



Case Studies on Insurance and Compensation after Natural Disasters

Research Report for the Deep South

National Science Challenge

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Title Case Studies on Insurance and Compensation after Natural Disasters

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Every effort has been made to ensure the soundness and accuracy of the opinions and information expressed in this report. While we consider statements in the report are correct, no liability is accepted for any incorrect statement or information.

This paper was initially written and finalised in March 2018. Some updates on the basis of current events were made in June and August 2018 (eg re Matatā), but otherwise the report should be taken as at 31 March 2018. The government's 2018 amendment to the Earthquake Commission legislation is not considered; this is considered more fully in the separate report: V James, C Iorns & J Watts, The extent of EQC liability for damage associated with sea-level rise (Deep South National Science Challenge, Wellington, 2019). 56pp.

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SUMMARY

This paper is part of a Deep South National Science Challenge project on insurance and other liability for compensation for damages suffered to housing from coastal hazards associated with sea-level rise. There are a range of issues addressed in this project, presently divided into different discussion papers. One of the other papers focuses on the New Zealand Earthquake Commission insurance and compensation scheme, and how well it might provide for compensation for damage from sea-level rise hazards (lorns & Watts, 2018; James, Iorns & Watts, 2019). A second paper discusses local government liability issues related to sea-level rise (lorns & Watts, 2018). A third paper considers how to better uphold principles of the Treaty of Waitangi in adaptation decision-making (lorns, 2019). A fourth will address local government barriers and enablers to adaptation (James, Gerard, Iorns, 2019). This paper considers some examples of where financial risks to property have fallen both in New Zealand and overseas as a result of some natural disasters, particularly flooding. Pre-existing schemes are important for discussing possible future policy responses as they are and how they could be adapted for new and different natural hazards.

Risks relating to sea-level rise challenge how insurance currently operates due to their nonrandom nature. A non-random risk event which effects related areas such as sea-level rise incentivises insurers to withdraw from risk rather than face financial instability. Insurers internationally have already withdrawn from covering some areas, and locally have recently withdrawn from covering certain property damage unrelated to sea-level rise. For example, since Hurricanes Katrina and Sandy, USA insurers have shifted relevant risks onto state and federal insurance schemes, as well as to individual property owners.

When a private insurer leaves a gap in the market, this often gives rise to a state-mandated system to maintain an insurance programme for consumers. An example of a state-mandated system is the New Zealand Earthquake Commission. The Earthquake Commission Act 1993 sets out a structure analogous to an insurance policy and cover. However, it is not a contract of insurance but a levy system. The Crown further assumed (voluntarily) a large cost for the purchase of property following the Christchurch Earthquake.

Low insurance rates and the substantial uninsured loss following Hurricane Sandy show the possible impact when property owners assume the risks themselves rather than insuring, and the importance of an automatic levy based EQC scheme rather than a requirement to buy extra insurance when designing state-provided insurance to ensure uptake.

In New Zealand, land subject to coastal hazards could be compulsorily acquired using the Public Works Act 1981.

The leaky homes crisis shows that there would likely be similar political pressure for a government financial assistance package for coastal properties. For a financial assistance package to be effective, it must be comparable in value to other avenues of redress, simple, and with a long longstop period to ensure uptake. It also shows that fears about an unknown future

might already and/or in future affect the value of coastal houses. Yet, conversely, residents may be unwilling to acknowledge or accept the risk of sea-level rise.

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Councils' actions can have negative effects on current owners through the provision of information in LIMs or coastal hazard information and adaptation. Different New Zealand Councils have already faced varying and even competing legal and political pressures from current owners. For example, some ratepayers have pressured their authority to not include information on sea-level rise on official property documentation on the basis of (purported) evidential uncertainty (though perhaps in reality an attempt to ignore the issue); others have pressured councils to build hard flood protection structures, to protect coastal properties; others have called for governments to purchase land threatened by coastal hazards so that owners can relocate. Liability for council actions is considered in a separate report by the same authors pursuant to the same project.

With more properties at high risk of coastal hazards, risk will be pushed further towards property owners. This will likely lead to political pressure for either government intervention into the private insurance market, as a reinsurance or state insurance scheme, or for government to assume loss through land acquisition or compensation. There will be similar pressure on central and local governments to simultaneously fund adaptation measures to protect coastal property, subsidise insurance for losses from storm and flood damage, and compensate coastal property owners for relocation when necessary. Sea-level rise is a certainty, so lessons can be taken from overseas examples about aspects to avoid as well as those to encourage.

This paper examines ways that risk, damage, cost and liability currently fall under different schemes. Private insurance, state supported insurance, the Public Works Act 1981, and council liability could be used to share losses of value and utility of land. Each of them has weaknesses; however, these can be used, adapted, and/or combined to create a framework to deal with loss of value and utility of land due to sea-level rise. If any government subsidy scheme is adopted, it will need to avoid the problems of previous compensation schemes here and overseas, and be carefully designed to enable people to assess and manage the risks to their homes and communities fairly. What is fair won't be determined by analysis of what is currently legal, but needs to be the subject of a wider discussion.

I Introduction

Sea-level rise will detrimentally affect the value and utility of some coastal land in New Zealand; scenarios for sea-level rise include rises of up to 2 meters from pre-industrial levels by 2100, with it continuing to rise after that. Rising sea-levels will directly affect low-lying land along coasts through: flooding, erosion of 'soft' shorelines by waves and currents, and groundwater becoming higher and more saline.¹ Houses in low lying areas will be particularly affected. In New Zealand within 1.5m of the present spring high tide, there is a population of 133,265 people, 48,600 residential buildings, 182 critical facility buildings, 5 airports, 1,547 jetties and wharves, 2,121hm of roads, and 46 km of railway.² In 2015, it was revealed that Dunedin has more houses lower than 50 centimetres above the high tide mark than any other city in New Zealand.³

Sea-level rise is a gradual process, changing the experience of damage compared to other natural hazards. Slow deterioration places less urgency on risk to land, an element that is present in only some analogous risk situations. Predictable or reasonably anticipated natural hazards allow for mitigation or protection plans such as flooding. Other natural hazards such as earthquakes, hurricanes, volcanic eruptions are sudden and not always predictable. Predictability is important when considering risk management solutions as different natural hazards can only be mitigated to a certain point. The purpose of this paper is to look at some examples of where financial risks to property have fallen both in New Zealand and overseas as a result of some natural disasters, particularly flooding. Pre-existing schemes are important as part of discussing possible future policy responses as they are and how they could be adapted for new and different natural hazards; understanding of how liability and risk fall currently is imperative for future adaptation or changes. A brief overview of each scheme will be given with any additional information relevant to risk and durability.

This report will first detail how private insurance operates and how it is inadequate to react to sea-level rise; this will be demonstrated through a case study into insurance markets in the U.S. Gulf States following Hurricane Katrina. It will then discuss state intervention into the market for natural hazard insurance and how this could apply to sea-level rise. The state provision of insurance model will be assessed through the UK Flood Re scheme, the New Zealand Earthquake Commission is applied to the Christchurch earthquake, and the US National Flood Insurance Program in the light of Hurricane Sandy. The report will address the acquisition of low-lying land under the Public Works Act 1981. It will finally summarise issues surrounding council liability from the Leaky Homes Crisis to show lessons for policymakers that could apply to sea-level rise.

¹ Parliamentary Commissioner for the Environment *Preparing New Zealand for Rising Seas: Certainty and Uncertainty* (November 2015) at 23.

² Rob Bell, Ryan Paulik and Sanjay Wadhwa *National and regional risk exposure in low-lying coastal areas* (NIWA, Prepared for the Parliamentary Commissioner for the Environment, October 2015) at 13.

³ Associated Press "Risks to low-lying South Dunedin revealed in sea-level rise maps" *Stuff* (online ed, New Zealand, 4 April 2017).

This is just introductory and illustrative. There are many more examples that could be examined, including in New Zealand. For example it has been reported that insurance has already been denied for coastal properties in Haumoana and Matatā, both as a result of flooding (although from different causes). As a result, property values have already decreased in these places by hundreds of thousands of dollars. For example, property values for coastal properties in Haumoana quickly dropped to a third of their previous prices.⁴ Matatā is discussed below.⁵

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II Insurance

A Private Insurance

Insurance can be complex when dealing with natural disasters. Premiums are paid by the insured for the assumption by the insurer of an agreed risk. Insurance operates on the probability law of larger numbers, requiring large numbers of insured people or organisations to be independent from the risk of the hazard which they have insured against.⁶ The likelihood of the event must be random. Losses to the insurer are usually predictable, allowing a high level of assurance.

Insurance is based on the contract of insurance or policy. This defines relationships, rights and obligations.⁷ An insurance policy is an agreement between the insurer and the insured about what actions need to be taken if a certain event were to occur. Insurance operates though spreading risk and is usually seen as a social good.⁸ Property insurance is directly concerned with material damage or loss to a property or land. Insurance has expanded to include flooding, storms, hurricanes, earthquakes, volcanic eruptions and other disasters.⁹

A few mechanisms are used to deal with the risk that payouts will vastly exceed the premiums collected, even when averaged widely. First, insurance companies can limit the coverage they are willing to sell. They might impose a high excess level, or increase the premiums to better reflect the risk. Under this approach, insurance purchasers retain the uninsured risk where they are unable to pay the excess price or where they underinsure for affordability. Second, insurance companies may limit the cover by refusing to insure particular risks, or denying all coverage due to one singular risk. Thus the precise risk of flooding can be separated out from the other elements that are insured such that flood risk insurance might be denied but fire and theft, for

⁴ Values reportedly dropped from between \$75,000 and \$160,000 in 2010, to between \$20,000 and \$75,000 in 2013. Lawrence Gullery "Coastal Properties Hit In Latest Wave of Valuations" *Hawkes Bay Today* (13 October 2013). See also Matt Shand "Matatā: Damned Because Dam Never Built" *Stuff.co.nz* (23 December 2017).

⁵ See p.13, below. I note that the New Zealand examples of Council responses to Haumoana and Matatā are being studied extensively by researchers in the Resilience National Science Challenge; so only brief mention is made of these case studies here.

⁶ David Middleton "The role of the New Zealand Earthquake Commission" 16(2) AJEM 57 at 57.

⁷ Chris Boys and Paul Michalik *Insurance Claims in New Zealand* (LexisNexis, Wellington, 2015) at 3.

