
ZURICH®
Optimal protection for the things you love
Checklists with tips on protecting your property against natural hazards

02

General tips

Property protection:

- Natural hazards are natural processes that cannot be prevented. However, their effect can be reduced or eliminated by means of relocation.
- The risk for individuals can be reduced through the adapted use of rooms, e. g. by using outdoor and indoor rooms on the side facing away from the hazard.
- If structural protective measures are necessary, redundancy is recommended. Multiple measures reduce dependency on a single protective element that may fail and therefore cannot offer protection anymore.
- Natural protective measures adapted to rooms are preferable.
- Permanent protective measures are preferable to temporary ones as they do not need to be set up in the event of an incident. In addition, permanent protective measures are more reliable.
- It is recommended to use only certified and proven products for the construction of protective measures.
- Professionals should be consulted when planning and constructing protective measures. For this purpose, cantonal offices and specialist engineering firms offer advice.
- Existing protective measures should be examined regularly for their suitability and functionality.

Behavior:

- Along with protective measures, an emergency plan should be drawn up to specify behavior and processes if an event occurs. It is recommended to check this emergency plan and conduct drills based on it on a regular basis.
- Obtain information from the cantonal and federal authorities about imminent natural hazard events and subscribe to an SMS alarm
  → www.natural-hazards.ch, www.meteoswiss.ch, www.slf.ch/avalanchebulletin
- The Federal Office for Civil Protection (FOCP) makes available information and emergency plans for natural and other hazards
  → www.alertswiss.ch
- Put together a set of emergency equipment: Charge your mobile phone, set aside warm and sturdy clothing as well as emergency supplies of water and non-perishable foods. Keep on hand clean-up and clear-up supplies as well as a first aid kit; make a list of emergency phone numbers and the necessary craftspeople and auxiliary businesses. Arrange for alternative lodging.
- Make copies of important documents such as passports and driver licenses and keep them on hand in case an event occurs.
- Keep flashlights (electric torches) on hand to deal with power failures.
- Keep cash on hand.
- Warn neighbors and look after children and people in need.
- When the event occurs: Keep calm, avoid panicking. The top priority is to ensure everyone's personal safety. Listen to the radio/TV for information and follow the instructions issued by the authorities.
- Keep away from hazardous areas and shut off the power, heat and gas if need be.
- Learn from past incidents and optimize the protective measures and emergency plan where necessary.

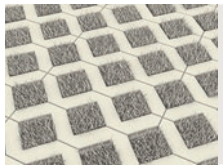
General tips

Tips for SMEs (Small to Medium Enterprises):

- Check and optimize critical operating equipment (machines, warehousing) and operating processes: Where are bottlenecks likely to occur? Where are long-term or expensive machine failures or material losses likely to occur?
- Draw up an emergency plan tailored to your personnel and site and conduct drills based on this plan on a regular basis.
- Set up an emergency power supply.
- Gear the operating processes to the hazard and arrange for the protection of production and storage if possible (e. g. higher ground, facing away from the hazard).

Checklist for floods and surface run-offs

Property protection

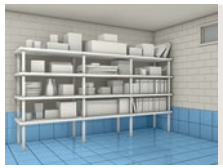


Avoid completely sealed surfaces such as asphalted access roads and parking lots. Instead use turfed paving stones, through which water can seep. Keep gutters on roofs and drain pipes clear of any blockages, and clean and inspect them regularly, especially before a thunderstorm warning.

The top edge of any ventilation shafts or light wells must be higher than the maximum water level in accordance with the hazard map. Connect drains to the sewer systems rather than a soakaway.

Install doors on the side of the building facing away from the river or seal and reinforce them depending on the maximum water level. Fasten doors from the outside and secure them using certified stoplogs.

If possible, install windows on the side of the building facing away from the river or ensure watertight reinforcement depending on the maximum water level and secure them using certified stoplogs.



Floors, walls and ceilings should be made of moisture-resistant materials such as concrete, brick and stone, metal, plastic and glass.

Install building services and electrical equipment above the maximum water level. Have separate wiring for the supply of parts of the buildings below and above the maximum water level.

Checklist for floods and surface run-offs

Property protection *(continuation)*

Install backflow traps to prevent the backflow and penetration of flood water through sewers.

