Christchurch City Council
Coastal Hazards Working Group

12 March 2021

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ICNZ Insurance Council of New Zealand

Overview

- Who we are – general (re) insurers (NOT Life and Health)
- ICNZ members protect over $1 trillion of NZ's assets and liabilities
- Views on:
    - Risk – what is it? increasing losses, how is risk managed? Climate risk and where insurance fits in?
    - Things to know about insurance
    - How insurance/reinsurance works
    - Big drivers of change - regulatory
    - Responses to climate change – insurers and banks
    - Insurance pricing
    - Data sources and capability
    - What can local government do?

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Risk, Insurance and Climate Change

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What is risk? What are disasters?

- exists within the complexity of global systems we depend on for our prosperity including banking, insurance, infrastructure, real estate etc
- by reducing risks, we can limit the adverse economic, social and environmental impacts and become more resilient
- **Risk** is a product of a **hazard** (e.g. extreme weather, quakes, fire), **exposure** (people/property that could be impacted) and **vulnerability** (e.g. how resilient is the property to the hazard)
- "Disasters" are **not** natural but the product of
  - collective decisions and investments where to place ourselves and what is of most value to us on the landscape
  - natural forces impacting on ourselves
  - the extent to which we and what we value are vulnerable e.g. building quality
- Information/knowledge about risks must be easily/freely accessible to all to inform choices, build resilience and reduce vulnerability

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Drivers of increasing insurance losses locally and globally

- Population increase
- Improved living standards, so **higher value assets**
- **Aggregation** of people/assets in urban areas
- Settlement and **investment in vulnerable areas** specially coastal areas and areas close to rivers
- **Climate Change** – intensification and accumulation of extreme weather events

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Climate Change Risks for Insurers

Risk 1: underwriting physical assets

- accepting transfer of risk for a price

Risk 2: investment

- other side of the balance sheet, insurers are large investors in physical assets (US$30 trillion), so de-carbonising portfolios has begun to avoid stranded asset risk e.g. coal divestment

Risk 3: liability

- cover for councils, infrastructure/other property. Failing to address known climate change risks which cause damage to third parties, creates a liability. In Australia, the regulator has said directors can be held accountable for failing in their duty to assess climate change risk. How will liability insurers respond?

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Drivers of Change

Zero Carbon Act and Climate Change Commission

- long-term framework with adaptation/risk-reduction mandatory

Regulatory

- RBNZ as regulator of Banks and Insurers focusing on climate change impacts on financial stability

Emerging legislation

- Government to make climate change disclosures mandatory from 2023 for major public and private entities (including banks and insurers)
- RMA changes – Climate Change Adaptation Act, Strategic Planning Act

Banks and Insurers

- Starting to report CC exposure (e.g. Westpac)
- Shorter term loans will impact demand and price
- Risk-based pricing (informs investment decisions/efficient capital allocation

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New Zealand Risk, Insurance and Reinsurance

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NZ is a risky country

- Given the size of our economy New Zealand faces one of the biggest risks in the world to natural perils
- Lloyd's study rated **New Zealand No 2 in the world for most vulnerable to the impact of natural disasters** in any given year as a % of GDP behind Bangladesh
- **New Zealand is #9 in world for coastline length** (think as an island nation of coastal hazards incl sea level rise). Replacement costs of 125,000 properties located between 0 and 1m from mean high tide levels is about $38 billion.
- fortunately New Zealand has one of world's highest levels of **insurance penetration (4th in the world)**