⁸ At 1; Jessica Lamond and Edmund Penning-Rowsell "The robustness of flood insurance regimes given changing risk resulting from climate change" (2014) 2 Climate Risk Management 1 at 3.

⁹ Middleton, above n 6, at 57.

example, might still be covered. The homeowner will similarly bear the risks of uninsured future damage. A third tool is for insurance companies to purchase reinsurance to insure their portfolio. This approach spreads the risks to sellers of the reinsurance, typically other large insurance companies. This will distribute some of the risks and possible losses to their shareholders, which can include large managed funds, including pension funds.

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A New Zealand example of cover reduction is the revision of policies by some to avoid losses caused by methamphetamine contamination.¹⁰ for another example, in 2018 Tower Insurance shifted premiums to reflect earthquake risk.¹¹ This resulted in large premium increases for some Wellington property owners. 2000 Tower customer's annual insurance premiums increased by more than \$2000, while 97% of customers received a small decrease in premiums. One Karori homeowner's annual premium increased by 300%, about \$5000. IAG similarly raised its brand's premiums across areas at higher risk of natural hazards by an average of \$91.¹² Premium increases shift the cost of disasters onto property owners. Tower's chief executive Richard Harding told RNZ that "[risk pricing will] move through from earthquake ... through flood and storm and other activities."¹³ This will significantly increase the cost of insurance in areas prone to coastal hazards, and possibly incentivise property owners to go un- or under-insured.

B Sea-level Rise, Compensation and Insurance Durability

There will be a reduction in private insurance coverage of coastal hazards risks in New Zealand in the future. This will be due to the reluctance of individual homeowners to pay the price of such insurance, as well as due to withdrawal from the market by insurance companies.

One immediate cause of low insurance coverage against risks of coastal hazards due to climate change is apparently due to a reluctance to pay higher premiums that are necessary to accurately reflects the risk, even when such coverage is provided.¹⁴ This is particularly the case where predictions of climate change are not accepted, reducing the willingness of such homeowners to purchase insurance against the possibility of more severe weather related events than they have already experienced.

As coastal hazard risks eventuate, the bigger cause of a lack of insurance is through withdrawal from the market by insurance companies. This is particularly the case for risks relating to sealevel rise because of their non-random – i.e. predictable – nature.¹⁵ Insurance companies are often perceived as performing a public policy role, with an expectation that cover will be provided, and an outcry when it is not. However, a private insurer is in business to cover a risk

¹⁰ Jenée Tibshraeny "What Property Owners Need to Know as Their Insurers Duck for Cover to Avoid Being Lumped with Meth Damage Bills" *Interest* (online ed, New Zealand, 4 November 2016).

¹¹ RNZ "Insurer Defends Big Quake Risk Insurance Hike" RNZ (20 June 2018).

¹² RNZ "Insurance Giant Raises Premiums for Disaster-Prone Areas" RNZ (24 July 2018).

¹³ RNZ, above n 11.

¹⁴ Lamond and Penning-Rowsell, above n 8, at 2.

¹⁵ Lamond and Penning-Rowsell, above n 8, at 2.

where it is profitable for them to do so, and is under no obligation to continue providing coverage against increasingly uncertain events, such and storms and floods. When an event affects a large number of insured subjects, it can affect the financial stability of the insurer. A non-random risk such as sea-level rise incentivises insurers to withdraw rather than face financial instability. Private insurers thus have a clear financial incentive to abandon the market when covering a risk is no longer profitable, such as due to large and/or repeated claims from damage, and in light of future predictions of more such damage. Because insurance policies usually renew annually, withdrawal from a market can be rapid.

Flood risk is comparable to sea-level rise as it likely to simultaneously affect property owners and is correlated rather than independent.¹⁶ Flooding is a natural hazard with high prevalence across all countries. Flood insurance is usually classified as a high consequence/low probability with losses clustered together. Highly detailed information is needed to price flood risks. Functioning and sustainable insurance schemes require quantifiable, distributed, affordable risk, an insurable population that is willing to insure, aware of the risk and can afford the cover and a solvent insurer who can run the scheme and pay claims, even abnormally large claims.¹⁷

Climate change affects the predictability, quantification and distribution of natural hazards, therein rendering prior insurance data sets and models unreliable. It is thus hard to say exactly what insurance companies will do and when, in relation to coverage for coastal hazards, except that they will likely withdraw from such coverage. However, examples of *flood* insurance can be looked at for lessons for dealing with coastal hazards due to sea-level rise.

Flooding has already seen some insurers withdraw from risk overseas. Andover Companies, the largest homeowner insurer in Massachusetts, did not review 14,500 policies because of projections in storm losses.¹⁸ Suncorp, after the extreme floods in 2011, refused insurance coverage to residents of Roma and Emerald in Queensland. Suncorp said without local and state government implementing mitigation measures, the towns were left exposed. This risk meant it was unviable to provide insurance. Mitigation could reduce exposure to damage making insurance affordable, however, that would require state intervention. This blurs the line between the individual, state and private company.¹⁹ Private companies can use this as leverage against the central government to subsidise premiums.

Internationally, insurers can find it uneconomic to insure certain areas. This often results in state provision which, without partial or whole interference, would leave homeowners entirely vulnerable, as demonstrated in Figure 1 below.

¹⁶ Lamond and Penning-Rowsell, above n 8, at 2.

¹⁷ Lamond and Penning-Rowsell, above n 8, at 2.

¹⁸ Evan Mills, Richard Roth and Eugene Lecomte Availability and Affordability of Insurance under Climate Change: A Growing Challenge for the U.S. (Ceres, 2005) at 6.

¹⁹ Lee Godden and others "Law, Governance and Risk: Deconstructing the Public-Private Divide in Climate Change Adaptation" (2013) 36(1) UNSW Law Journal 224 at 250.



Features of flood insurance worldwide.

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	The cover available	Coverage	Source
Austria	Private/optional Catastrophe fund for disasters covering up to 30% of	10–25%	CCS (2008) Gaschen et al. (1998) Bouwer et al. (2007)
Australia	private loss Some flood risks covered by default others available in	50–60% But lower in high risk	IAG (2012) NDIRP (2011)
Belgium	some areas Bundled private with fire cover up to a limit	areas High	Bruggeman et al. (2011)
Brazil	Disaster fund Bundled into general private buildings cover	Low linked to low property	Gaschen et al. (1998)
China	Included in standard fire policy private and state owned	insurance	Caschen et al. (1998)
Cinna		areas	
Canada Caribbean	Very limited private cover available Cover provided by private companies.	Almost none Verv low	CCS (2008) SwissRe (2010a) CCS (2008) Auffret (2003)
	State provides disaster relief via the CCIFR		
Czech Republic	Voluntary add onto fire cover	15%	Gaschen et al. (1998)
Denmark	Compulsory coastal flooding cover Bundled into fire policies	50–75%	Machetti (2009) Bouwer et al. (2007)
Ecuador	Within standard fire policy private provision	Low related to low property insurance coverage	Gaschen et al. (1998)
France	Bundled in natural hazards, Public Private Partnership	Close to 100%	Gaschen et al. (1998)
Germany	Optional private add on priced by defined flood zones	5-10% in most regions	Machetti (2009) Thieken et al. (2006)
Hungary	Private Bundled cover from national and international	60% but much lower in highest risk zones	Bouwer et al. (2007) Vari et al. (2003)
Iceland	Compulsory natural hazards cover includes flood	100%	CCS (2008)
Indonesia	Supplement to fire policy privately or state owned	20%	Gaschen et al. (1998)
Israel	Optional to fire policy. Private cover	95%	Gaschen et al. (1998)
Italy	Option as an endorsement Disasters often covered by emergency taxes	<5%	Gaschen et al. (1998)
Japan	Available within comprehensive fire cover which is an optional extension	40% -72%	Gaschen et al. (1998) Kron (2009)
	Private provision		
Mexico	Private cover based on risk zones Emergency relief	Low	Monti, 2009
Netherlands	Pluvial bundled in standard policy Fluvial and coastal not	High Non existent	Bruggeman et al. (2011)
New Zealand	Part of earthquake cover compulsory	High	Paklina, 2003 CCS (2008)
Norway	Compulsory as part of property policies, backed by	High above 75%	Bouwer et al. (2007) Machetti (2009)
Philippines	Part of typhoon cover to fire policy private provision	10–20%	Gaschen et al. (1998)
Delend	Government often provides relief funds	25%	Coophan at al. (1000)
Poland	Private add onto Fire cover. Private companies	25% High due to bundling with	Gaschen et al. (1998)
POILUgai	included in natural perios as part of life cover	earthquakes	Gaschen et al. (1998)
South Africa	Add onto fire cover private provision but not available in highest risk areas	30–50% households but 75%+ by value	Gaschen et al. (1998)
Spain	Bundled into all buildings cover	Close to 100%	Gaschen et al. (1998)
Switzerland	Standard part of buildings cover state provided	100%	Gaschen et al. (1998)
Taiwan	Part of typhoon private provision	Less than 1% due to high rates	Gaschen et al. (1998)
Turkey	Some might be covered under earthquake	Very low	Paklina, 2003
UK	Bundled in general household	95%	Gaschen et al. (1998)
US	Optional state provided	75%	Abbott (2008)

Figure 1: Features of Flood Insurance Worldwide²⁰

²⁰ Lamond and Penning-Rowsell, above n 8, at 3.

AIG Insurance New Zealand has said that properties in the future will be assessed in accordance with their climate change risk, and properties with flooding risk will receive a premium rise.²¹ Claims for storm and insurance have risen 56% in New Zealand over the last three years, which has meant a 70% increase in claim values to insurers.²² ICNZ's CEO Tim Grafton has urged the Government to coordinate an adaption strategy in legislation to reduce risks to people, property and the environment.²³ A New Zealand example of removal of insurance cover after flooding is provided by Matatā.

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C Matatā

On 18 May 2005 severe rainfall caused a debris flow in the Awatarariki Stream at Matatā. 124 mm of rain over a 90-minute period caused a one in 100-1000 year flood event.²⁴ The flow travelled at a velocity of 15-30 kilometres per hour and deposited an estimated 700,000+ cubic meters of debris into the Matatā lagoon.²⁵ 538 people were evacuated.²⁶ 27 houses were destroyed, and the flow caused \$20 million in damage.²⁷

Insurance for Awatarariki Fanhead properties is now either prohibitively expensive or impossible to obtain.²⁸ That inability to obtain insurance has led to uncertainty. After the flow, local residents stayed on the belief that the risk would be mitigated.²⁹ However in 2017, the council saw compelling reasons for a change in the situation of land owners living on the Awatarariki Fanhead: a need for investment to allow owners within a high risk area to retreat from the risk of loss of life, and to provide certainty to property owners about the future use.³⁰ In May 2017, the council decided to initiate a change to the district plan to remove current residential zoning and prevent any further development, and discussed with the Bay of Plenty Regional Council the need to compel residents to leave the area.³¹

The Council planned to buy the 24 sections in the area at a cost of \$14.2 million.³² The compensation to the property was assessed at 2016 valuations, as if there was no flood risk and thus no diminution in value.

