

2024 Loss Modelling Results

Absolutely Positively
Wellington City Council
Me Heke Ki Pōneke

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Insurance Roadmap Workplan



1. Develop Risk Appetite Statement

- Set the scene, define objectives & plan
- Workshops with elected members



2. Data Consolidation and Optimisation Project


- Convert information in central asset database to usable information suitable for next steps



3. Financial Risk Tolerance

- Set retentions consistent with balance sheet capacity and risk appetite
- Use actuarial modelling tools to find the right balance between risk retention and risk transfer
- Programme design and stress testing - financial impact quantification





4. Loss Modelling

- Set goals and define objectives
- Research/develop scenarios
- Agree scope of work
- Inform the amount of coverage required in a 'worst case' scenario



7. Asset Selection and Prioritisation

- Develop an asset selection policy taking into consideration criticality, continuity of services, future asset use, other forms of funding
- Validate if assets selected for retention or transfer, is aligned with risk appetite and tolerance



6. Assess alternative risk transfer options

- Cost/benefit analysis for each option
- Assess if option adds value and is cost effective
- Agree on preferred options
- Structure solutions to improve product relevance



5. Climate Risk Assessment

- Research/develop scenarios for a physical risk assessment of climate related risks and opportunities
- Potential transition risk assessment
- Link to Sustainability and Climate / Insurance
- Enable Council to test business model



8. Marketing

- Seek pricing and support for preferred solutions



9. Reporting

- Draft report with recommendations for risk financing and transfer programme
- Seek decision from elected members



10. Review and Evaluate process and learnings

- Assumptions that underpin decisions are regularly reviewed and tested to ensure they remain valid and fit for purpose

Types of Modelling

2022/23 Deterministic Interim Loss Modelling

Best used to determine a “worst case scenario”

Applies consistent shaking across the portfolio

Includes “surge demand”

Does not require extensive GIS mapping

Based on loss modelling last fully completed in 2015 and updated with the expected impacts of the NSHM2022

2024 Probabilistic Loss Modelling

Best suited to long term financial planning

Provides the “probable scenario”

Uses data from a catalogue of more than 100,000 earthquakes

Does not include “surge demand”

Requires that each asset is mapped in GIS

Recently made available by GNS

How we got from \$2.6bn to \$1.8bn

Insurance Roadmap and Other Actions

Increase in insurance cover of \$120m

Increased building portfolio resilience

Reflecting earthquake resilience upgrades and high-quality new builds like Tākina

Increased asset data granularity and quality

A significant amount of data cleansing was undertaken

Differences in loss expectation

\$75m increase to risk on the Housing portfolio

Assets are not widely dispersed

Decrease to the risk on the 3-waters portfolio

Results in a \$80m gap reduction

\$400m reduction to risk on the building (vertical) assets

Impacted by building portfolio resilience

Assets are widely dispersed

Decrease to the risk on the transport portfolio

Results in a \$147m gap reduction

What does it mean?

We now have both a “worst case” and “most likely” scenario

The most likely scenario is the most appropriate information to use for long term risk planning

This is the work we are carrying out under the insurance roadmap

The worst case scenario is appropriate to inform the additional capacity which may be required after a significant event

The actions under the insurance roadmap have had a significant effect on quantifying and managing the underinsurance risk

\$1.8bn is still a significant amount of risk, which cannot be managed on the balance sheet alone

Further modelling to inform Council’s risk appetite is recommended

Specific engineering reviews are required to best inform site-by-site modelling

Changes			
Hazard Data	What could we be exposed to?	E.g., shaking maps, soil maps, water table, flood maps	NSHM 2022 update
Asset Data	What could be exposed?	Valuations, detailed engineering reports, new buildings	Updated values (e.g., impact of inflation)
Performance / Vulnerability Data	How might these assets be impacted	Latest research on asset performance, loss experience.	Constant improvements
Financial Implications (interpretation and application)	What might it cost to reinstate, and how do we finance this? How do we use this information?	Retention – Transfer boundary Understand the assumptions	Better information (reduced uncertainty)

Previous Work

2023 High-Level Deterministic

2024 Detailed Probabilistic

OBJECTIVE

BE PROACTIVE:
NSHM update initially available

BE INFORMED:
Use full NSHM update to determine portfolio losses

HAZARD DATA



Historic data (superseded)



Coarse resolution of hazards, applied constant (unattenuated) shaking

Taking advantage of the information available at the time



Fine resolution in both shaking, and secondary hazards.

Modelling of a full suite of potential events, considering ground conditions and attenuation.

ASSET DATA



Coarse resolution – with high-level assumptions applied



Fine resolution – utilising WCC’s spatial data, containing detailed individual asset information

PERFORMANCE / VULNERABILITY DATA



General industry models



General industry models, **adjusted** to reflect the improvement in WCC’s asset data records

FINANCIAL IMPLICATIONS

Loss estimates required updating to reflect known changes

Conservative loss associated with a specific level of shaking, giving **interim indication of the potential increased exposure** with the new reported shaking levels.

Losses include surge demand.

Produces a full loss curve, for **understanding likelihoods** associated with **different levels of risk retention / transfer.**

Raw damage losses presented.