Protect garage door and underground garage entrances with certified stoplogs or install a reverse pitch in underground garages.

Firmly fix the oil tank or position it above the maximum water level.

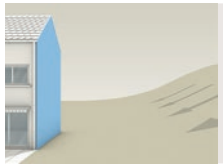
If possible move valuable goods (of monetary and emotional value) to higher floors.

Tips for SMEs:

- Protect plant components and products that might suffer a total loss when exposed to water or high levels of humidity.
- Fix non-mobile plant components to prevent floating.
- Ensure that highly flammable chemicals and those that can contaminate water, such as fertilizers, paints or gasoline, are stored outside the danger zone.
- To ensure optimal drainage, check and clean sewers and drains on the factory premises regularly and remove any blockages.
- In the event of a flood warning, remove any outdoor storage facilities and mobile equipment from the danger zone. Note: Roads may be impassable even after only minor flooding.
- Regularly check technical flood protection measures (water pumps, etc.) for their suitability and functionality and integrate them into the maintenance schedule.

Checklist for hillslope debris flows

Property protection



Reinforce the side of the building facing the hazard and avoid installing any doors and windows.

Construct a wedge (protective structure that divides and redirects the hillslope debris flow) or a dyke on the side of the building facing the mountain.

Install doors on the side of the building facing away from the hazard or seal and reinforce these depending on the maximum pressure in accordance with the hazard map. Fasten doors from the outside and secure them using certified stoplogs.

The top edge of any ventilation shafts or light wells must be higher than the maximum flow level in accordance with the hazard map.

If possible, install windows on the side of the building facing away from the hazard or ensure watertight reinforcement depending on the maximum pressure according to the hazard map and secure them using certified stoplogs.

Protect garage door and underground garage entrances with certified stoplogs or install a reverse pitch in underground garages.

Floors, walls and ceilings should be made of moisture-resistant materials such as concrete, brick and stone, metal, plastic or glass.

Checklist for hillslope debris flows

Property protection *(continuation)*

Firmly fix and position the oil tank above the maximum water level.

Install building services and electrical equipment above the maximum water level, separate wiring for the supply of parts of the buildings below and above the maximum water level.

If possible move valuable goods (of monetary and emotional value) to higher floors.

Behavior:

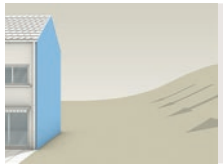
- During and after thunder storms, avoid streams susceptible to hillslope debris flow. Avoid riverbeds and steep couloirs.
- Leave the danger zone or the side of the building facing the hazard.
- After a debris flow, the danger is often not over. They often happen in several, irregular waves.
- Obtain information on hillslope debris flows in the surroundings, including torrents, narrow channels, steep couloirs in which they could occur. It is very difficult to predict hillslope debris flows accurately. It is therefore important that you inform yourself about current weather conditions and other circumstances (e. g. thaw with thunderstorms) that might involve an increased risk.

Tips for SMEs:

- Protect plant components and products that might suffer a total loss when exposed to water or high levels of humidity.
- Ensure that highly flammable chemicals and those that can contaminate water, such as fertilizers, paints or gasoline, are stored outside the danger zone.

Checklist for debris flows and spontaneous slides

Property protection



Reinforce the side of the building facing the hazard and avoid installing any doors and windows.

Construct a wedge (protective structure that divides and redirects the debris flow) or a dyke on the side of the building facing the mountain.

Install doors and windows on the side of the building facing away from the hazard or reinforce these depending on the maximum pressure. Fasten doors from the outside and secure them using certified stoplogs.

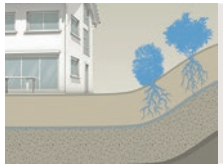
Protect garage doors and underground garage entrances with certified stoplogs.

For new buildings: Erect embankments.

Checklist for debris flows and spontaneous slides

Property protection *(continuation)*

If possible move valuable goods (of monetary and emotional value) to higher floors.



For low slides (up to 2 m), plant the slope with deep-rooted shrubs and trees.

Behavior:

- Leave the danger zone or the side of the building facing the hazard.
- During and after thunderstorms and prolonged wet spells, avoid steeply sloping hillsides or steep terrain.

Tips for SMEs:

- Protect plant components and products that might suffer a total loss when exposed to water or high levels of humidity.
- Ensure that highly flammable chemicals and those that can contaminate water, such as fertilizers, paints or gasoline, are stored outside the danger zone.