In an evaluation report prepared under s 32 of the Resource Management Act 1991, consultants Boffa Miskell found that, while the risk of debris flow is not a coastal hazard, the Awatarariki

²¹ Nicholas Boyack "Insurance likely to become a problem for homes on the edge of Wellington Harbour" *Stuff* (online ed, New Zealand, 13 November 2017).

²² Catherine Harris "Cost of storms in NZ pushing up premiums insurance brokerage says" *Stuff* (online ed, New Zealand, January 4 2018).

²³ Jenée Tibshraeny "Having forked out \$240m for damage caused by extreme weather events in the last year, insurers call for the establishment of a central agency to oversee a plan to adapt to the impacts of climate change; LGNZ on a similar page" *Interest* (online ed, New Zealand, 7 March 2018).

²⁴ K. Spree *Community Recovery after the 2005 Matata Disaster: Long-term Psychological and Social Impacts* (GNS Science, March 2008) at 1.

²⁵ Whakatāne District Council *Debris Flow Risk: A Way Forward for the Awatarariki Fanhead: Indicative Business Case* (Whakatāne District Council: Kia Whakatāne au I ahau, 16 August 2017) at p 2-3.

²⁶ Spree, above n 24, at 1.

 $^{^{\}rm 27}$ Whakatāne District Council, above n 25, at 3.

²⁸ Whakatāne District Council, above n 25, at 40.

²⁹ Checkpoint "Anger as Dozens of Matatā. Properties Need to be Abandoned" RNZ (14 July 2017).

³⁰ Whakatāne District Council, above n 25, at 5.

³¹ Checkpoint, above n 29.

³² Robin Martin "Council: \$14.2m to buy homes at risk from Matata Debris Flows" RNZ (14 September 2017).

Fanhead is also susceptible to coastal hazards including from sea-level rise; therefore the proposed restrictions on the use of land would be consistent with the New Zealand Coastal Policy Statement 2010 and its requirement to reduce the adverse effects from coastal hazards.³³

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In June 2018, the Bay of Plenty Regional Council proposed Plan Change 17 to the Regional Natural Resources Plan; the plan change would insert the rule NH R71 which would prohibit the use of and for a residential activity on any listed Awatarariki Fanhead property from March 2021.³⁴

This is the first time the RMA has been used to extinguish property rights in this way, and it is a controversial interpretation of the relevant powers under the RMA; it will thus go before a Board of Inquiry for the decision, with the process expected to start later in 2018. If the Board approves the plan change, this will signal to other regional councils around New Zealand that they have the power to rezone land that is at risk of coastal hazards in order to remove residential activities from permitted uses.

D Case Study: Private Insurance, Hurricane Katrina and the Gulf States

Following Hurricane Katrina, insurance companies shifted the burden of hurricane damage onto property owners and states, illustrating the industry's unwillingness to carry the burden of expensive loss to property. It is similarly unlikely New Zealand insurance companies will be willing to carry the burden of foreseeable losses for sea-level rise.

Hurricane Katrina first hit the United States at Florida on the 23rd of August 2005 as a Category 1 hurricane, before returning to the Gulf of Mexico to strengthen. It returned to land for a second and third time on the 29th of August as a Category 3 storm.³⁵ It caused extensive damage across the Gulf States. At least 1,836 people were killed by the storm or its subsequent flooding. Over a million people were displaced. Eighty per cent of New Orleans was flooded and remained so for weeks. It damaged or totally destroyed 275,000 homes.³⁶

Katrina cost USD 45.1 billion in insured wind losses. The federally backed National Flood Insurance Program had paid out a further USD 17 billion by 2010 for flood losses. Katrina was only one of seven hurricanes in the 2004 and 2005 season; the total cost of insured wind losses for all seven hurricanes was nearly USD 90 billion.

³³ Boffa Miskell Ltd *Planning Provisions for Debris Flow Risk Management on the Awatarariki Fanhead, Matatā:* Section 32 Evaluation Report (Prepared for the Whakatāne District Council, 31 January 2018) at 10.

³⁴ Bay of Plenty Regional Council *Proposed: Plan Change 17 (Natural Hazards) to the; Regional natural Resources Plan: Management of Debris Flow hazards on the Awatarariki Fanhead at Matatā* (Bay of Plenty Regional Council, June 2018).

³⁵ Jeremy I. Levitt and Matthew C. Whitaker "Hurricane Katrina: America's Unnatural Disaster" (University of Nebraska Press, Lincoln, 2009) at 2.

³⁶ James W. Macdonald, Lloyd Dixon, and Laura Zakaras *Residential Insurance on the U.S. Gulf Coast in The Aftermath of Hurricane Katrina: A Framework for Evaluating Potential Reforms* (Rand Institute for Civil Justice ,Occasional Paper, 2010) <rand.org> at 2.

The risk for these losses has been shifted onto residents. This shift has been achieved by price increases for residential wind insurance and decreases in access to coverage.³⁷ Between 2001 and 2007 in Louisiana, average wind premiums increased from below 800 USD to above 1200 USD; some coastal residential wind insurance premiums rose 300 to 400 per cent. There has been a trend since 1992 to shift risk to residents by charging hurricane deductibles based on a percentage of dwelling insurance, typically 2 to 5 per cent; some states allow for deductibles to be charged for each storm event, with deductibles as high as 25 per cent allowed in Florida. Large insurers have further reduced exposure by stopping underwriting state-provided insurance, cancelling or not renewing policies, excluding wind coverage, lowering coverage, and/or raising claim excesses.

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E State Provision of Insurance

When a private insurer leaves a gap in the market, this usually gives rise to a state-mandated system to maintain an insurance programme for consumers.³⁸ This has certainly been the case for natural disasters, which has seen growth of state and federal insurance programs; natural hazard protection in most countries is provided by the state. While private schemes are market-oriented and exclude those who do not purchase coverage, state-run insurance programmes protect citizens who cannot afford the private insurance. Governments thus tend to assume a share of costs in weather-related incidents.³⁹

For example, in the USA, state-backed programs have become the primary source of insurance for windstorm damage in high-risk areas. For another example, in the US state of Washington, insurers such as Pemco and Grange Insurance have decided against renewing policies in wildfire-prone areas.⁴⁰ Property insurers have had to rely on the Washington Fair plan which offers basic coverage to properties where owners are unable to obtain insurance from an insurance company.⁴¹

State-backed programs have faced some political pushback. For example, Florida State-Senator Alan Haynes called Florida's Citizen Property Insurance Corporation 'nothing more than socialism, and we need to stamp out socialism in this country as soon as we can".⁴² Any cancellation or reduction of these programs would further push risk onto residents.

³⁷ At 3.

³⁸ Mills, above n 18, at 6.

³⁹ At 13.

⁴⁰ Tom Banse "Some Property Insurers Pulling Back from Highest Wildfire Risk Areas" *NW News Network* (online ed, Australia, 3 October 2017).

⁴¹ Above.

⁴² Jessica Weinkle "A Public Policy Evaluation of Florida's Citizens Property Insurance Corporation" (2015) 34 JIR 1 at 3.

Three National Flood protection schemes are discussed below: the UK Flood Re scheme; the New Zealand state natural disaster insurance scheme run by the Earthquake Commission ('EQC'); and the US National Flood Insurance Program, particularly after Hurricane Sandy.

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F Case Study: Flood Re (UK)

There are an estimated 3.5 million people in the UK whose home is at risk of flooding.⁴³ One in twelve of those are at high risk.

Prior to the establishment of Flood Re, less than one in ten households who had made previous flood claims could get quotes for flood insurance from two or more insurers.⁴⁴ Those who were at the most significant risk could face premiums of thousands of pounds a year and excesses of up to UKP 5000 per claim. Flood insurance coverage was ensured through a Statement of Principles developed by the insurance industry and the government. The Statement of Principles set out voluntary commitments from the insurance industry to provide flood insurance, while the government would improve flood risk management and data.⁴⁵ Concern about the long-term viability of that voluntary Statement of Principles, and the need for more certainty for the future, led to the establishment of Flood Re.

Flood Re is a reinsurance scheme established as a collaboration between the government and the insurance industry. The scheme was established under the Water Act 2014, and began operation in April 2016.⁴⁶ It provides reinsurance to those insurance providers who offer flood insurance to eligible consumers.⁴⁷

The scheme gives insurers the option of reinsuring policies at a highly subsidised rate.⁴⁸ A homeowner purchases insurance through an insurer, who pays a premium to Flood Re.⁴⁹ When a homeowner makes a flood claim, they are compensated by the insurer, who is reimbursed by Flood Re. Flood Re premiums are at fixed price, set with reference to the property's Council Tax band to reflect the household's ability to pay.⁵⁰ Flood Re's subsidy is funded by annual levies from the insurance industry.

Not surprisingly, the cost of flood insurance has dropped as a result of this program, with four out of five householders with previous flood claims having premiums reduced by more than 50%.⁵¹ All households with previous flood claims could get quotes from at least five insurers,

⁴³ Flood Re *Our Vision: Securing a Future of Affordable Flood Insurance* (Flood Re, 2018) at 20.

⁴⁴ At 21

 ⁴⁵ Florence Crick, Katie Jenkins and Swenja Surminski "Strengthening Insurance Partnerships in the Face of Climate Change – Insights From an Agent-Based Model of Flood Insurance in the UK" (2018) Sci Tot Env 636 192, at 193
 ⁴⁶ Flood Re, above n 43, 23.

⁴⁷ At 24.

⁴⁸ Crick, above n 45, at 194.

⁴⁹ Flood Re, above n 43, At 24.

⁵⁰ At 23.

⁵¹ Flood Re, above n 43, at 25.

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which was unusual before the agreement. Notably, however, houses built after 2009 are not able to be covered by Flood Re to incentivise movement from high risk areas.