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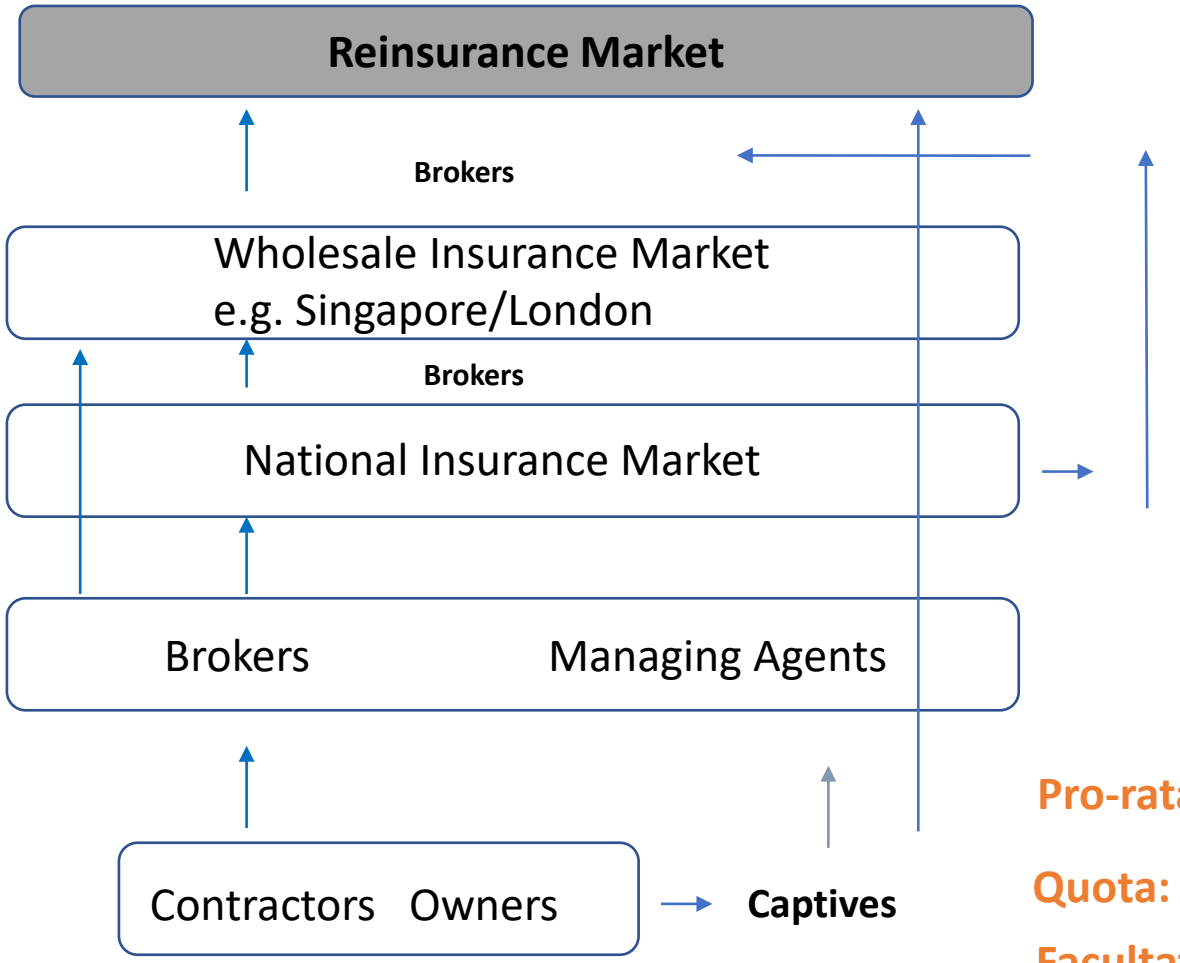
Insurance and Reinsurance market - 75% of catastrophe risk carried offshore

Reinsurance

Direct insurance market

Intermediaries

Risk organisation



Main RI arrangements

Pro-rata: share split % dividend and risk

Quota: risk layer above 1st loss

Facultative: single large risk

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New Zealand Issues

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Insurers in New Zealand take an all-risks approach

Flood

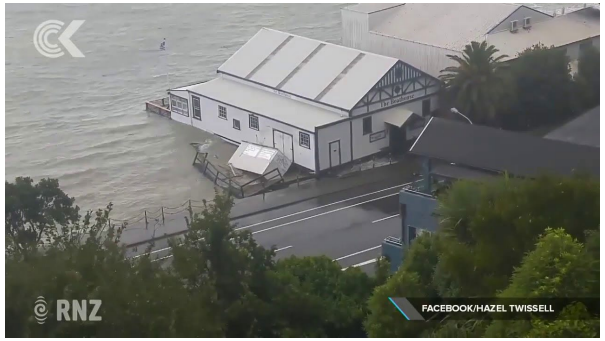
Landslip

Wind

Earthquake

Fire

Storm surge



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Risk Management and Insurance

- Risk management involves:
  - Avoidance
  - Control
  - Acceptance
  - Transfer (to insurers)
- As noted house insurance in New Zealand covers all risks (fire, earthquake, flood, volcano, tsunami, etc)
- In most other countries perils like flood and earthquake are optional and additional to standard fire insurance
- Insurance only covers sudden and accidental events
- Sea-level rise on its own is neither sudden nor accidental
- Insurance restores losses = no better, no worse

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Other things you need to know…

- Only responds to loss from material damage
- Does not pay for economic loss e.g. section 124 notice and uninhabitable houses
- Does not insure land – EQC does but only with respect to specified events and within a designated area
- Does provide up to 6 months temporary accommodation payment if house is uninhabitable temporarily due to damage
- Can cash settle which has implications for reinstatement of property

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Explaining Risk-based pricing

