

## Firming up your earthquake risk plan

Ground movement from earthquakes and aftershocks can cause serious damage to property, buildings and infrastructure. Buildings with foundations resting on loose landfill or other unstable soils are especially prone to damage, as are buildings not properly 'attached' to their foundations.

Earthquakes can also disrupt gas, electricity, telephone/internet services, transport networks, and can sometimes trigger landslides, liquefaction, flash floods, fires and tsunamis.

Earthquakes can't be predicted so it pays to plan ahead and having a plan for you and your staff to follow. This should include identifying safe places within the building, practicing 'drop, cover and hold' and having a safe area outside to assemble.

In order to prepare your business for an earthquake, start by identifying building weaknesses and then move inside and review hazards that could interrupt your business. Prioritise activities for addressing these risks.



## Take cover in an Earthquake

Inside a building, take cover

- Under a sturdy table or door frame
- Against an interior wall
- Away from windows and tall furniture that could fall
- Do this quickly and if possible without the need to move more than 3m to minimise the chance of injury.

If outside

- Move to an open space (if possible) and drop to the ground
- Stay clear of overhead powerlines and streetlights
- Move away from buildings

Do this for every aftershock as well.

## Building watch outs

- Check to see if the Council has identified the building you own or occupy is an earthquake prone building.
- Consider having a detailed engineering evaluation done to determine the building's strength, especially if it's an older style building.
- If building strengthening work is required only work with reputable and, where necessary, licensed and experienced experts and companies. In leased spaces work with the building owner on addressing structural issues.
- Experts should check that buildings are securely anchored to the foundation and that internal partitioning is anchored to the floor, an adjoining wall or braced to an overhead structure. Suspended floors should be braced to prevent collapse.
- Consider non-structural building elements as well – suspended ceilings, ventilation ducting, shelving, fire protection and other water pipes, light fittings, signs, etc. Making sure they are adequately braced reduces the likelihood of them falling down, breaking and causing further property damage.
- Large panes of glass can shatter – design and install to try and prevent this.
- Brace hot water cylinders, gas appliances and equipment, secure other tanks to the ground or building structure. Consider fitting flexible fittings and hoses to gas, water and other liquid pipes.
- Check electrical and telecommunications cable to ensure they can withstand the shaking without separating. Do the same for water and gas pipes. Use flexible pipes or connections to create give in the system.
- Anchor furniture to the floor. Carpets can help reduce the likelihood of furniture sliding back and forth. This is especially important in taller buildings.
- Secure bookcases, shelves cabinets and tall furniture to the wall framing.
- Make sure cabinets and drawers have strong latches to prevent the doors flying open and spilling the contents during an earthquake. Close doors and drawers when not in use.
- Place heavy items on shelves closer to the floor and lighter items higher up. Consider installing straps on shelves to prevent items from falling.
- Ensure heavy wall hangings such as artwork and mirrors are located away from where people work and sit. Secure large ornamental items that could fall over.
- Secure laptops, computers and other items that can easily fall in a shake.
- Store dangerous goods such as flammable liquids and gasses in fit for purpose cabinets or dedicated storage areas and ensure that containers are properly closed.
- Attach compressed gas cylinders to a wall or other immovable object using strong chains or straps.

## Shake, rattle and roll

- Secure or restrain heavy mechanical or manufacturing equipment, appliances and bulk tanks. These can move or fall over during severe shaking resulting in damage or injury.
- Ensure gas and fuel supply connections to appliances and equipment cannot be severed by appliance/equipment movement.
- Consider installing a seismic gas shut off valve for incoming gas mains. This valve automatically shuts down the gas supply when shaking occurs.

## Rack'in and stack'in

Warehousing and storage areas are particularly vulnerable during earthquakes.

- Build racks and shelves to withstand a strong earthquake so they don't fall over or drop contents. Use double beams, uprights and row spacers to create additional stability and bolt feet to the floor. You can even tie racks at the top to provide more stability.
- Avoid block stacking drums. Store in a rack to keep them in place.
- Store heavier stock items closer to the ground. Use bungee cord netting to secure smaller boxes/items to shelves. Alternatively, a simple braided wire across the front of your shelving areas is usually enough to stop items falling during minor quakes or aftershocks.
- Consider installing removable barriers/fences across the front and back of racks/shelves to help keep goods in place.
- Take steps to mitigate water damage due to flash floods, liquefaction and burst water mains. (See flood prevention guide for more information on this).

## Don't get disrupted

- Have a business continuity plan in place, including an up-to-date asset register.
- Avoid data loss by having offsite data back-up, such as cloud storage.
- Keep important paper documents and records e.g. operating/lease records, financial information, in a water and fire proof safe or container.
- Consider having a civil defence cabinet containing essential food, and emergency equipment.

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