From the inception of the scheme, it was criticised as unsustainable due to the impacts of climate change. The Center for Climate Change Economics and Policy and the Grantham Research Institute on Climate Change and the Environment concluded that the scheme does not make sufficient allowance for increases in flood risk due to climate change.⁵² They stated "[Flood Re] may prove to be unsustainable because the number of properties in future that will be at moderate and high probability of flooding has been significantly underestimated." By 2080, there are expected to be 10.8 million people in the UK whose homes are prone to flooding, compared with 3.5 million now.⁵³

The key long-term objective is to provide a smooth transition to a free market which applies risk reflective pricing.⁵⁴ If the scheme was a risk-based free market, flood insurance could not be kept affordable without addressing flood risk. This risk would however greater incentivise movement from high risk areas. The scheme has a longstop date of 2039 and a future agreement will need to be found to prevent a reversion to high excesses and premiums after that date.

Any reinsurance scheme in New Zealand for coastal hazards will need to balance affordability of insurance, however also incentivise movement from high risk areas to reduce loss.

⁵² Mark Hansfor "FloodRe Insurance Scheme Unsustainable, Warn Experts" *New Civil Engineer* (London, 28 August 2013).

⁵³ Paul Sayers and others "Flood Vulnerability, Risk, and Social Disadvantage: Current and Future Patterns in the UK" (2018) Reg Environ Change 18(2) 339 at 347.

⁵⁴ Crick, above 43, at 194.

III The Earthquake Commission scheme (NZ)⁵⁵

The Earthquake Commission ('EQC') is a state-owned corporation and Crown entity. It provides cover for damage to the dwelling, residential land and domestic content caused by volcanic eruption, tsunami, natural disaster fire, storm, flood, natural landslip or earthquake. Coastal erosion is explicitly exempt. EQC was originally founded as the Earthquake and War Damage Commission in 1945 in response to the 1942 Wairarapa earthquakes. Earthquake insurance was voluntary, so many houses were uninsured, and buildings had not been repaired a year after the 1942 earthquake.⁵⁶

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The Earthquake Commission Act 1993 sets out a structure analogous to an insurance policy and cover; however, it is not a contract of insurance as there is no agreement between the insured and EQC. When homeowners insure their houses with private insurance, they pay a levy into the Natural Disaster Fund ('the Fund'). Currently, homeowners pay \$0.20 per \$100 of cover the homeowner is eligible for.⁵⁷ This is a flat rate regardless of a property's risk of natural disaster damage.⁵⁸ EQC has the discretion to set the rate of the payable premium.⁵⁹ There are no premiums related specifically to land cover. The pricing structure of a flat cost for insurance makes it affordable, even if a home is located in a high-risk area.⁶⁰ This means New Zealand homeowners likely have the highest rate of natural disaster insurance in the world.⁶¹

It is exempt from contractual interpretation, the Insurance Law Reform Act 1977 and any other insurance contract legislation.⁶² The Act is still subject to the normal principles of insurance, except where the Act expressly states it is exempt, and to the notion of indemnity.⁶³ The EQC has no commercial imperative. Private insurers will usually pay marginal claims where is it commercially sensible to; EQC is subject to political imperatives and a statutory scheme, which can make it difficult to predict when claims will be paid out.⁶⁴

⁵⁵ Note that the ability of the EQC program to provide cover for flooding and land erosion due to sea-level rise is considered much more fully in a separate, detailed report from this project: C lorns, Jesse Watts & Vanessa James, "The NZ Earthquake Commission and liability for flood and storm events" (Deep South National Science Challenge Working Paper, September 2018).

⁵⁶ EQC "Our history" (15 March 2018) <www.eqc.govt.nz/our-history>; EQC "Event Timelines 1941 –to Today" (16 February 2018) <www.eqc.govt.nz/our-history/event-timeline-1942-to-today>.

⁵⁷ Earthquake Commission Amendment Regulations 2017, s 5(1).

⁵⁸ John O'Neill and Martin O'Neill *Social Justice and the Future of Flood Insurance* (Joseph Rowntree Foundation, 2012) at 7.

⁵⁹ Earthquake Commission Act, s 36(1)(c).

⁶⁰ The Treasury New Zealand's Future Natural Disaster Insurance Scheme: Proposed Changes to Earthquake Commission Act 1993 (Treasury, Discussion Document, July 2015) at 5.

⁶¹ At 6.

⁶² Boys and Michalik, above n 7, at 288.

⁶³ At 288.

⁶⁴ At 288.

EQC uses the Fund to carry out its functions under the Act, which includes settling claims made to EQC, purchasing reinsurance from international financial markets, meeting administration costs, improving understanding of natural hazard risk and how to reduce that risk. EQC pays the Crown \$10,000,000 a year from the Fund to guarantee the Crown will meet the cost of all claims if the Fund is drained. This Crown guarantee has never been used. However, claims from 2010-11 earthquakes in Canterbury ('Canterbury Earthquakes') and Kaikoura in 2016 may drain the Fund. To avoid this, the levy has been increased from \$0.15 to \$0.20 per \$100 to rebuild the Fund.⁶⁵

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A Claims

For the Canterbury earthquakes, EQC will cover claims for home repairs or replacement up to \$100,000 plus Goods and Services Tax ('GST'). For claims up to \$15,000, a cheque is sent to the affected person or persons.⁶⁶ Contents are covered up to \$20,000. If the claim is more than \$15,000 and less than \$100,000 plus GST, the claim is referred to the Canterbury Home Repair Programme ('CHRP'). Through CHRP, the homeowner nominates a contractor to cover all aspects of the repair process, including consents, repair quality, complying with the Building Act 2004, ensuring defects are identified and remedied and cost escalation protection.⁶⁷ If the repair exceeds the cap, the management of repairs or replacement is handled by the private insurer.⁶⁸

B Damage to land

Damage to residential land can be claimed for. Visible damage is required, this includes land cracking and uneven ground settlement because of liquefaction. However, the Court in *Kraal v Earthquakes Commission* held that homeowners cannot claim for pure economic loss, for example, if land damage around the property prevents access.⁶⁹

In 2015, the Treasury proposed amending the Earthquake Commission Act 1993.⁷⁰ Two changes in relation to cover for land damage were recommended. First, that land damage cover should be confined to situations where the land is "so badly damaged it is not practically or economically feasible to repair or rebuild the insured property."⁷¹ Second, site works cover would be included under the residential building's cap and the cap would be increased to \$200,000 plus GST.⁷² Site works would include damage that is currently considered land damage, such as levelling land beneath a house.⁷³ Other land damage would no longer be covered in relation to land.⁷⁴

⁶⁵ EQC "Our role" (31 October 2017) <www.eqc.govt.nz/about-eqc/our-role/ndf>.

⁶⁶ EQC "Building claims" (31 August 2017) <www.eqc.govt.nz/canterbury-earthquakes/home-repairs>.

⁶⁷ EQC "Canterbury Home Repair Programme" (1 March 2018) <www.eqc.govt.nz/canterbury-earthquakes/home-repair-process/chrp>.

⁶⁸ Above.

⁶⁹ [2015] NZCA 13, [2015] 2 NZLR 589 at [50]–[59].

⁷⁰ The Treasury, above n 60, at 9–10.

⁷¹ At 10.

⁷² At 9-10.

⁷³ Definition of "site works" in s 7 of the Building Act 2004.

⁷⁴ The Treasury, above n 60, at 11.

C Red Zones

Post the Canterbury Earthquakes, a zoning system was introduced by the Department of Building and Housing. This system allocated each property a zone. Technical Category ('TC') 1 is for where future land damage is unlikely; it is considered a safe area from future property and land damage. TC2 is for where future land damage is likely in any large earthquake; repairs and rebuilds can occur on TC2. TC3 is for where there is a future moderate to a significant risk of land damage in any large earthquake. To repair or rebuild on TC3 will likely require a geotechnical engineering assessment.⁷⁵ Red Zones were introduced to indicate where the land has been damaged so badly that is it unlikely it can be built on in the short to medium term.⁷⁶

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The result of the zoning system was a corresponding change in land value. The High Court in *O'Loughlin v Tower Insurance Ltd* found that a decrease in value was not physical loss and therefore landowners could not receive compensation for it.⁷⁷ Being red-zoned forced homeowners to relocate because communities were abandoned and unsafe, with services and infrastructure deteriorating.⁷⁸ However, in a legal challenge, the case of *Quake Outcasts v Minister for Canterbury Earthquake Recovery* held that the red-zoning designation was not lawful within the wording of the emergency legislation.⁷⁹ Some residents are thus being allowed to remain living in the so-called red zones, and councils are required to maintain essential services such as water and sanitation, despite there being very few residents remaining.

After the Canterbury Earthquakes, it became clear that not all homeowners had insurance. Even though the government was not legally required to compensate them, there was significant political pressure to respond to the public need for compensation in order for these families to relocate and rebuild their lives. As a result, the Crown offered to purchase insured properties within the red zones at 100% of the 2007 valuation, which was the most recent valuation available. The insurance rights would also be assigned to the Crown, so they would be able to recover some, if not all the price they paid. Uninsured properties would be purchased for 50% of the unimproved land value and nothing for the buildings. The Crown would be unable to recuperate any of the prices they paid.⁸⁰ This was increased to uninsured land at its 100% unimproved value and 0% for the buildings.⁸¹

⁷⁵ Southern Response "Technical Land Categories" (2018) <http://southernresponse.co.nz/moreinformation/technical-land-categories_>; Ministry of Business, Innovation and Employment "Understanding the technical categories" (1 February 2013) Building Performance <www.building.govt.nz/building-codecompliance/canterbury-rebuild/understanding-the-technical-categories/>.

⁷⁶ Land Information New Zealand "Residential red zone areas" (2 March 2017) <www.linz.govt.nz/crownproperty/types-crown-property/christchurch-residential-red-zone/residential-red-zone-areas>.

⁷⁷ [2013] NZHC 670, [2013] 3 NZLR 275 at [49] - [50].

 ⁷⁸ Quake Outcasts v Minister for Canterbury Earthquake Recovery [2015] NZSC 27, [2016] 1 NZLR at [176].
 ⁷⁹ At [176].

⁸⁰ Boys and Michalik, above n 7, at 184; *Quake Outcasts v Minister for Canterbury Earthquake Recovery*, above n 40, at [4], [60], [213] and [214].

⁸¹ Quake Outcasts v Minister of Canterbury Earthquake Recovery [2017] NZCA 332, [2017] 3 NZLR 486 at [31].