Checklist for permanent slides

Property protection

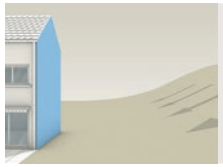
Reinforce the floor. Monolithic construction (building consisting of a single piece) and structural separation between the main building and any annexes. Install a sewage pipe for rainwater and slope drainage for optimized soil drainage.

Tip:

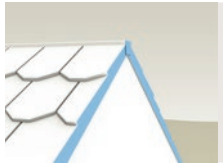
- Permanent landslides are usually difficult to detect for the uninitiated by eye. An accurate evaluation by professionals (cantonal agencies or specialist engineering companies) is therefore worthwhile.

Checklist for avalanches

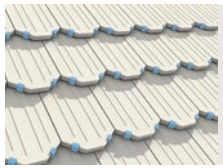
Property protection



Reinforce the side of the building facing the hazard. If possible, do not install any doors and windows on the mountain side, otherwise use only small windows. Fasten doors from the outside.

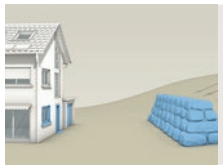


Avoid eaves.

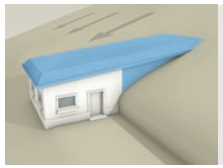


If possible, use and affix heavy tiles.

Remove snow from roofs (house, porch, conservatory) to prevent roof avalanches.



Install collection or diversion dams on the mountain side to prevent small avalanches and snow slides.



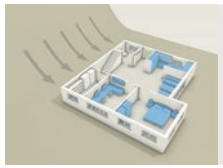
If topographically possible, construct a ramp roof.

Checklist for avalanches

Property protection *(continuation)*

Construct a wedge (protective structure that divides and redirects the avalanche) or a dyke on the side of the building facing the mountain.

If possible, only use the outdoor facilities in summer or move these out of the danger zone. In the event of snow slides use tripods.

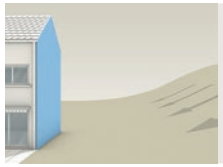


If possible, only construct rooms on the side of the building facing the mountain in which people spend a short amount of time (bathroom, stairwell, corridors, storage rooms, etc.).

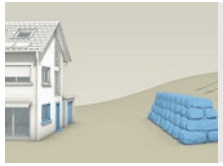
If possible, move valuable goods (of monetary and emotional value) to the side of the building facing away from the hazard.

Checklist for falling objects (falling rocks or boulders)

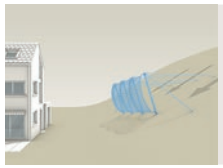
Property protection



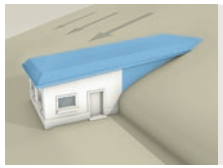
Reinforce the side of the building facing the hazard and avoid installing any doors and windows.



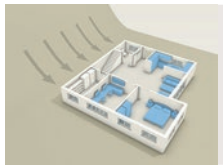
If possible, do not install windows and doors on the side of the building facing the mountain. Secure windows with steel bars, doors with protective walls or dykes.



Install safety netting against falling rocks and boulders. If a rock face directly adjoins the building, install rock fall netting or rock anchors or clean the rock face.



If topographically possible, construct an earth-covered ramp roof.

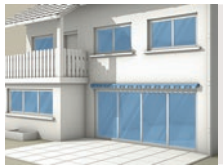


If possible, only construct rooms on the side of the building facing the mountain in which people spend a short amount of time (bathroom, stairwell, corridors, storage room, etc.).

If possible, move valuable goods (of monetary and emotional value) to the side of the building facing away from the hazard.

Checklist for hail

Property protection

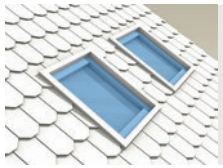


Raise blinds, awnings and rolling shutters. Today's window glass has a hail impact resistance class of HIR5 and is therefore more stable.

Use a carport, garage or hail protective cover.

Check drainage from roof, terrace and balcony (roof gutters, downspouts, etc.) on a regular basis, clear out any blockage.

