

Working from the same page consistent messages for CDEM

PART B: Hazard-specific information



Flooded farm houses and paddocks, Hawke's Bay 2007

Floods

- ▶ Learn about your community's risks from hazards created by flooding.
- ▶ Contact your local council to find out if you live in an area prone to flooding.

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CORE ACTION MESSAGES IN THIS CHAPTER (p9)

- ▶ **Determine your risk.**
- ▶ **Get your household ready.**
- ▶ **Make an evacuation plan.**
- ▶ **Keep an ‘in case of flood’ to-do list.**

For general readiness, every household should create and practice a Household Emergency Plan and assemble and maintain Emergency Survival Items and a Getaway Kit. In addition, every household should take flood specific precautions and plan for and practice what to do if the flood occurs.

Please note: Core Action Messages should be read in conjunction with the rest of the text in this chapter.

Awareness messages

Why talk about floods?

Floods are New Zealand's number one hazard in terms of frequency, losses and declared civil defence emergencies.

Of all emergency declarations since 1963, over 70% have been flood-related.

The Insurance Council of New Zealand has recorded 55 major floods since 1968 that caused losses of \$626 million, averaging to \$16 million per year (adjusted to 2007). The Ministry of Civil Defence & Emergency Management estimates the total costs of flooding in New Zealand of more than \$125 million each year. Flood risk and flood losses are continuing to rise, largely through the continued intensive use of floodplains and increasing urbanisation. The risk may also be exacerbated by climate change.

Impacts include loss of life, damage to property and infrastructure, loss of stock, and contamination of water and land. The bigger the flood, the greater the probability and severity of these impacts.

What causes floods?

Floods are usually the result of continuous heavy rain and/or thunderstorms, but may also be caused by tsunami and coastal-storm inundation.

Flash floods occur rapidly, usually as the result of intense rainfall, and affect relatively small areas such as parts of a town or city. They are generally the result of a sudden downpour overwhelming the natural and urban drainage systems. The flash flood often appears as a torrent, can carry rocks, mud, and other debris and can sweep away most things in its path. The rain causing the flood may fall some distance away – that is, at the place the flood occurs, it may not have rained at all.

Heavy rain associated with major storms is usually less intense but much more widespread (over an area of 1000 square kilometers or more) than it is with thunderstorms. Therefore, rises/falls in river levels and onset/recession of flooding brought about by widespread heavy rain tend to be slower but also longer-lasting.

Widespread heavy rain is associated with a strong flow of warm air and is enhanced when that air is driven up and over hills and ranges. Thus in western parts of New Zealand, heavy rainfall most frequently occurs in northwesterlies, while in eastern areas it is generally associated with winds from the easterly quarter. Rainfall over high ground, particularly on the upwind side, can be several times that on the lowlands.

As with flash floods, the flooding brought about by a major storm may occur in a different place from where the heavy rain fell. Many of New Zealand's rivers are quite long and heavy rain in the upper part of their catchments can result in flooding a long way downstream.

Measuring floods

The amount of water flowing in a river is measured by a unit called a *cumec* (the number of cubic metres of water that flows past a given point in a second). Statistical techniques (a process called *frequency analysis*) are used to estimate the probability of the occurrence of a given event. The recurrence interval (sometimes called the return period) is based on the probability that a flood of a particular size will be equalled or exceeded in any given year.

Recurrence intervals refer to the past occurrence of random events and describe the average time span between large floods at a particular site. So, a 1 in 5, 1 in 50, or 1 in 100 year flood, for example, means that floods of certain sizes are statistically likely to happen once every 5, 50 or 100 years respectively. The term “100-year flood” is often used instead, which can be misleading. That may sound as though a very big flood is only going to happen once in 100 years. In reality two big floods can happen soon after each other.

The term “100-year flood” is used in an attempt to simplify the definition of a flood that statistically has a 1% chance of being reached or exceeded in any given year. With climate change the likelihood of floods increases and a so-called 100 year flood may increase in likelihood to become a 1 in 30 year event.

Forecasting / warning

In New Zealand, MetService defines broad-scale severe weather as widespread (that is, over an area of 1000 square kilometers or more) and:

- Rainfall greater than 50 millimetres within six hours or 100 millimetres within 24 hours and/or
- Snowfall below 1000 metres on the North Island or 500 metres on the South Island with a snow depth of 10 centimetres within six hours or 25 centimetres within 24 hours and/or
- Severe gales with a minimum mean speed of 90 km/hr or frequent gusts exceeding 110 km/hr.

Every afternoon, MetService publishes a Severe Weather Outlook for all of New Zealand for the upcoming three days. This can be found at:

www.metservice.co.nz/default/index.php?alias=severeweatheroutlook

The Severe Weather Outlook states, in broad terms, the risk that broad-scale severe weather will occur.

If confidence of broad-scale severe weather remains moderate to high within 48-72 hours of the event occurring, MetService will issue a Severe Weather Watch. A Severe Weather Watch may also be issued if there is a high level of uncertainty within the next 24 hours. Severe Weather Watches may be issued at any time but usually at around 8-9am and 8-9pm. They are updated every 12 hours until cancelled.