The Court of Appeal found the further area-wide offer to purchase land at the 2007 unimproved land value was unreasonable and therefore unlawful.⁸² The Crown could not solely consider insurance status, without considering the Earthquake Recovery Act 2011, earlier decisions and parameters set by the Supreme Court. The Court did not apply the orthodox test of unreasonableness – that a decision must be so unreasonable that no reasonable decision maker could have made it; it instead applied a more liberal test that does not preclude deference where it is appropriate to consider expertise, policy content and political accountability.⁸³ The court required that revised offers be made to the homeowners. Revised offers were made on 21 August 2018 for 100% of land and improvements as valued in 2007-2008.⁸⁴

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The total amount the Crown spent on purchasing properties in the red zone was \$1,360,000,000. The compulsorily acquired land is included in that figure. \$20,170,000 has been spent demolishing houses since December 2015. \$3,780,000 has been spent on land treatment and \$490,993 on security.⁸⁵ Between 2012 and 2016, CERA spent over \$107,000,000 on the red zone. This includes \$64,000,000 on demolition, \$11,000,000 on land treatment, \$2,000,000 on security, and \$428,000,000 on property management.⁸⁶ Some costs are ongoing and thus will have increased since these reporting dates.

D Risks

Those who are uninsured are considered to be self-insuring by retaining the premiums. Insurance in New Zealand is not compulsory. People have decided against purchasing insurance or been unable to afford the premiums. The Crown offering to purchase uninsured red-zoned land could encourage others to not insure because the public is aware the state will likely intervene. Where an owner's property is purchased, taxpayer money is used to help the owner recuperate their losses. However, there is no return for that money spent; \$1,500,000,000 was spent on land now worth \$21,000,000.⁸⁷ The Crown assumed much of that cost of damage.

Flat premiums mean a scheme is risk insensitive. Risk-differentiated schemes are more economically efficient.⁸⁸ Risk differentiated premiums encourage risk reduction and signal potential hazards. If property owners have to bear the cost of the risk, they will make choices to lower that risk. This includes earthquake proofing or choosing less susceptible areas – for example, not flood-prone areas.⁸⁹

⁸² At [92]; See Officer of the Auditor General *Canterbury Earthquake Recovery Authority: Assessing its effectiveness and efficiency* (B.29[17a], January 2017) at p 48.

⁸³ At [72].

⁸⁴ Hon Dr Megan Woods "Government Announces New Red Zone Payment" The Beehive (21 August 2018).

⁸⁵ Nick Truebridge "Govt spent \$1.5b acquiring Christchurch red zone land that's now worth just \$12m" *Stuff* (online ed, New Zealand, 28 August 2017).

⁸⁶ Truebridge, above n 87.

⁸⁷ Truebridge, above.

⁸⁸ See, for example, Okmyung Bin, Jon Bishop and Caroline Kousky "Redistributional Effects of the National Flood Insurance Program" (2012) 40(3) Public Finance Review 360.

⁸⁹ O'Neill and O'Neill, above 58, at 9

There are four reasons why risk-based premiums are generally thought to be unsuitable for the EQC scheme. First, risk-differentiated premiums would increase the insurance cost for homeowners in risk-prone areas. The impacts of this may include underinsurance, requiring emergency Government assistance to repair properties after a natural disaster and undermining the social justice aims of the scheme.⁹⁰ If EQC covered sea-level rise risks, this drawback would apply to the premiums for that coverage as well.

Second, the risks of some natural disasters are difficult to quantify.⁹¹ For example, historically Canterbury was considered low risk in terms of earthquake damage. However, the city experienced extensive earthquake damage in the Canterbury Earthquakes. As a result, a new fault line was discovered which changed the risk perspective.⁹² If risk-based premiums were imposed, hypothetically, Christchurch homeowners would have paid a quarter of the premium compared to homeowners in Wellington.⁹³ However, this objection does not apply to flooding from sea-level rise, as it is a different type of risk from earthquakes. For example, it is possible to predict the risks of sea-level rise to coastal properties much more easily than for earthquake risks.

Third, homeowners find it hard or impossible to mitigate some natural disaster damage to the land. For example, technology is currently unable to protect buildings or land from earthquake damage on fault lines, only mitigate to a point.⁹⁴ If EQC premiums were to rise to make way for risk-based premiums for earthquake damage, the implication would be for homeowners to avoid purchasing a house in earthquake-prone areas. In New Zealand, that is a significant portion of the land area, including most of the capital city. However, this objection similarly does not apply to sea-level rise. For example, managed retreat from the coast is exactly the kind of action that is needed to avoid damage to housing from sea-level rise and its associated hazards.

Finally, local authorities possess responsibility. The Resource Management Act 1991 requires local authorities to take responsibility for mitigating natural disasters,⁹⁵ and the Ministry for the Environment encourages councils to develop risk management policies.⁹⁶ This means that other entities than homeowners carry some of the risk for natural disaster damage. A risk-based insurance premium would alter where the financial liability currently lies. However, this objection is again not as apt for dealing with coastal hazards from sea-level rise. Local government in New Zealand is not currently resourced sufficiently to undertake all the responsibility for adaptation to sea-level rise. Some other mechanism may be needed to encourage a recognition of the risks faced to coastal homes from sea-level rise and associated hazards, and for appropriate actions to be taken at all levels – ie, homeowners as well as central

⁹⁰ The Treasury, above n 60, at 42.

⁹¹ Janine Kerr and others A Guideline to Assist Resource Management Planners in New Zealand (Ministry for the Environment, July 2003) at 10.

⁹² PricewaterhouseCoopers *Exploring The Insurance Industry's Top Risks: A New Zealand Perspective* (August 2015) at 2.

⁹³ The Treasury, above n 60 at 42.

⁹⁴ Kerr and others, above n 91, at 1.

⁹⁵ Resource Management Act 1991, s 31(1)(i); see also s 62(1)(i).

⁹⁶ Kerr and others, above n 91, at 8.

and local government. It may be that risk-differentiated premiums are exactly one of the tools necessary to encourage this. Yet this differentiation must also be seen in light of the fact that it occurs within a state-sponsored social insurance scheme; it cannot be one that mirrors the strict allocation of risk seen in the private sector, or else it will defeat the purpose of a public scheme.

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E Compulsory Acquisition and Costs

The Canterbury Earthquake Recovery Act 2011 ('CER Act') gave powers to the Minister for Earthquake Recovery and the Canterbury Earthquake Recovery Authority ('CERA') over a property. Section 53(1) gives the chief executive of CERA the power "to purchase or otherwise acquire, hold, exchange, mortgage, lease and dispose of real property."⁹⁷ Additionally, ss 54 -55 gives the Minister powers to compulsorily acquire land.⁹⁸ The acquisition process set out in s 54 of the CER Act is similar to compulsory acquisition under other legislation. A voluntary agreement is the first step. If that is unsuccessful, a s 54 notice is issued and served upon relevant parties. The Minister then recommends the Governor-General issue a proclamation. 14 days after the proclamation is published in the Gazette, the land becomes vested in the Crown. A landowner is then able to make a claim for compensation from the Crown. Section 64 of the CER Act stipulates that the Minister determines the claims for compensation, having regard to market value and Part 5 of the Public Works Act 1981, which is discussed below in Part 5 of this paper.

It is unclear how many properties have been acquired through agreement or compulsorily acquisition, or the amount paid in every case. This information is likely to be hard to obtain because voluntary agreements are subject to the Privacy Act 1993. As of March 2016, 7,700 properties had settled with the Crown and 7,243 had been cleared. About 170 still need to settle.⁹⁹ It has been suggested that a tribunal be established in order to resolve outstanding claims by helping process claims faster and potentially deal with repairs which have not been carried out to code. This was rejected by the Insurance Council of New Zealand ('INCZ') because of fears that it would not be subject to natural justice. ICNZ noted that they have set up the Residential Advisory Service to help people navigate claims, and insurers have waived their rights to close claims under the Limitation Act. The decision to waive Limitation Act rights was in response to public demand.¹⁰⁰

CERA was disestablished on 18 April 2016, as part of the transition from Government leading the recovery to establish long-term and locally-led recovery.¹⁰¹ CERA's functions are either no longer relevant or now carried out by multiple different organisations.¹⁰²

⁹⁷ Canterbury Earthquake Recovery Act.

⁹⁸ Canterbury Earthquake Recovery Act.

⁹⁹ CERA Future Christchurch Update (CERA Document Archive, PUB320.1603, March 2016) at 2-3.

¹⁰⁰ Andrew Hookers "Insurance lawyers takes aim at Insurance Council for shooting down Labour's proposal to form a Canterbury quake tribunal" *Interest* (online ed, New Zealand, 11 September 2017).

¹⁰¹ Christchurch Regeneration Act 2016, s 146(1).

¹⁰² Department of the Prime Minister and Cabinet "Disestablishment of CERA" (11 September 2017)

<www.dpmc.govt.nz/our-business-units/greater-christchurch-group/roles-and-responsibilities/disestablishment-cera>.

F EQC Compensation Guidelines

EQC does not enter into a contract with the insured; instead compensation is governed by statute, as set by EQC determined policy. Compensation from EQC is defined in s 61 of the CER Act to mean compensation for actual loss. "Actual loss" is given a very limited definition. That section defines "actual loss" to exclude—

- (i) a loss by an insurer arising from a liability to indemnify:
- (ii) any part of a loss that is insured:
- (iii) any part of a loss that ought reasonably to have been insured:
- (iv) a consequence of regulatory change arising from the operation of this Act causing loss:
- (v) cancellation of an existing resource consent that has already been exercised:
- (vi) cancellation of an existing use right:
- (vii) economic or consequential loss:
- (viii) loss of personal property exceeding \$20,000 in value:
- (ix) business interruption:
- (x) any other loss that the Minister reasonably considers is unwarranted and unjustified.

The guidelines apply if the land has been compulsorily acquired, or the chief executive has decided to demolish a building or damage to property caused by the demolition of a building.¹⁰³ The Court of Appeal in *Ace Developments Ltd v Attorney-General* defined "actual loss" on its ordinary and natural meaning, being a real and significant loss that has been suffered or will be suffered, as opposed to loss that is non-existent or theoretical.¹⁰⁴ The Court found that economic loss could be an actual loss but that economic loss was expressly excluded. The Court equated consequential loss with loss not direct or immediate upon the compulsory taking of the land.¹⁰⁵ "Consequential loss" is a wide term which greatly limits what will be compensated by the Act.