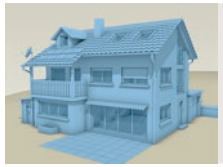
Also regularly check and clean drains outside the building and subsoil drains (drainage shafts and lines, etc.).



For roof windows and skylights, use glass or plastic with a hail impact resistance class of at least HIR3 or mount a hail protection grid with a hole diameter of at most 1 cm.

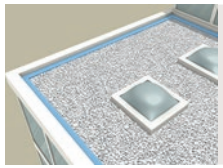
Checklist for hail

Property protection *(continuation)*



Select building products with a sufficiently high hail impact resistance class. The materials should be able to withstand hailstones of up to 3 cm in diameter (hail impact resistance class of at least HIR3). Replace old and brittle materials with new, hail-resistant products.

Check your tile roof annually. Reattach or replace any loose tiles.



Check the roof membrane every ten years, especially around the edging.

Use solar cells with a hail impact resistance class of at least HIR3.

Checklist for hail

Behavior:

- Subscribe to the weather alarm service.
- Follow local weather developments, obtain information.
- Close windows, doors, garage doors and other building openings in the event of thunderstorms.
- Raise all blinds and awnings.
- Keep an eye on building drainage (roof gutters, downspouts, drainage shafts and lines, etc.) during the thunderstorm to be able to intervene immediately if required.
- Promptly remove hailstones and leaves from blocked drains after the thunderstorm.
- After a hailstorm, repair any roof or facade damage immediately, otherwise even a small amount of precipitation can cause great damage (entry of water).

Tips:

- Subscribe to hail alerts:
  - Natural hazard bulletin from the Swiss Confederation: → www.natural-hazards.ch
  - App with weather forecasts and warnings on natural hazards: → www.meteoswiss.ch
- Unrepaired damage to small structures such as garden sheds and greenhouses can also become expensive. Immediate repairs and maintenance save money.
- Information about specific building products is also available from the hail register for Switzerland (Hagelregister Schweiz; German/French only): → www.hagelregister.ch
- Hail often coincides with thunderstorms, so also be mindful of protection from lightning strikes (lightning protection system, etc.).

Tips for SMEs:

- Protect plant components and products that can be totally destroyed on contact with hail.
- Place the vehicle fleet under a hail-proof shelter.
- Provide for a covered storage yard or protected storage room for mobile plant and equipment.
- Regularly check the suitability and functionality of technical hail protection measures (drainage systems, automatic control of blinds, hail protection grid, etc.) and integrate these measures into maintenance planning.

Checklist for storms

Property protection

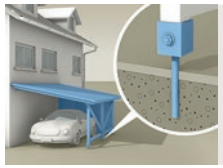
Raise blinds, awnings and rolling shutters because window glass is more resistant to impact.

However, do close wooden shutters.

Regularly check trees, remove loose and rotten branches.

Secure loose objects (outdoor furniture, grill, trampoline, flower pots, stacked firewood) and/or remove to an area protected from the wind.

Secure lightweight structures with a (point) foundation. Close garage doors, doors and windows.



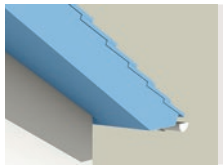
Firmly secure building parts exposed to the wind (e. g. roof, prefab parking garages).

Solid constructions and stable assemblies attached to or on top of the building (chimney, satellite dish or signs).

Checklist for storms

Property protection *(continuation)*

Professional installation of solar panels inspected by a solar installer/building engineer.



Attach roof reinforcement, roof boarding or soffit cladding to reduce the areas exposed to storm gusts.

Check roof tiles once a year, fastening down loose tiles and replacing damaged ones. Have experts check the tiles every 5 to 10 years, especially the attachment of storm clips. Secure tiles with storm clips in hazard-prone areas.

Behavior:

- Close garage doors, doors, windows and other building openings in the event of high winds.
- Keep away from objects at risk of falling such as loose roof tiles or rotten tree branches.

Tips for SMEs:

- Also check whether outbuildings, external storage areas, lightweight structures and makeshifts are storm-proof.
- Secure objects such as lightweight tools or smaller vehicles such as lawnmowers.
- Regularly check the suitability and functionality of technical protection measures (automatic control of blinds, hail protection grid, etc.) and integrate these measures into maintenance planning.

