Making sense of risk

Earthquake action plan

Asia Pacific

Liberty

Organisations and individuals are likely to face natural or manmade catastrophe at some stage. It is therefore crucial to have a plan well in advance of emergencies, in order to protect you, your employees and your customers from personal injury and your business from damage and protracted downtime.

Earthquakes can be devastating, and may cause those affected to lose their home, business property or even their lives. Earthquakes are by their very nature abrupt and aftershocks can continue for hours, days and weeks. Since earthquakes are a reality of nature, advance preparation is a priority for responsible business managers and owners in earthquake-prone areas.

This action plan is intended as a guide to help business owners and managers in earthquake-prone areas prepare in advance their business, premises and employees for an earthquake, in order to minimise the risk of personal injury and damage to property, and to reduce business interruption.

An effective Earthquake action plan should include the following:

- Full support of senior management;
- A well-stocked **Earthquake emergency kit** (as discussed below);
- Readily available emergency contact numbers, *both in the kit and backed up offsite*;
- Copies of all employee, supplier and client contact information, backed up offsite;
- Copies of vital records, including business and customer records, blueprints, structural records and utility service plans, backed up offsite;
- Preparations to make and precautions to be taken before, during and after an earthquake (as discussed below);
- A designated onsite **Emergency Action Team**;
- The appointment of an **Action Plan Leader** for the **Emergency Action Team** responsible for ensuring the preparations are carried out and precautions are taken, and for maintaining the **Earthquake emergency kit**.

Action Plan Leader

Appoint an **Action Plan Leader** with sufficient authority to lead the **Emergency Action Team** and take responsibility for implementing and overseeing the action plan. The **Action Plan Leader** should have a thorough understanding of the operations, critical processes, special hazards and protection systems of the business.

The **Action Plan Leader** should have access to and be responsible for maintaining the **Earthquake emergency kit**.

Earthquake emergency kit

A well-stocked **Earthquake emergency kit** forms part of the essential advance planning for Earthquake events in earthquake-prone areas. The **Action Plan Leader** is responsible for maintaining the kit, which should contain the following:

- A copy of the Earthquake emergency kit checklist
- Contact details for police, earthquake and emergency services; **Action Plan Leader**; **Emergency Action Team** members; plumber; electrician; heating/ventilation/air conditioning (HVAC) contractor; building owner; senior management; suppliers; and your insurance broker
- A copy of this document (Earthquake action plan), for reference
- Instructions for the safe shut down of vulnerable and/or critical processes
- Emergency supplies, as detailed in the Earthquake emergency kit checklist.

Pre-earthquake procedures for earthquake-prone areas

Secure supplies and information

☐	Appoint an **Action Plan Leader** who will take charge *after the earthquake is over and only once it is safe to do move around*.
☐	Establish and maintain a well-stocked **Earthquake emergency kit** (using the Liberty kit checklist as a guide).
☐	Review your business continuity plan and update it as necessary, to include current employee contact details. If you do not have a current Business Continuity Plan, consider using the Liberty Disaster recovery and business continuity plan guide to help you develop one.
☐	Remind personnel of the key elements of the business continuity plan, including post-earthquake communications procedures and work/payroll procedures, and ensure that all employees have a hard copy of the plan.
☐	Identify priority and backup personnel or rotation personnel for critical operations and/or processes. Be aware that employees may also have personal emergencies and may not be able to return to work promptly.
☐	Determine which company records are vital and make plans to protect or relocate them to an offsite location.
☐	Maintain an offsite inventory of all equipment and assets in case of structural damage.
☐	Identify vulnerable and/or critical equipment and processes. Provide instructions for the safe shut down of these processes and data processing equipment, and ensure the instructions are in the **Earthquake emergency kit.**
☐	Identify a *hot site* (an offsite data processing location for immediate business resumption) or a *cold site* (an offsite location ready for setup of your own data processing equipment). Also, consider an offsite business recovery facility where general business operations can be resumed.
☐	Evaluate the interdependency of your facilities and develop a contingency plan.
☐	Maintain ongoing agreements with contractors for supplies and repairs that will be needed after the earthquake. If possible, use contractors who are based outside the area, since local contractors may be hampered by the earthquake, or local authorities' needs may be of higher priority.
☐	Decide who will turn off water/ electricity/gas.
☐	Decide on the need for portable generators or other emergency equipment, and ensure that there is enough fuel to run the generator for a few hours a day.
☐	Evaluate approaches to your facility for earthquake-vulnerable structures such as bridges or other potential impediments to emergency access, and be aware that alternative access routes may be required if the earthquake prevents normal access. (It is difficult to predict in advance the safe routes for employees returning to work.)
☐	Decide where personnel should meet if they cannot get home, bearing in mind that this safe area may need to be reviewed in the event of an earthquake.
☐	Decide how personnel will keep in touch with each other and, if they cannot contact each other, who will they check in with and who will they leave a message with.
☐	Encourage personnel to maintain an emergency supplies kit (containing 3 days-worth of food and drink, torches, radios, batteries and first aid supplies) at their homes.
☐	Arrange for post-earthquake site security.
☐	Prepare messages for the website, telephone recording and employee intranet ready to be customised when the need arises.