Margo Perpick, Partner at Wynn Williams, a Christchurch law firm commented that this scheme was less generous than the Public Works Act.¹⁰⁶

The value of private insurance indemnity is the loss of value to the insured not to the property, ¹⁰⁷ or as set out by the policy. A full bench of the High Court discussed the EQC's assessment of the value of indemnity for properties at greater risk of flooding following the Christchurch Earthquakes in *Earthquake Commission v Insurance Council of New Zealand Inc*. The Commission's proposed Increased Flooding Vulnerability Policy was to pay the repair cost where

¹⁰³ Canterbury Earthquake Recovery Act, ss 40, 41, 60 and 62.

¹⁰⁴ Ace Developments Ltd v Attorney-General [2017] NZCA 409 at [40].

¹⁰⁵ At [48].

¹⁰⁶ Margo Perpick "Compulsory Acquisition in the Central City" (November 2012) WynnWilliams

<www.wynnwilliams.co.nz/WynnWilliams/media/Articles/Compulsory-Acquisition.pdf>.

¹⁰⁷ Falcon Investments Corporation (NZ) Ltd v State Insurance General Manager [1975] 1 NZLR 520 at 523.

repairs were technically feasible, could lawfully be undertaken, were not disproportionately expensive, and were likely to be carried out by the claimant.¹⁰⁸ In all other cases, the Policy was to provide payment for the loss of market value due to the natural disaster damage. The Court stated that the loss to the insured must be assessed as a question of fact in each case and will not necessarily be satisfied by a payment representing the loss in market value of the insured property.¹⁰⁹ The Court supported this with dicta from the House of Lords in *Reynolds v Phoenix Insurance Co Ltd* on the purpose of the value of an award;

'you are not to enrich or impoverish. [...] To force an owner who is not a property dealer to accept the market value if he has no desire to go to market seems to me a conclusion to which one should not easily arrive. There must be many circumstances in which an assured should be entitled to say that he does not wish to go elsewhere and hence his indemnity is not complete unless he is paid the reasonable cost of rebuilding the premises in situ.'¹¹⁰

The Court found as a matter of law, without a factual determination, that where a claimant received estimated costs of repairs or reinstatement work where that work was neither technically feasible nor lawful, the claimant would be overcompensated.¹¹¹ The Policy was consistent with the Commission's obligations under the Earthquake Recovery Act. These general principles from *Reynolds* – that an assessment of fact is required before either the cost of repairs or diminution are paid out, in order to avoid enrichment, impoverishment, or forcing an owner to market – will likely be followed in anticipated insurance claims surrounding sea-level rise, and possible claims under EQC if EQC covers relevant coastal erosion.

The limited compensation provided by EQC under its statute shows an unwillingness by government to compensate property owners beyond real loss due to actual costs expended, not just losses of market value. If and where EQC compensation applies to coastal hazards from sealevel rise, then it would likely be similarly limited; not all losses that will result will be compensated by government, resulting in land owners being liable for losses due to reduction in market value.

¹⁰⁸ Earthquake Commission v Insurance Council of New Zealand Inc [2015] 2 NZLR 381 at [100]. ¹⁰⁹ At 109.

¹¹⁰ Reynolds v Phoenix Insurance Co Ltd [1978] 2 Lloyd's Rep 440 (QB) at 451.

¹¹¹ Earthquake Commission v Insurance Council of New Zealand Inc, above n 108, at [112].

IV The National Flood Insurance Program (USA)

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The US National Flood Insurance Program ('NFIP') makes federally backed flood insurance available at subsidised prices to participating communities where those communities have agreed to adopt baseline floodplain management regulations.¹¹² The NFIP was established in 1968 as homeowner insurance tended to exclude damage caused by flood, and affordable flood insurance was difficult to acquire.¹¹³ The NFIP provides affordable insurance to property owners and occupants to reduce the socio-economic impact of disasters.¹¹⁴ Like EQC, it cannot be purchased directly but can be bought as part of an insurance package provided by private insurers.¹¹⁵ Unlike EQC it exists because the private insurance is risk sensitive. Contents coverage is to be purchased separately, flood insurance pays the replacement costs or actual value of damages up to the policy limit.¹¹⁶ NFIP offers coverage for building property up to USD 250,000, and property (contents) up to USD 100,000, USD 500,000 for business structures and USD 500,000 for business contents. NFIP does not cover for losses for: basement flooding; temporary housing; damage caused by earth movement under the slab of a house, even if this was caused by the flooding; currency; precious metals; property and belongings outside; cars; or financial losses caused by business interruption.¹¹⁷

NFIP is managed by the Federal Emergency Management Agency ('FEMA'). NFIP requires FEMA to identify and map flood areas and in those areas 'Special Flood Hazard Areas' property owners are required to purchase flood insurance.

Unfortunately, the NFIP is currently in debt for USD 25,000,000,000. NFIP is paid around USD 3,300,000,000 in premiums a year, which does not fully cover the losses that have occurred. For example, following Hurricane Katrina, the NFIP paid more in claims that it had paid out collectively since its inception.¹¹⁸ Coastal storm-related damage has made up approximately 60% of NFIP's payouts for the last 35 years.¹¹⁹

A Costs and Risks

The execution of the NFIP has encouraged residents to take greater risks by living in flood-prone areas. The scheme was originally established to encourage people to move away and out of flood-prone areas. In the provision of subsidises flood insurance to properties in coastal zones,

¹¹² Carolyn Kousky and Erwann Michel-Kerjan *Hurricane Sandy, Storm Surge, and the National Flood Insurance Program: A primer on New York and New Jersey* (Resources for the Future, November 2012), at 1.

¹¹³ Lloyd Dixon and others *Flood Insurance in New York City Following Hurricane Sandy* (RAND Corporation, 2013) at 1.

¹¹⁴ FEMA The National Flood Insurance Program (accessed 31 August 2018).

¹¹⁵ Dixon, above n 113, at 1.

¹¹⁶ FEMA National Flood Insurance Program: Summary of Coverage (FEMA F-679, November 2012) at 1.

¹¹⁷ FEMA, above n 116, at 2-3.

¹¹⁸ At 12.

¹¹⁹ At 13.

the scheme acts as a positive factor to purchase homes in those zones.¹²⁰ Homeowners in coastal zones are NFIP's primary beneficiaries. These properties are usually also subject to repetitive loss payments from the NFIP. A repetitive loss payment is where a payment for loss has occurred after more than one flood. This encourages homeowners to repair and rebuild in the risk-zoned area rather than move out of it. Repetitive loss payments are the main reason that NFIP has had solvency issues. Almost a quarter of all payments, from 1987 to 2013, have been repetitive loss payments totalling USD 9,000,000,000. The houses subject to repetitive loss only make up for 1.3 per cent of all policies.¹²¹ Some repetitive loss properties have made over 40 claims. One example of repetitive loss payments totals \$806,591, seven times the value of the house that has received several loss payments for damage from repeated flooding.

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NFIP subsidises premium rates. Policyholders who have structures built prior to FEMA mapping flood risk area have heavily subsidized premium rates. The risk-sensitive nature of private insurance is adjusted by the NFIP subsidises.¹²² The subsidised rates fail to reflect the risk of flood risk to a coastal property.¹²³ This may disincentivise property owners to make efficient location decisions. The NFIP being in debt is considered to be a result of these inefficient location decisions, including the resulting repeated claims.¹²⁴

Hurricanes and coastal storms have increased in frequency and, as a result, are increasing the physical and financial damaged they cause.¹²⁵ The common recurrence and guaranteed payouts for coastal dwellers ensure these owners see the coastal damage as a normal event, rather than one to suggest relocation.¹²⁶

B Case Study: Hurricane Sandy

Hurricane Sandy hit all five boroughs of New York City on 29 October 2012. The storm surge reached over 400,000 buildings. It resulted in 159 deaths and USD 65.7 billion in damage.¹²⁷ It is estimated that only 15 to 25 per cent of properties in Special Flood Hazard Areas in the northeast had the mandated insurance for flood issues when Sandy struck.¹²⁸ The geographic scope and the low take-up of flood policies lead to NFIP payouts between USD 12 billion and USD 15 billion.¹²⁹

¹²⁰ Robin Craig "Harvey, Irma, and the NFIP: Did the 2017 Hurricane Season Matter to Flood Insurance Reauthorisation?" (2018) 88 University Law Faculty Scholarship 88 at 7. (Also forthcoming in UA Little Rock Law Review).

¹²¹ Craig, above 120, At 7.

¹²² At 9.

¹²³ Rawle O. King *The National Flood Insurance Program: Status and Remaining Issues for Congress* (Congressional Research Paper, R42850, February 2013), at 3.

¹²⁴ Craig, above n 120, at 10.

¹²⁵ At 11.

¹²⁶ At 13.

¹²⁷ Craig, above n 120, at 11.

¹²⁸ King, above n 123, at 3.

¹²⁹ At 5.

The lack of coverage for flooding in basements left those insured exposed to substantial losses.¹³⁰ The lack of coverage for damage caused by earth movement under the slab of the house, even if caused by flooding, resulted in several hundred homeowners in New York being denied NFIP claims.¹³¹

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Because of criticism and possible fraud, claimants were subsequently offered the opportunity to have the original claim decisions by FEMA reviewed. This was accompanied by major reforms aimed at increasing transparency of claims handling.¹³² 19,467 claims for review have been received and nearly 85% of them have received additional payments totalling \$258,648,226.¹³³ NFIPs borrowing limit was extended following Hurricane Sandy from USD 20.775 billion up to USD 30 billion in order to cover pay-outs.¹³⁴

Those not covered by NFIP, or whose damage was not subject to coverage, were required to find other funding for repairs, rebuilding, and recovery. The Federal Government made the Community Development Block Grant Disaster Recover fund available, which was separated into to further funds, Build it Back and NY Rising.¹³⁵ However, these funds had restrictions, some being onerous. To receive NY Rising funds, victims must show eligibility criteria, and must also obtain flood insurance under NFIP. If a victim had previously received federal assistance with the requirement to buy flood insurance but did not, that person was ineligible for NY Rising relief following Sandy.¹³⁶ This led to a significant cost to those property owners.