Checklist for radon

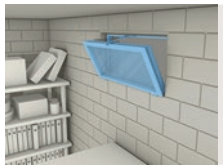
Property protection

Consult Zurich Radar for Natural Hazards at:
→ www.zurich.ch/naturalhazards

Enter your street address and find out the possible hazard level for the building.

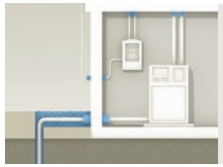
For buildings with basements the Swiss Federal Office of Public Health (FOPH) advises a radon measurement even for minimal radon exposure. The Swiss Federal Office of Public Health (FOPH) has a list of recognized radon measurement stations to purchase and evaluate dosimeters.

Seal cracks. Moisture and a musty smell in the basement are signs of insufficient air circulation and/or moisture leaks. Radon might also be the cause. A professional refurbishment to reduce radon tends to improve a damp indoor climate posing microbial risks.



Thorough airing reduces the radon concentration in rooms. After just two hours, the initial level can be reached again, however.

To prevent cracks, waterproof concrete should be used for the foundation slab and for walls touching the soil.



Run lines for water, gas, oil, power cables, and downhole heat exchangers through the wall (not through the foundation slab). That way, supply lines can be additionally ventilated with gravel backfill or a drainage slab. All lines must also be professionally sealed.

Radon can enter living spaces through lines or shafts inside the building (water and gas lines, electrical, TV and phone cables, heating, chimney, installation and elevator shafts or laundry chutes). They should therefore be professionally sealed off.

Checklist for radon

Property protection *(continuation)*

Radon can enter living spaces through open steps leading from the basement to the upper floor. Therefore seal off open steps in the basement with a tight door.

Open basement steps should be sealed off in at least one place with a tight door. Even better is to have external stairs serve as the access to the basement.

High radon exposure is generally a problem posed by rooms close to the ground, i. e. rooms in the basement or situated on a hillside. Ground-floor homes are affected in particular from basement rooms or hollow spaces.

Behavior:

- It is recommended that rooms and spaces with possible radon hazard are no longer used as habitable rooms but are only used for short periods of time. In addition, converting basement rooms into habitable rooms should be avoided if possible.
- As an immediate measure, basement rooms with high levels of radon can be equipped with fans. This step should be seen only as a makeshift solution, however, because basement ventilation is reduced in the winter in particular due to cooling and the windows are usually closed.

Checklist for radon

New construction – tips for planning:

- Determine the possible radon exposure at the planned location at
  → www.zurich.ch/naturalhazards
- Since the local occurrence of radon can vary greatly due to surface geology, the specific radon hazard cannot be determined solely on the basis of geological survey maps. From medium radon exposure on, bring in a geologist with corresponding knowledge to evaluate the building site.
- The estimated radon exposure is instrumental in helping to determine whether protective measures are needed and if so, which ones. Make sure the architect takes these measures into account in the building design.
- Conduct a radon measurement after construction is completed and the building has been moved into. This control measurement provides information about the success of the protective measures. The Swiss Federal Office of Public Health (FOPH) has a list of recognized radon measurement stations to purchase and evaluate dosimeters.

New construction – tips for construction:

- Impermeable concrete slabs throughout offer the best protection against radon.
- The use of waterproof concrete for the foundation slab and for walls touching the soil prevents cracks.
- Use a pipe ducting system to run pipes through the foundation slab and through walls touching the soil. This measure applies to downhole heat exchangers and underground storage tanks in particular.
- For controlled ventilation, the fresh air inlet should be placed at least 1,5 meters above the ground.
- A subfloor ventilation system (radon drainage) is recommended in new buildings containing habitable rooms that touch the soil or a natural basement.
- Separating the living spaces from the basement rooms with air-tight doors prevents radon from rising into the upper floors.
- Additional protection is provided by having an access to the basement outside the building.

Checklist for earthquakes

Property protection

Loose or non-secured shelves or heavy objects that can tip over or fall down (e. g. suspended ceilings, TVs, hi-fi equipment, lights) should be firmly fixed or bolted to ceilings and walls.

Firmly fasten insufficiently fixed or non-fixed balustrades, chimneys or facade elements such as loose roof tiles or freestanding walls that can tip over and collapse if subjected to tremors.

