The National Seismic Hazard Model (NSHM) combines the best available scientific knowledge to estimate future earthquake shaking in Aotearoa New Zealand. The NSHM considers possible earthquakes that could affect a location and then estimates the severity of the related shaking that might occur. Knowing the likely impact of future earthquakes on New Zealand’s land, structures, and people is essential to help us be as safe and prepared as we can be.

On average, around 250 earthquakes are felt in Aotearoa New Zealand each year and thousands more are measured. Knowing how strong future earthquake shaking might be can help us to understand the potential risks. Various tools including computer modeling, the latest knowledge of how earthquakes occur, and understanding our turbulent past can help us prepare, make good decisions, and increase our resilience to earthquakes.

Wellington-Wairarapa regional information

The NSHM calculates multiple levels of potential shaking forecast to occur across the region. In the Wellington-Wairarapa region, earthquake shaking is forecast to be more severe in the east, and is overall higher than forecasts nationwide.

These two example maps display the level of ground shaking (PGA) that has either a 10% chance or a 2% chance of being exceeded within the next 50 years.

- **10% probability of exceedance in 50 years**
- **PGA map**

Areas on the maps that show warmer colours are more likely to experience severe shaking. At 10%, there is more chance of shaking but the shaking is forecast to be less severe.

- **2% probability of exceedance in 50 years**
- **PGA map**

At 2%, there is less of a chance of shaking but the shaking we experience is forecast to be more severe.

All of the information on the website must be considered together – no one map on its own can illustrate the hazard.

Wellington-Wairarapa: Notable earthquakes

**Magnitude 8.2 - 1855**  
**Magnitude 7.0 - 24/06 1942**  
**Magnitude 6.8 - 1917**

Source: Rollins et al (2022)

Don’t just think about your local or known faults. Damaging shaking can occur from earthquakes outside of the region.

For detailed results, go to: www.gns.cri.nz/nshm

Be prepared

For more information visit Wellington Region Emergency Management office’s website: www.wremo.nz

National Emergency Management Agency: civildefence.govt.nz

Toka Tū Ake EQC: eqc.govt.nz
Earthquakes generate waves in the earth which cause the ground beneath our feet to shake. These waves can be short and fast (like shaking a rattle) or long and slow (like fly fishing), depending on many factors.

Earthquakes mostly occur on faults. A fault is a rupture in the Earth's crust that enables the land to move independently on either side. When pressure builds up in a fault, it can cause an earthquake and ground shaking. Faults can be as short as a few metres or up to 1000 kms long and they can cause a variety of different land movements. Many faults can rupture together affecting multiple regions.

Peak ground acceleration (PGA) is a measure of earthquake shaking. It measures the maximum acceleration of the ground that occurred during shaking at a particular location. Acceleration describes how the ground moves from slower to faster shaking speeds, much like accelerating in your car.

Ground shaking will vary due to:
- the ground conditions
- the land deep beneath our feet
- earthquake location and magnitude
- the direction the earthquake fault ruptures

Earthquakes mostly occur on faults. A fault is a rupture in the Earth's crust that enables the land to move independently on either side. When pressure builds up in a fault, it can cause an earthquake and ground shaking. Faults can be as short as a few metres or up to 1000 kms long and they can cause a variety of different land movements. Many faults can rupture together affecting multiple regions.

It is common to see a range of hazard results, even within one region.

There is not one map which tells us what the hazard from earthquakes is.

There are around 1000 faults that we know of in Aotearoa New Zealand, and these are found both on and offshore.

That's 1000 faults we know about – there will be others that we haven't discovered yet. The potential for unknown faults is accounted for in the model.

Keep your whānau safe:
Practice Drop, Cover and Hold at least twice a year.

There’s a lot we can do to make our homes safer for earthquakes.
The Toka Tū Ake EQC website has key steps that will help you prepare your home and protect your whānau.

Long or Strong? Get Gone.
If you live near the coast, as soon as earthquake shaking stops, move immediately to high ground or as far inland as possible, in case of tsunami.

If you would like more support or advice, have feelings of heightened or prolonged anxiety, stress, fear, hopelessness, or anger, or if you just need to talk with someone, please text or free phone 1737 to speak to a trained counsellor in the National Telehealth Service.