Low insurance rates and the substantial uninsured loss shows the possible impact when a property owner assumes the risk, and the importance of an automatic levy-based EQC scheme rather than a requirement to buy extra insurance. This addresses individual losses and enables people to rebuild their lives and maintain their communities. However, there is significant concern that a post-disaster recovery financing scheme that is insensitive to future flood risks will lead to the rebuilding of infrastructure in the same vulnerable areas.¹³⁷

2017 was the most expensive hurricane season in the United States of America. It was in the top 10 most active Atlantic seasons recorded: the first storm of the hurricane season formed a before the season was meant to start, it was the second season to have two Category 5 hurricanes to make landfall, the first season to have two Category 4 hurricanes to make landfall, the first season to have two Category 4 hurricanes to make landfall, the first time since 2010 that three hurricanes were in the Atlantic Ocean simultaneously, and the first time since 1983 that 10 hurricanes have occurred.¹³⁸ Data from Hurricane Harvey's rainfall has suggested climate change is increasing the likelihood of Atlantic hurricanes.

¹³⁴ Craig, above n 120, at 12.

¹³⁰ Craig, above n 120, at 25.

¹³¹ At 26.

¹³² Jean Mikle "FEMA announces major flood insurance reforms" *App* (online ed, United States of America, 23 May 2016).

¹³³ FEMA "Sandy Claims Review Division Update" (1 February 2018) < www.fema.gov/media-library-data >.

¹³⁵ Matthew J. Kutner "One for Ten Dollars, Two for Thirty: the Value of the National Flood Insurance Program Dwelling Policy for the Insured" (2014) 43 Hofstra L. Rev. 169 at 173

¹³⁶ At 174.

¹³⁷ King, above n 123, at 4.

¹³⁸ Craig, above n 120, at 23.



Hurricanes have been getting stronger for the last 30 years, there have been more Category 4 and 5 storms, and the warming water will further fuel more powerful storms.¹³⁹ NFIP is not structured to reflect adaptation needed for climate change. The current structure will likely encourage rebuilding and repairs in areas which will ultimately be inundated.¹⁴⁰ To ensure the solvency of the programme, it has been suggested that NFIP should change to a scheme that encourages property owners to move out of areas prone to repeated flooding and destruction.¹⁴¹

¹³⁹ At 24.

¹⁴⁰ At 25.

¹⁴¹ At 32.

V Compulsory Acquisition: Public Works Act 1981 (NZ)

If it was thought that the Crown should purchase land for the purposes of managed retreat from coastal hazards – i.e., coastal land that is currently occupied by housing – one method could be to compulsorily acquire it using the Public Works Act 1981 ('Public Works Act'). The section will address the rules around this, and make some brief comments about its suitability for this purpose.

Under the Public Works Act, the Minister of Lands can acquire any land, unit title, building or structure for any government work.¹⁴² Government work "means a work or intended work that is to be constructed, established, managed, operated or maintained by or under the control of the Crown or any Minister for any public purpose."¹⁴³ Local authorities are also given powers under the Public Works Act to acquire land. Local authorities include regional councils, territorial authorities, catchment authorities, regional water boards, harbour boards, electric power boards, educational authorities, university councils, airport authorities and any other person or authority designated under any Act.¹⁴⁴ This is limited to works where the local authority has financial responsibility.¹⁴⁵ The Local Government Act 2002 also allows local authorities to construct works on or under private land or buildings for water supply, trade waste disposal and land drainage.¹⁴⁶

The Public Works Act stipulates that, prior to notice of compulsory acquisition, the body should try and consult with the affected landowners to sell their land or interest by agreement.¹⁴⁷ If an agreement is reached, the transfer of title can be by declaration or ordinary transfer to the Minister.¹⁴⁸ The agreement can include what compensation is to be paid to the land owner or interest holder. If an agreement is not reached, a formal notice may be issued. This notice will be registered on the certificate of title.¹⁴⁹ The notice invites the owner to sell the land and then the Minister must negotiate in good faith. If a solution is not reached in three months, then a year after the notice, compulsory acquisition of the land will occur, or the notice can be withdrawn.¹⁵⁰ If the sum of compensation cannot be agreed upon, it will be referred to the Land Valuation Tribunal.¹⁵¹ If an owner has an objection, they must file a notice of objection to the Environment Court.¹⁵²

¹⁴² Section 4A(a).

¹⁴³ Definition of "Government work" in s 2 of the Public Works Act.

¹⁴⁴ Definition of "Local authority" in s 2 of the Public Works Act.

¹⁴⁵ Section 16(2).

¹⁴⁶ Section 181.

¹⁴⁷ Section 17.

¹⁴⁸ Section 17.

¹⁴⁹ Section 18.

¹⁵⁰ Section 18.

¹⁵¹ Land Valuation Proceedings Act 1984, s 28.

¹⁵² Public Works Act, s 23(3).

Where land has been acquired, the owner is entitled to full compensation for the interest or property acquired,¹⁵³ unless a right existed for the Crown or local authority to take the land and use it for a road, rail line or access way.¹⁵⁴ If the activity is outside the statutory powers of the Public Works Act, a common law action for trespass or another action is possible, such as a local authority is liable for ongoing flooding by escaped water.¹⁵⁵ Compensation is limited in two different ways. First, the cause of action must arise out of the common law but for the statutory regime. For example, trespass, negligence, private nuisance, access rights or another cause of action.¹⁵⁶ Second, if a notice of intention has been raised and then withdrawn, any damage that has occurred during that period, the owner may be entitled to some form of compensation.¹⁵⁷

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The Marine and Coastal Area (Takutai Moana) Act 2011, Māori customary rights, and the ongoing use of public works legislation in the alienation of Māori land needs to be thoughtfully considered if the Public Works Act 1981 is to be used to acquire coastal land. Even if such a use may be lawful, such as through being pursuant to legislation, it may breach Treaty principles and justify a claim before the Waitangi Tribunal.¹⁵⁸

A Compensation for Compulsorily Acquired Land

Where land is taken, a claim can be made by the owner of the land, or on behalf of an owner who lacks capacity.¹⁵⁹ The claim must be made within two years after the declaration of taking the land or works done on the land.¹⁶⁰ If land has been taken without a compensation agreement, the owner can apply to the Minister or local authority for a formal offer of compensation, alternatively the Minister or local authority can apply to the Land Valuation Tribunal. The Land Valuation tribunal can hear the claim and make an order as to the compensation.¹⁶¹

The date of assessment will depend on the circumstances of acquisition. If it is vested by proclamation, that is the specified date. The specified date could also be the date the notice was issued or beginning of construction, depending on relevant circumstances.¹⁶² Part 5 of the Public Works Act sets out what may or may not be taken into consideration. The value of the land is determined if the land was to be sold on the open market, unless the assessment of compensation relates to any matter which is not directly based on the value of land and in respect of which a right to compensation is conferred under the Act. If part of the land is acquired, the compensation is based on the whole value of the land, deducting what remains in

¹⁵³ Section 60(1).

¹⁵⁴ Section 61.

¹⁵⁵ Powrie v Nelson City Corporation [1976] 2 NZLR 247.

¹⁵⁶ Wildtree Hotels Ltd v Harrow London Borough Council [2001] 2 AC 1.

¹⁵⁷ Cockburn v Minister of Works and Development [1984] 2 NZLR 466.

¹⁵⁸ The liability of the Crown for breaches of The Treaty principles and climate adaptation is addressed in a separate paper from this project: C Iorns, "Liability Under the Treaty of Waitangi for Sea-level Rise Adaptation" (Deep South National Science Challenge, Draft Working Paper, 30 Sept 2018).

¹⁵⁹ Public Works Act, ss 59, 77 and 81.

¹⁶⁰ Section 78(1).

¹⁶¹ Sections 70 and 79.

¹⁶² Section 62(2).

the owner's possession.¹⁶³ If the value of the land has been affected by the work, such as a decrease or increase that will be taken into account.¹⁶⁴ Any special suitability of the land or natural material is not accounted for in the price unless there is a general market for it, other than the body acquiring it.¹⁶⁵ Additionally, any deduction may be made if the New Zealand Transport Authority has increased the value of the land by way of road alterations.¹⁶⁶

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B Market value

The legal test for the market is set out in *Cedars Rapids Manufacturing and Power Co v* Lacoste:¹⁶⁷

"(1) The value to be paid is for the value to the owner as it existed at the date of taking, not the value to the taker. (2) The value to the owner consists in all advantages which the land possess, present or future, but it is the present value alone of such advantages that falls to be determined."

The willing seller is considered a reasonable person. Site potential is the second requirement; any special attributes the property possesses must be taken into account. Potential value also includes zoning rules, potential zone changes or resource consents.¹⁶⁸ Injurious affection for compensation can also be claimed. This is likely to occur where the public work affects the remaining land or cause further damage.¹⁶⁹

In order to avoid coastal hazards, zoning changes may attempt to change permitted land use activities, as seen in the case study of Matatā. In such cases, land values will invariably dramatically decrease. If the Public Works Act scheme is used to compulsorily purchase such properties, the appropriate compensation will be based on the reduced market value. This could leave an owner feeling short changed when, prior to the plan change, the land was worth more. This could lead to an unwillingness by central government to undertake compulsory acquisition due to possible political repercussions. Interestingly, in the Matatā case study, the full, previous property values were proposed to be used, not the current, now-reduced ones.¹⁷⁰

¹⁶³ Section 62.

¹⁶⁴ Section 64.

¹⁶⁵ Section 62(1)(d).

¹⁶⁶ Section 62(1)(f).

¹⁶⁷ [1914] AC 569 (PC) at 576.

¹⁶⁸ Elizabeth Toomey and others New Zealand Land Law (3rd ed, Thomas Reuters, Wellington, 2017) at [15.6.03].

¹⁶⁹ Section 63(3).

¹⁷⁰ And despite using such now-inflated and arguably exorbitant values, residents are still upset at being forced to relocate away from the hazard zone. See Section IIC, above.



VI The Leaky Homes Crisis (NZ)

A Background

Since the 1990s, thousands of New Zealand homes have been unable to withstand weather conditions due to poor materials and de-regulation, leading to huge repair costs.¹⁷¹ In 2009, PwC estimated a total number of affected dwellings at between 22,000 and 89,000, with a consensus number of 42,000.¹⁷² The initial issue was that properties were not weathertight, however, the issue has evolved; in many homes, either the weathertight issue has not been repaired, or it has been inadequate so that that repair became faulty in some way. These buildings are still sold and bought, for the purchasers to find out they have purchased a leaky home, or that the repairs that they were aware of were insufficient.