Renovation/Conversion:

- For existing structural class I buildings such as residential buildings as well as smaller office, commercial and industrial buildings, an earthquake safety inspection is a disproportionate step unless a renovation project is involved.
- For the conversion or renovation of a structural class I building, it is recommended to have an expert clarify whether earthquake-resistant renovation or conversion is worthwhile. Relevant factors are the type and scope of the planned construction project, the total investment, the value of the building and the remaining useful life.
- For existing structural class II buildings with significant infrastructure and larger congregations of people such as hospitals, shopping centers, schools, administrative buildings or churches, an earthquake safety inspection is recommended.
- Structures built after 1989 in accordance with the then valid structural code or after 2003 in accordance with SIA 261 should be safe for human beings. It is improbable that the buildings would collapse. In the case of older buildings, it is highly recommended to have them inspected to see how earthquake-proof they are.

New construction:

- In a new building, earthquake-proof construction is an obligation pursuant to Swiss structural code SIA 261. The building can sustain damage in a hazardous event but will remain structurally sound so the protection of human beings is guaranteed. The additional costs average just 1% of total construction costs.

Checklist for earthquakes

Behavior indoors:

- Seek cover from falling objects (e. g. suspended ceiling, lighting fixtures) under a sturdy table or in a door frame.
- Keep your distance from objects that can tip over or burst (shelves, heavy furniture, glazed areas, windows, etc.).
- Do not leave the building immediately, but only if the surrounding area is safe and there are no falling objects such as roof tiles.

Behavior outdoors:

- Remain outdoors; do not flee into a building.
- Avoid getting close to buildings, bridges, power poles or trees that could collapse or fall over.
- Avoid shore areas or leave them quickly (tsunami danger).
- Do not enter areas endangered by avalanches, falling rocks or slides or leave these areas immediately. Avalanches, falling rocks or slides pose a greater hazard after an earthquake.

Behavior in a vehicle:

- Stop the vehicle and remain inside it during the earthquake.
- If possible, do not stop on bridges, in tunnels or in underpasses.
- Avoid the vicinity of buildings.

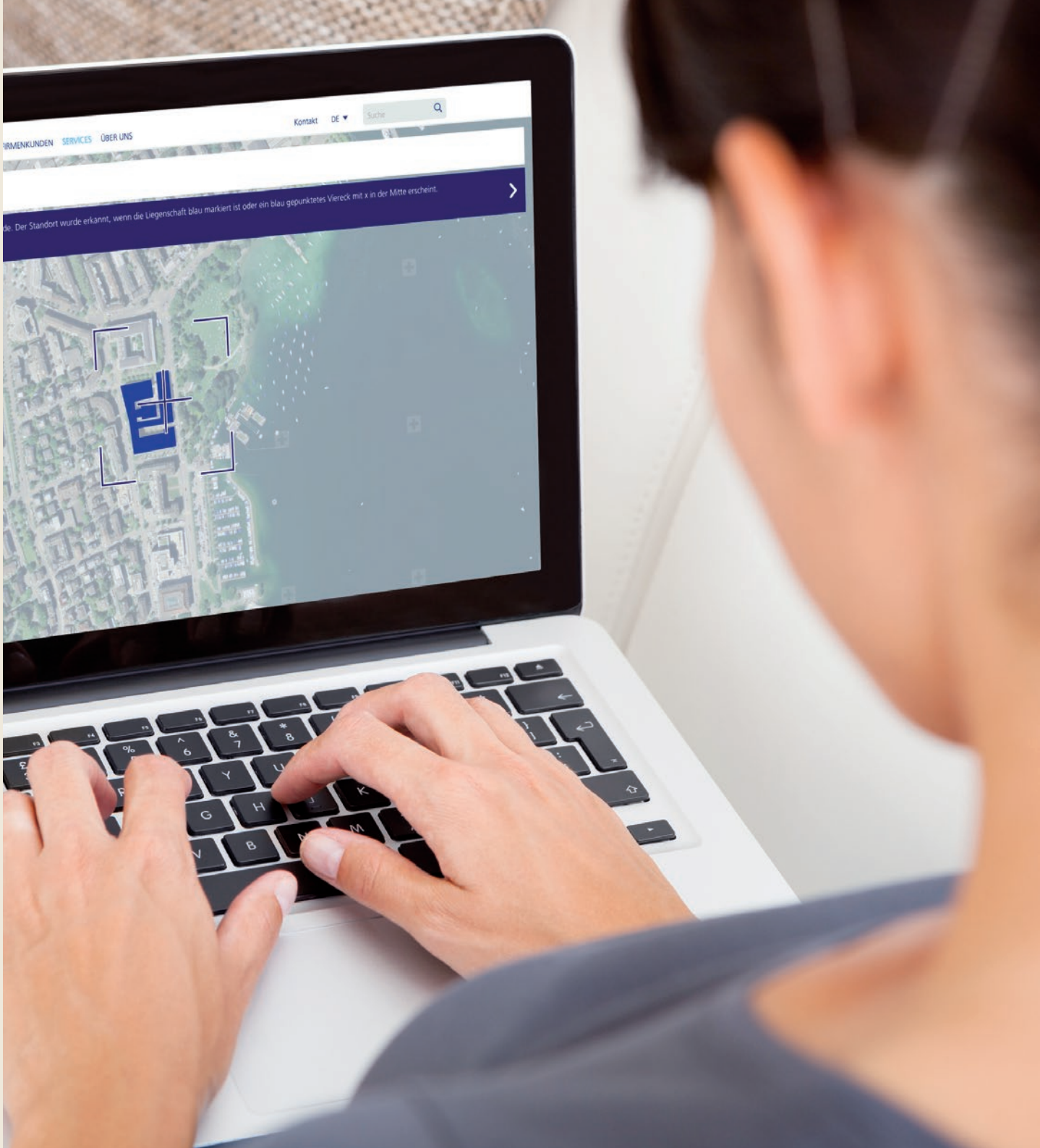
Behavior after a strong earthquake:

- Be prepared for aftershocks.
- Be mindful that avalanches, falling rocks or slides pose a greater hazard after an earthquake.
- Check gas, water and power lines for damage and shut them down if you suspect damage.
- Search buildings and the surrounding area for any fires. If possible, extinguish small fires yourself or alert the fire department.
- The building might be in danger of collapsing and therefore may not be able to withstand an aftershock. Leave the building for that reason.
- When leaving the building, watch out for falling objects.
- No private car trips; keep streets clear for emergency services.
- Be prepared for power failures and take the corresponding precautions.

Tips for SMEs:

- In functionally important buildings, secure installations and equipment such as pipe systems, laboratory equipment, tanks, cabinets or storage racks as well as production equipment.
- Also check outbuildings and outdoor storage areas for earthquake-resistance.

Information and services



The Zurich Natural Hazard Radar

Landslides, floods, avalanches, rockfalls … the Zurich Natural Hazard Radar can be used to perform a sound site and property analysis, enabling you to best protect yourself and your real estate.

This analytical tool is part of Zurich's natural hazard prevention initiative, a comprehensive program developed in cooperation with various experts to protect the population against natural hazards.

Start risk check now:
→ www.zurich.ch/naturalhazards

Your benefits:

- Just enter the address of the property in question and get a reliable analysis of natural hazard risk exposure.
- Benefit from numerous expert tips on how to protect your property efficiently and cost-effectively against potential natural hazards.
- Understand the ways in which natural hazards can occur that pose a threat to your home in Switzerland.
- **Assessing risks in advance is rewarding – both financially and for your peace of mind.**

Damage from weather events

Occurences of loss involving storms, flooding or hail give rise to many unpleasant and time-consuming tasks. We are there for you in the event of an incident.

Storms and flooding can seriously affect buildings, furniture, appliances and the landscape. Zurich supports you in dealing with storm damage, quickly and professionally. Report any damage to us immediately via the 24-hour free hotline 0800 80 80 80 and ask our experts for advice.

Call 0800 80 80 80

From outside Switzerland +41 44 628 98 98

I would like to know more

Zurich Natural Hazards Radar
Site and property analysis for your real estate:
→ www.zurich.ch/naturalhazards

Natural hazards in Switzerland
The Zurich guide to natural hazards with background information and interviews with experts and those affected.

In Zusammenarbeit mit:
GEOTEST GEOLOGEN / INGENIEURE / GEOPHYSIKER / UMWELTFACHLEUTE

Zurich Insurance Company Ltd
Hagenholzstrasse 60, 8050 Zurich
Phone 0800 80 80 80, www.zurich.ch

ZH19589e-1812

ZURICH®