Inspection and fortification of the facility

- [ ] Inspect all fire protection and safety equipment.
- [ ] Identify key equipment that is vulnerable to earthquake damage (e.g. gas and electricity lines, water pipes) and equipment or stock that is crucial to the business (computers, telecommunications and manufacturing equipment).
- [ ] Secure items that may fall during an earthquake, such as bookshelves, light fixtures or mirrors.
- [ ] Maintain and test all necessary backup equipment such as emergency generators and communication systems or devices.
- [ ] Create and maintain an *Emergency-ready fire safe zone* around your premises, as follows:
  - Determine where your gas, electricity and water supplies should be turned off after an earthquake.
  - Ask the electricity company to clear branches away from power lines.
  - Consider and implement the safe storage of fuel supplies and other flammables to limit their contribution to the inherent fire risk after an earthquake.
  - Chemicals should be labelled and stored safely to limit the risks of injury should they spill during an earthquake.

Procedures during an earthquake

When indoors:

- [ ] DROP, TAKE COVER and HOLD ON.

- [ ] DROP to the floor, avoiding falling objects or furniture that may topple.
- [ ] TAKE COVER under sturdy table or desk that is not likely to tip over.
  - If that is not possible, drop to the floor near an internal wall and protect your head and neck with your arms.
  - Avoid windows, mirrors, hanging objects, tall objects that may topple and cabinets containing heavy objects.
  - Do not shelter in a doorway – they do not offer special protection.
  - In an auditorium, take cover between the seats and protect your head with your arms.
  - If you are in bed, stay there and cover your head and neck with a pillow.
- [ ] HOLD ON to the sturdy table and expect to move with it until the strong tremors stop.
- [ ] Remember:
  - Do not leave the building during strong tremors.
  - Do not use elevators.
  - If you use a wheelchair, lock the wheels and cover your head.
- [ ] Turn off electrical switches during power failure, to prevent any equipment powering up before the necessary safety checks have been completed.

When outdoors:

- ☐ Move to a clear area *only if it is safe to do so*, avoiding power lines, buildings and trees.
- ☐ Stay away from buildings. Glass from tall buildings may not fall vertically down; it can be carried long distances by the wind.
- ☐ In a city, it may be difficult to avoid falling debris from buildings. You may need to take cover inside a building to avoid injury.
- ☐ Once in the open, DROP, TAKE COVER and HOLD ON and remain there until the tremor stops.
- ☐ If driving, pull over to the side of the road and stop *where it is safe to do so*. Avoid stopping near overhead hazards, such as power lines, overpasses and trees.
- ☐ If you are near the beach, move to higher ground, in case of tsunami.

Procedures once the tremor stops

When and if safe to do so

- ☐ Access the **Earthquake emergency kit.**
- ☐ Ensure all personnel and onsite customers are accounted for.
- ☐ Check for injuries. Do not move seriously injured individuals unless they are in immediate danger. Render first aid if necessary.
- ☐ Call for emergency assistance if needed.
- ☐ Observe fire safety procedures at all times. If you have fire extinguisher and are trained in its use, put out small fires immediately.
- ☐ Make a superficial visual inspection of the property for evident hazards such as structural damage, potential building collapse, power cable damage, developing fires, and gas or water pipe damage and leaks. Alert others and emergency responders if hazards are discovered. (A full structural assessment and report is likely to be provided at a later date by specialists.)
- ☐ Leave the building if it appears unsafe to stay there.
- ☐ Be aware of indoor safety. If backup power is needed, do not use a generator indoors, inside a garage or near building air intakes, because of the risk of carbon monoxide poisoning.
- ☐ Access emergency information and news reports using a battery-powered radio, TV, social media or mobile phone, if operational.
- ☐ If you were driving and stopped during the tremor, proceed with caution, avoiding roads, bridges or tunnels that may have been damaged.

If you are trapped in or under debris

- [ ] Move as little as possible so that you do not kick up dust or disturb debris further.
- [ ] Cover your nose and mouth with clothing or a handkerchief.
- [ ] If you have a mobile phone with you and it is operational, call or text for help. Its location services may help locate you.
- [ ] If you have no phone, tap on a pipe or wall to help rescuers locate you. Use a whistle if one is available, but shout only as a last resort.