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Data is the key

Risk for insurers is a financial sum based on:

Frequency x ***Severity*** = **Average Annual Damage (AAD)**

Frequency based probability of event in any one year e.g. 1:100 year = 1% any year

Severity is a measure of actual damage incurred due to any given event; this can be estimated by models using historic events, house type and age

Traditionally, risk rated on historic losses

Data is changing the game:

Multiple sources – councils, NZGD, GIS, GNS, LINZ, mix of open source/specialist suppliers e.g. CoreLogic (5m urban resolution or modellers)

Type of data - flood maps, hydrology, topography, Lidar, coastlines, landslips, fault lines

Riskscape 2.0 coming soon (Probabilistic model for all hazards to estimate losses)

Insurers own models – some larger insurers have their own models

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Average Annual Damage for flood

AAD

- cost of potential flood events integrated annual probability of occurrence

This will cover:

- houses affected by flood very often but with only minor damage
- houses affected by flood rarely, but when it does significant damage occurs
- houses can be categorised into **H**igh, **M**edium and **L**ow bands reflective of the financial risk

Premiums

- Insurers can build an actuarial model based on the data to forecast how often customers will claim and for how much = Average Cost Claim Per Policy (CPP)
- Insurers will adjust the CPP for various risk factors that statistically affect the claims risk e.g. flood location, type of house build,

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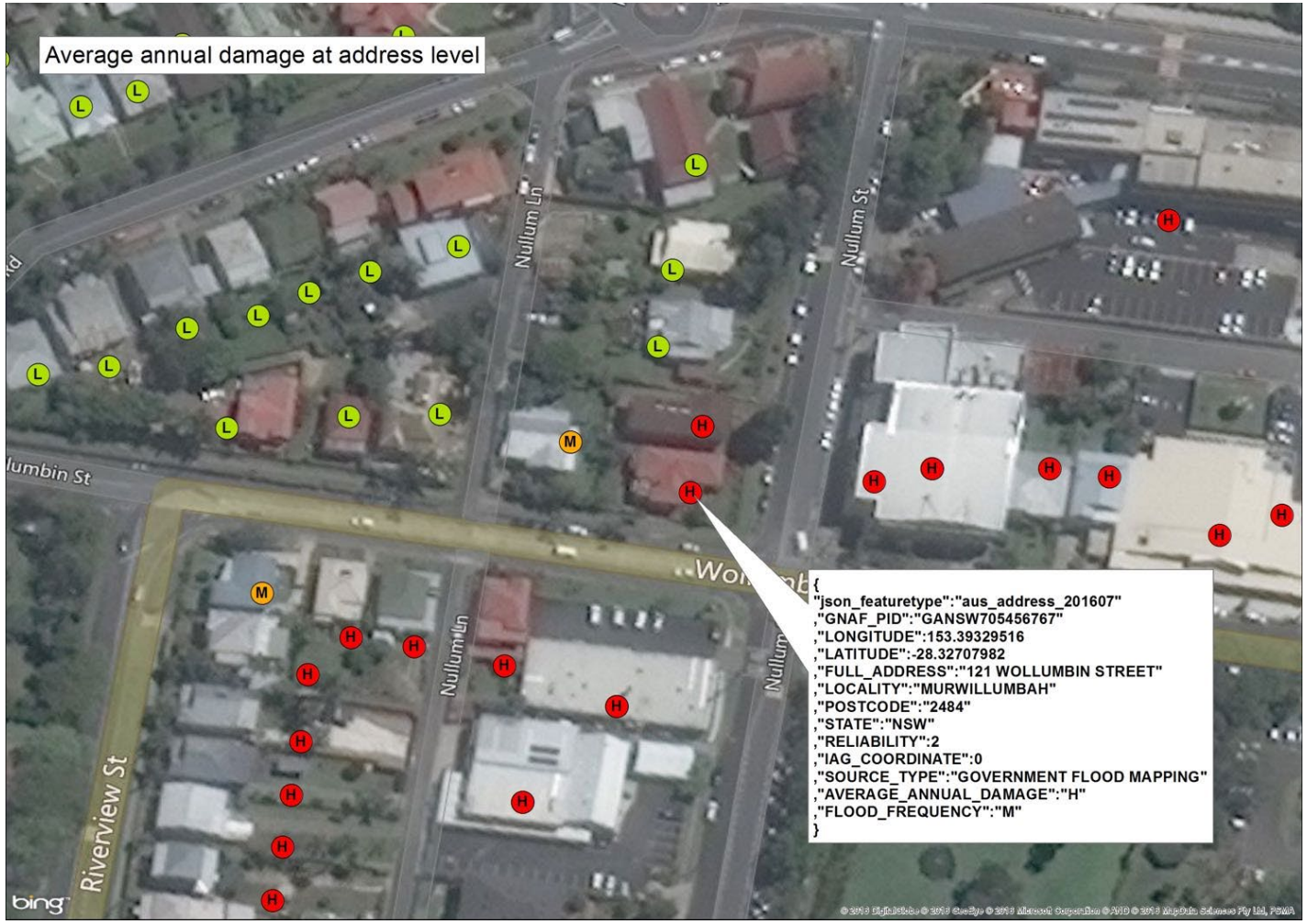
Down to the individual property