The Weathertight Homes Resolution Services Act 2006 established the Weathertight Homes Tribunal. The Tribunal was established because the government recognised the issue of leaky home claims and understood the need for quick dispute resolution.¹⁷³ Eligibility is set out in the statue, with the main requirement being that water has penetrated the property because of the design, construction or alteration and that has caused damage.¹⁷⁴ The Tribunal is only open if the claim is within 10 years of the act or omission, or the limitation will apply. There is no obligation to go to the Tribunal, and other dispute resolutions available are the court system, the Disputes Tribunal (if less than \$15,000), the Financial Assistance Package, private negotiation, mediation or arbitration.¹⁷⁵

B Risks and costs

Consenting Authorities are liable to homeowners through the tort of negligence for their role in the leaky building crisis. Authorities are liable if they owed the plaintiff a duty of care, the breach of which has a causal link between the damage and loss, which is not too remote to hold the authority liable.¹⁷⁶

The Building Act 1991 and 2004 both have 10-year limitation periods within which claims must be made. A 15-year longstop for civil action was introduced by the Limitation Act 2010. The

¹⁷¹ Daniel Gartner "Leaky Buildings and the Negligence Liability of Public Authorities: Background, Principles and Limits" (LLM Research paper, Victoria University of Wellington, 2010) at 1-3.

¹⁷² PriceWaterhouseCoopers "Weathertightness – Estimating the Cost" (Prepared for the Department of Building and Housing, July 2009) at 3.

¹⁷³ Weathertight Homes Resolution Services Act 2006, s 3.

¹⁷⁴ Sections 14(c)-(d), 15(d)-(e), 16(b)-(c) and 17(b)-(c).

¹⁷⁵ Ministry of Building, Innovation and Employment "Dispute resolution for your weather tight claim" (27 September 2017) Building Performance <www.building.govt.nz>.

¹⁷⁶ Gartner, above n. 171, at 19.

Limitation Act 1950 applies to any acts or omissions before 1 January 2011. The Limitation Act 2010 applies to any acts or omissions after 1 January 2011. Most of the claims are prior to 2011 and as such, the Limitation Act 1950 applies.

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The Limitation Act 1950, s 4(1) says that a claim in contract or tort cannot be brought more than six years after the date of cause of action accrued. A claim in negligence can occur after when the damage is reasonably discoverable.¹⁷⁷ The Limitation Act 2010 puts a stop after six years. If a claim is made after the six years, s 11 provides a defence to the claim that it was filed after six years of the date or omission which the claim is based, and therefore a court cannot hear the claim. Late knowledge claims are now allowed, which allows an additional three years from when the plaintiff gained knowledge or ought reasonably to have gained the knowledge of the issue.¹⁷⁸ The 15-year longstop bars any claims for acts or omission that occurred more than 15 years prior to the issue of proceedings.

Despite the limitation, there are other avenues for recovery. A purchaser may have a claim in misrepresentation if the owner or agent represents the property is not leaky under s 35 of the Contract and Commercial Law Act 2017. Another claim could be made under the Fair Trading Act 1986, as s 9 prohibits misleading or deceptive conduct which is likely to mislead or deceive.

In the Tribunal, the claimant can claim for the cost of remedies work, loss of rental or rental for the period the property was affected, interest on loans obtained to carry out remedies, general damages for inconveniences and accommodation costs if necessary.¹⁷⁹

The Financial Assistance Package was a limited scheme which ran from 23 July 2011 to 22 July 2016.¹⁸⁰ The Government and council would pay 25 per cent each of the agreed cost for repair and the homeowner would pay the remaining 50 per cent, this was not capped at any amount. This was to ensure quick and effective home repair.¹⁸¹ The scheme was established partly due to political imperatives caused by considerable political pressure from the electorate to intervene.¹⁸² When the Financial Assistance Package Scheme launched in 2011 it was thought the cost would be close to \$1,000,000,000. Before closing in June 2016, Government spending on the scheme had been \$38,800,000, with \$15,500,000 earmarked for additional claims. There was a lack of uptake due to claimants not believing the part payment programme was value for money compared to the Tribunal or High Court, the limitation period of 10 years being too short, and the process being too complex.¹⁸³

¹⁷⁷ Invercargill City Council v Hamlin [1996] 1 NZLR 513.

¹⁷⁸ Sections 14 and 11(3).

¹⁷⁹ Section 50; Ministry of Justice "What you can claim for" (19 September 2016) <www.justice.govt.nz>.

¹⁸⁰ Ministry of Business, Innovation and Employment "Financial Assistance Package scheme" (26 July 2016) Building Performance <www.building.govt.nz>.

¹⁸¹ Ministry of Business, Innovation and Employment "Repairing your home with the Financial Assistance Package" Building Performance <www.building.govt.nz>.

¹⁸² Chris Murphy "Keeping the Builder Honest: An Analysis of Recent Building Code Initiatives in New Zealand" 201457(4) Archit Sci Rev 295, at 297.

¹⁸³ Chris Murphy "Why Isn't It Working? The Rise and Fall of the Financial Assistance Package in the Repair of Leaking Buildings Within New Zealand" (paper presented to Architectural Research Through to Practice: 48th International Conference of the Architectural Science Association, Genoa, December 2014) at [3].

The owner also carries a loss once the house has been repaired. A house with cladding that even looks like it might be monolithic cladding suffered an 11 per cent depreciation due to the general market stigma surrounding leaky buildings; repaired buildings suffered a further 5-10 per cent depreciation due to that stigma.¹⁸⁴

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Owners of leaky buildings had difficulties facing up the potential costs to their properties. PwC found that owners were more likely to make a claim, the greater the magnitude of the failures.¹⁸⁵ However, PwC found some owners did not want to know of the damage to their houses.¹⁸⁶ This was caused by a lack of consumer awareness, direct denial, a desire to sell, or an unwillingness to face up to the consequences. Owners who have not sought to check their weather tightness could sell in good conscience with little liability. PwC found experts believed that these led to issues going untreated, and therefore a build-up of structural problems, leading to the owner bearing the full cost of repair and significant structural problems.¹⁸⁷

In November 2017, Auckland Council's regulatory services director Penny Pirrit said that the leaky building crisis had cost that Council alone \$600,000,000 in claims.¹⁸⁸

C Lessons from the Leaky Homes Crisis.

It is likely there would be similar political pressure for a government financial assistance package for coastal properties. Political pressure could be greater due to the regional clustering of properties in electorates where a high proportion of properties are at risk, such as the South Dunedin electorate. Greater political pressure for financial assistance would be put on electorate MPs.

If the Financial Assistance Package for weathertightness was to be applied to sea-level rise, it must be comparable in value to other avenues of redress, simple, and with a long longstop, period to ensure uptake. However, a long longstop could incentivise the avoidance of accepting the risk.

A similar stigma that surrounds monolithic houses will also surround low-level housing. In some areas of New Zealand, that has already happened – for example, property values for coastal properties in Haumoana dropped from between \$75,000 and \$160,000 in 2010, to between \$20,000 and \$75,000 in 2013.¹⁸⁹ It will only be a matter of time before this spreads to properties not already suffering significant flooding but which are likely to be so in the future. Without any intervention, this would shift the financial burden of sea-level rise onto current homeowners.

¹⁸⁴ Song Shi, Iona McCarthy, Uyen Mai "Leaky building stigma: Can it be eliminated by remediation? Evidence from New Zealand" 2017 10(3) International Journal of Housing Markets and Analysis 328 at 339.
¹⁸⁵ Durg. above p. 172 at 24.

¹⁸⁵ PwC, above n. 172, at 24.

¹⁸⁶ At 64.

¹⁸⁷ PwC, above n. 172, at 65.

¹⁸⁸ Anne Gibson "Leaky Buildings Cost Auckland Ratepayers \$600m" NZHerald.co.nz (5 November 2017).

¹⁸⁹ Lawrence Gullery "Coastal Properties Hit In Latest Wave of Valuations" *Hawkes Bay Today* (13 October 2013). See also Matt Shand "Matata: Damned Because Dam Never Built" *Stuff.co.nz* (23 December 2017).



The severe overestimation of the total costs of the Financial Assistance Package Scheme suggests a difficulty of estimating future costs if a similar scheme was to be applied to coastal properties.

Similar issues of owners avoiding accepting that possible damage to property could also occur. *Weir v Kapiti District Council* already seemingly shows resident's unwillingness to face the knowledge of sea-level rise.¹⁹⁰ If negligence is applicable to territorial authorities' decisions to grant resource consent to build near coasts, unwillingness to resolve issues early will further reduce owners' possible relief due to the 15-year longstop of the Limitation Act or limit a possible relief under a financial assistance package. This will shift costs further onto the owner.

¹⁹⁰ Weir, above n 178.

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VIII Conclusion

The private market incentivises insurance companies to remove coverage from high risk consumers. With more properties at high risk of coastal hazards, risk will be pushed further towards property owners. This may lead to political pressure for either government intervention into the private insurance market, as a reinsurance or state insurance scheme, or for government to assume loss through land acquisition or compensation. Following the Christchurch earthquakes, land acquisition was undertaken at significant cost to the government. The leaky homes crisis led to political pressure requiring government intervention to help provide recovery for landowners. There will be similar pressure on central and local governments to simultaneously fund adaptation measures to protect coastal property, subsidise insurance for losses from storm and flood damage, and compensate coastal property owners for relocation when necessary. Sea-level rise is a certainty, so lessons can be taken from overseas examples about aspects to avoid as well as those to encourage.

This paper has examined ways that risk, damage, cost and liability currently fall under different schemes, and has highlighted some overseas examples. Private insurance, state supported insurance, the Public Works Act 1981, and council liability could be used to share losses of value and utility of land. Each of them has weaknesses; however, these can be used, adapted, and/or combined to create a framework to deal with loss of value and utility of land due to sea-level rise.

While some natural hazards, such as earthquakes, are difficult to predict and thus to provide affordable cover for, sea-level rise is a certainty and must be provided for somehow. If any government subsidy scheme is adopted, it will need to avoid the problems of previous compensation schemes here and overseas, and be carefully designed to enable people to assess and manage the risks to their homes and communities fairly. What is fair won't be determined by analysis of what is currently legal, but needs to be the subject of a wider discussion, such as that undertaken by other researchers in this National Science Challenge project on housing, insurance and sea-level rise.¹⁹¹

¹⁹¹ See, e.g., Elisabeth Ellis, *How Should the Risks of Sea-Level Rise be Shared*? (Working Paper for the Deep South National Science Challenge, August 2018).



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