The Treasury. (2022a). Official Information Act Release 20220252, Monitoring the availability and affordability of residential property insurance. https://www.treasury.govt.nz/sites/default/files/2022-08/oia-20220252.pdf

The Treasury. (2022b). Residential flood insurance issues information release. https://www.treasury.govt.nz/sites/default/files/2022-12/residential-flood-insurance-issues-4620191.pdf

The Treasury. (2024a). Climate adaptation: Priorities for future work. https://www.treasury.govt.nz/sites/default/files/2024-09/oia-20240469.pdf

The Treasury. (2024b). Residential flood insurance issues information release. https://www.treasury.govt.nz/sites/default/files/2024-08/tr-t2023-1934-residential-insurance-issues.pdf

Tower. (2023). Tower FY23 results announcement script. https://api.nzx.com/public/announcement/422193/attachment/407924/422193-407924.pdf

Tower. (2024). Annual shareholder meeting. https://api.nzx.com/public/announcement/426524/attachment/412997/426524-412997.pdf

United Kingdom Government (2022). Third UK Climate Change Risk Assessment: Future flood risk. https://assets.publishing.service.gov.uk/media/61e54d8f8fa8f505985ef3c7/climate-change-risk-assessment-2022.pdf

University of Auckland. (2022, November). How climate change may alter New Zealand's waves. https://www.auckland.ac.nz/en/news/2022/11/04/waves-climate-change.html

University of Auckland. (2023, November). Predicting the future of Aotearoa New Zealand's coastline. https://www.auckland.ac.nz/en/news/2023/12/01/predicting-the-future-of-aotearoa-new-zealands-coastline.html

Vaughan, G. (2023). IAG says it has paid out more than $1 billion in insurance claims for the North Island floods & Cyclone Gabrielle. https://www.interest.co.nz/insurance/125301/iag-says-it-has-paid-out-more-1-billion-insurance-claims-north-island-floods

Wallace, M. (2024). How brokers can navigate a 'backdrop of ambiguity'. Insurance Business. https://www.insurancebusinessmag.com/nz/risk-management/news/how-brokers-can-navigate-a-backdrop-of-ambiguity-501929.aspx

Whitehead, C. (2024, 16 August). Some New Zealand homes are becoming uninsurable because of natural disasters – but all may not be lost. RNZ. https://www.rnz.co.nz/news/national/525396/some-new-zealand-homes-are-becoming-uninsurable-because-of-natural-disasters-but-all-may-not-be-lost

Williams, M. (2024, 25 June). Government rejects climate change assistance. Otago Daily Times. https://www.pressreader.com/new-zealand/otago-daily-times/20240625/281522231270482?srsltid=AfmBOooaXZHof8E493PbZbANMNbflbMImdx5Ke4w8uWJIYGZON4r_Ff7