Components of the premium
(1) Technical Premium

(1) Technical Premium (best cost estimate to cover claims, operating expenses, staff, reinsurance, regulator solvency requirements)

<u>Simplified</u> Example

Insurer needs to collect $1,000 from Houses A and B to meet average claims costs. Both could be charged $500, but House A is 10% more likely to suffer damage than House B. So, House A is Charge $525 and House B $475 to create a $50 difference between the two premiums and reflect the 10% risk.

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Components of the premium (2) Base Premium

(1) Technical Premium (best cost estimate to cover claims, operating expenses, staff, reinsurance, regulator solvency requirements)

(2) Base Premium (price Insurer wants to sell policy)

How base premium is varied:

- customer discounts e.g. no claims, multiple policies
- price moderation e.g. caps to avoid bill shock
- business pricing to attract new customers/retain
- profit margin to meet business goals, investment and return to shareholders

Example House B

Technical premiums		$475
Profit margin (10%) +$47.50		$522.50
Discount (5%) - $26.12	$496.38	
Capping -$10		$486.38
Base Premium		**$486.38**

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Components of the premium (3) Total Premium

(1) Technical Premium (best cost estimate to cover claims, operating expenses, staff, reinsurance, regulator solvency requirements)

(2) Base Premium (price Insurer wants to sell policy)

(3) Total Premium (Tax/levies to collect)

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Components of the premium

Technical Premium (best cost estimate to cover claims, operating expenses, staff, reinsurance, regulator solvency requirements)

Base Premium (price Insurer wants to sell policy)

Total Premium (Tax/levies to collect)

Example House B

Base premium		$486.38
EQC levy (house + contents)	$240	$726.38
FENZ levy (house + contents)	$127.20	$853.58
GST (15%)	$128.04	$981.62
Total customer cost		**$981.62**

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So, what can local government do?

WHICH ONE IS RED?

GREEN

RED

BLUE

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Common perceptions/issues

- Councils update hazards data and insurers use that data to increase premiums
  - if updates show a change in risk insurers may draw on that information to inform their assessment of risk and how they price it.
  - there should be nothing surprising about this as that is a role of insurance to reflect risk
  - insurers have an obligation all their policyholders to be there when the worst happens (e.g. Canterbury earthquakes), so expecting prices below the cost of losses is unsustainable, unfair to other policyholders and risk not being there when most needed
- Will insurance premiums come down if councils invest in mitigation to reduce risks?
  - it depends – certainly did happen in the Flockton Basin when flood excess reached $10,000
  - BUT – house policies cover all risks, so fire, quakes etc still factored in premium
  - if councils don't mitigate, then insurance may not be available at all

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Do what insurers do – understand the risk

- **assess risk in relation to objectives** – start from an understanding of what it is we wish to avoid (loss of life, property, business interruption) then assess its likelihood
- **identify the biggest risks** – focus on worst case scenarios in relation to long-term change as well as short-term events
- **consider the full range of probabilities** – bearing in mind a very low probability may correspond to a very high risk if the impact is catastrophic
- **use the best available information** – proven science or expert judgment, a best estimate is better than none
- **take a holistic view** – assess system risks as well as direct risks; models are useful but human behaviour and interactions within a system can produce different possibilities (scenario planning helps)
- **be explicit about value judgments** – they are subjective, so be transparent and subject them to public debate

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Take the long view – identify adaptive pathways

Adapt to lower the probability of loss below current values.

Calculate annual expected losses to inform adaptation cost-benefit analysis, consider:

- **how we build** e.g. requirements placed on developers like flood protection or land raising
- **where we build** in future e.g. don't consent where adaptation can't work
- **flood proof/flood resilient buildings**
- **relocatable buildings/retreat** where risk is too high/makes no economic sense to protect
- **upgrade existing infrastructure** to 21st century needs e.g. storm-water drains
- **build new infrastructure**
- **protect existing infrastructure** e.g. dunes, wetlands
- **improve flood warning systems/public education** – so there is time to reduce the impact
- **community consultation** – buying into the problem, contributing to solutions