Te Tauira Matapae Pūmate Rū i Aotearoa
NSHM The New Zealand National Seismic Hazard Model
A GNS Science Led Research Programme

# Understanding hazard, impact and risk

## New Zealand is subject to natural hazards, including earthquakes, tsunamis, volcanic eruptions and landslides.

Scientists help keep New Zealand as safe as it can be by monitoring for these events and providing information to help inform risk-based decision making.

No one can predict when earthquakes will happen, but we know they will keep happening because of how the Earth is formed.

We can expect to experience earthquakes in every part of New Zealand, and they might happen any time. That is why there is so much scientific work going into understanding as much as we can about earthquakes and ensuring our decision makers can access and use that science to help with planning and policy.

The National Seismic Hazard Model (NSHM) calculates the ground shaking that may be produced at a location, considering the range of earthquakes that are forecast to occur over a specified time period.

The ground shaking is the **hazard** that is being considered.

Any damage that might be caused by that ground shaking is the **impact** of that hazard.

The degree to which a certain location is likely to experience impacts from that hazard, is the level of **risk** attributed to that location.

The NSHM forecasts the shaking hazard across New Zealand. It does not forecast the impact of that shaking on communities.

**Hazard**
A source or situation with the potential for harm in terms of human injury, or damage to property, to the environment, or a combination of these.

**Impact**
A significant or major effect.

**Risk**
The likely range of impact; the degree of probability of loss or damage or harm.

The NSHM illustrates the hazard, and is the instrument used by others to estimate risk and then make risk-based decisions.

## How hazard estimates help inform New Zealand policy and practice

The NSHM is a tool that government and industry use to help them understand seismic hazard in New Zealand better, and to help with decision making.

The NSHM is used broadly by organisations and decision makers that need to estimate risk, based on the likely impact of earthquakes on Aotearoa New Zealand's land, buildings, and infrastructure.

How hazard and risk is applied to regulatory policies is determined by the government agency responsible for the specific regulation, usually in consultation with the New Zealand public.

We can't prevent earthquakes happening but, as science continues to advance and we grow our understanding of earthquakes, our monitoring and risk mitigation measures continue to develop.

We can help prepare our homes for earthquakes and keep our whānau safe. Visit the NEMA Civil Defence and Toka Tū Ake EQC websites.