
Monday, 17 April 2023

Te Hui o Te Kaunihera ā-Rohe o Heretaunga
Hastings District Council
Risk and Assurance Committee Meeting

Kaupapataka

Attachments Document

Volume 1

Te Rā Hui:
Meeting date: **Monday, 17 April 2023**

Te Wā:
Time: **1.00pm**

Te Wāhi:
Venue: **Council Chamber
Ground Floor
Civic Administration Building
Lyndon Road East
Hastings**

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TE KAUNIHERA Ā-ROHE O HERETAUNGA

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With you, every step of the way



Hawke's Bay Councils Group (HB Councils)

Regional Earthquake Loss Limit Analysis for Property Assets

October 2022

Regional Earthquake Loss Limit Analysis for Property Assets

Prepared for:

Hawke's Bay Councils Group (HB Councils)

Aon New Zealand

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Version	File Name	Produced By	Reviewed By	Date
Draft	HB Councils – Regional Earthquake Loss Limit Analysis – Rev 0.4.docx	E. Jude M. Nayerloo	A. Wild	Oct'22
Final Draft				
Final				

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Executive Summary

Hawke's Bay Councils Group (HB Councils) engaged Aon to undertake an earthquake loss analysis for the insurance purchasing group. The overall aim of this report is to provide a high-level portfolio estimate of loss that might be experienced from an earthquake.

The analysis includes buildings, above-ground three-waters facilities (e.g., treatment plants, pump stations and reservoirs), swimming pools, park assets, quays and wharves, contents, sculptures, statues, and memorials owned by the HB Councils. As of 2021/22, the total replacement cost of infrastructure assets, as declared by the HB Councils was approximately \$1.5b.

In addition to this regional loss analysis, each member council engaged Aon to produce council-specific loss limits to aid in decision-making around potential sub-limit setting and premium allocation. The council-specific loss analyses are attached to this main report as separate appendices for each council. The same approach has been followed in both the regional and the local assessments.

There is a small percentage of the regional portfolio (<1.2% of the total insured value) that is insured for indemnity (and not replacement). Modelling the losses based on these indemnity values has the potential to understate the council-retained proportion of the real-world loss, as our damage and loss models are based on replacement costs. Where this was thought to have a material impact on the loss estimates, and estimation of the replacement costs was possible, two sets of results are presented.

The assessment uses probabilistic analysis to determine a scenario that is most likely to cause significant damage to property assets distributed across the entire Hawke's Bay region, and then explores that earthquake scenario using a deterministic (scenario-based) approach.

The probabilistic investigation into the earthquake risk was undertaken to provide estimates of potential Material Damage (MD) loss from earthquakes with different return periods (RPs). An exposure model was developed using asset information and suitable vulnerability functions (relating ground shaking and potential additional damage from liquefaction and landslides to loss) for each asset in the model. Losses arising from each earthquake were estimated using OpenQuake for a synthetic catalogue of all possible earthquakes that could happen over the next 50,000 years to construct a probabilistic loss curve.

Earthquake Material Damage

Probable Maximum Loss Expectancy (Median)

Hawke's Bay Councils Group (HB Councils)
Insured Property Assets

500-yr RP

\$382m (insured)
\$405m (ground-up)

1,000-yr RP

\$ 477m (ground-up)
\$454m (insured)

We recommend a **30% demand surge** on top of the above estimates.