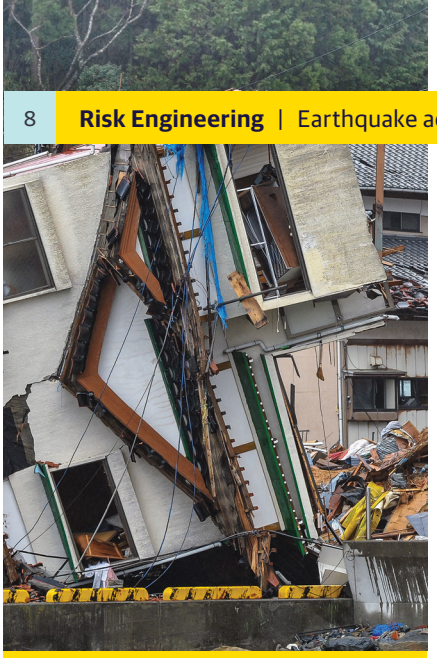
Procedures after an earthquake

Immediate actions

- [ ] Be prepared to DROP, TAKE COVER and HOLD ON in the event of aftershocks, which are likely to occur minutes, hours or days after the initial earthquake.
- [ ] Monitor and continue to ensure employee and customer safety.
- [ ] You may need to evacuate the building until it has been assessed for damage.
- [ ] If you evacuate, if possible take the **Earthquake Emergency Kit**, warm clothing, and handbags/wallets with you. Wear sturdy shoes to avoid injury from broken glass.
- [ ] Report damage and injuries to the authorities but avoid making unnecessary phone calls.
- [ ] Follow the instructions of local emergency authorities.
- [ ] Do not use elevators; use the stairs instead, and help those who have difficulty.
- [ ] Determine how best to aid those with special needs, such as the disabled, the elderly or pregnant women.
- [ ] Do not move seriously injured individuals; stay with them and do not leave anyone behind.
- [ ] Before leaving the building, turn off all electrical equipment.
- [ ] Disconnect gas, electricity and water supplies in case of power line/pipe damage. Check for open busbars, conductors and exposed insulators before powering up any essential electrical systems.
- [ ] Assemble in the pre-determined safe area outdoors, *if it is still a safe site*; assemble in another area if not.
- [ ] Once outside, stay away from power lines and buildings, and beware of falling debris.
- [ ] Since a large area may be affected by the earthquake, access roads and supply lines may be interrupted or damaged. Do not attempt to use the nearby roads until their condition has been assessed.
- [ ] Provide search and rescue services with the last known location of any missing people.
- [ ] When local roads have been assessed *and it is safe to do so*, consider viable routes for the safe return home of personnel or customers.
- [ ] Secure the site and provide a security watch if necessary.

Recovery actions

☐	Survey the facility for damage. If damage has occurred, contact your insurance broker as soon as possible, and they will liaise with Liberty on your behalf. Take photographs of the damage.
☐	Once you have assessed the damage, contact key personnel and contractors to arrange for the site to be secured and made safe.
☐	Look for safety hazards, such as live electrical wires, leaking gas, localised flooding from water pipe leaks, flammable liquids, corrosive or toxic materials, and damage to foundations or underground piping.
☐	Restore impaired automatic sprinkler protection and/or water supplies as soon as possible and conduct main drain and alarm tests to verify water supply. (Refer to the Liberty Fire protection impairment guide.)
☐	Notify key customers, suppliers and partners of the office/facility reopening and any property or operational changes resulting from earthquake damage.
☐	Begin salvage operations as soon as possible to prevent further damage, for example: • Cover broken windows and damaged roof coverings where safe to do so; • Separate damaged goods; • Check refrigerators/refrigerated areas after a power failure and discard spoiled items, and limit access to freezers and refrigerated areas during periods of interrupted power to maintain temperatures as long as possible.
☐	Update any messages on the website, telephone recording and employee intranet with the current status of the facility.
☐	Debrief key personnel on lessons learned during the event, compile a log of actions to be taken, and incorporate improvements for next time.
☐	Practise DROP, TAKE COVER and HOLD ON drills.



Evacuation procedures after an earthquake

If instructed by the authorities to evacuate, take the Earthquake emergency kit (if safe to do so) and follow this procedure:

- Leave the property, choosing a safe route away from earthquake hazards.
- Avoid falling debris and glass from tall buildings and avoid damaged power lines.
- Be prepared to DROP, TAKE COVER and HOLD ON in the event of aftershocks.
- Assemble personnel and onsite customers in a safe assembly point and ensure everyone is accounted for.
- Help those with special needs, such as the disabled, the elderly or pregnant women.
- Do not move seriously injured individuals; stay with them and do not leave anyone behind.
- Render first aid to the injured.
- Notify your local authority that you have evacuated, and be prepared to give them details of evacuees, any damage or injuries, and your location.
- Once everyone has been evacuated and accounted for, contact their families.
- Monitor the earthquake situation via local radio/TV stations/mobile phone alerts.

Want more information?

California State University San Marcos, Earthquake Procedures

University of Southern California, Fire Safety and Emergency Planning; Emergency Procedures – Earthquake

Geoscience Australia 2017, Geoscience Australia Earthquakes, Australian Government

Ready, Earthquakes, Department of Homeland Security