MetService will issue a Severe Weather Warning whenever it is expected that

weather conditions meeting the severe weather criteria will occur within the next 24 to 36 hours. Severe Weather Warnings may be issued at any time but usually at around 8–9AM and 8–9PM. They are updated every 12 hours until cancelled.

Most often, the risk of a major storm will be first signalled some days ahead in the Severe Weather Outlook and then carry through to a Severe Weather Watch and finally to a Severe Weather Warning. However, in situations where the predictability is low this will not be the case and the first advice of likely broad-scale severe weather may be the Severe Weather Warning.

Severe Weather Watches and Warnings are published on MetService's web site (www.metservice.com), available through the broadcast media and by email.

If your region operates a flood warning system, rainfall and river levels will automatically be monitored and if necessary an alerts system activated. Check your council website for details.

Example: Severe weather outlook

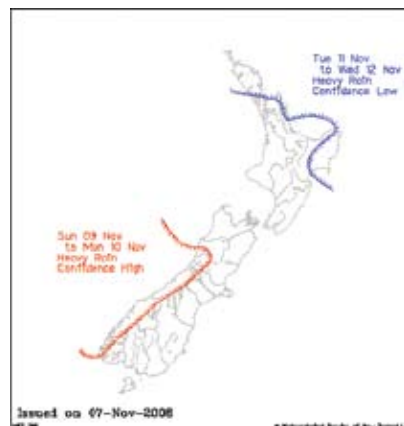
Severe weather threat situation

valid from Sunday 09-Nov-2008 to Wednesday 12-Nov-2008

Issued by MetService at 2:15pm Friday 07th November 2008

On Sunday, a ridge should move east across New Zealand. On Monday, a trough should move over the South Island from the Tasman Sea. Northerlies ahead of the trough should bring a period of heavy rain to Fiordland and the ranges of Westland with a good chance of rainfall accumulating to warning amounts on Sunday and Monday. The trough should weaken as it moves north late Monday.

An area of low pressure is expected to lie northeast of New Zealand from Monday to Wednesday. The various computer models differ on how close to the country the low centre will lie. If the low is close, then strong southeasterlies are likely to bring heavy rain to Northland, Coromandel Peninsula, Gisborne and northern Hawkes Bay. At this stage, MetService forecasters rate this as a low chance to produce enough rain to justify a warning for heavy rain on Tuesday and Wednesday.



Low confidence: a 20% likelihood (or 1 chance in 5) that the event will actually happen.

Moderate confidence: a 40% likelihood (or 2 chances in 5) that the event will actually happen.

High confidence: a 60% likelihood (or 3 chances in 5) that the event will actually happen.

Example: Severe weather watch

SEVERE WEATHER WATCH FOR MOUNTAINS AND HILLS OF THE CENTRAL NORTH ISLAND FROM MT TARANAKI TO MT RUAPEHU

ISSUED BY METSERVICE AT 0841hrs 01-Nov-2008

SPELL OF HEAVY RAIN ABOUT THE CENTRAL NORTH ISLAND LATE THIS AFTERNOON AND EVENING

MetService expects a front to move over the central North Island tonight. This front will probably bring a spell of heavy rain to the mountains and hills of the central North Island late this afternoon and evening, with the heaviest falls in the area from Mt Taranaki to Mt Ruapehu. The bulk of this rain will fall in a 6 hour period causing rivers and streams in the area to rise quickly. At this stage it looks like rainfall amounts will probably not reach warning criteria (e.g. 100mm in 24hours), however forecasters will continue to maintain a watch for this area.

This Watch will be reviewed by 9pm Saturday 1 November 2008

Forecast prepared by: John Crouch

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Example: Severe weather warning

SEVERE WEATHER WARNING.

ISSUED BY MetService AT 8:21 am 01-Nov-2008

PERIOD OF HEAVY RAIN ON THE SOUTH ISLAND WEST COAST AND THE TARARUA RANGES TODAY

SEVERE NORTHWESTERLY GALES ABOUT EASTERN AREAS FROM WAIRARAPA AND WELLINGTON DOWN TO EASTERN OTAGO

MetService continues to warn of a period of heavy rain about the South Island west coast and Tararua ranges today, as well as severe northwesterly gales about eastern areas from Wairarapa and Wellington down to eastern Otago.

Heavy falls are expected about the ranges of Westland, Buller and Northwest Nelson, as well as the Canterbury headwaters and the Tararua ranges. Up to 100mm of rain is forecast for these areas, with most of the rain falling in a 6-12 hour period. As this rain is falling in a relatively short time, river and stream levels in these areas will rise rapidly.

Severe northwesterly gales are also expected about Wellington and Wairarapa today, with gusts up to 140km/hr about exposed hilltops until this evening. In Marlborough, Canterbury and eastern Otago, winds could gust up to 120km/hr in exposed places, but these winds should ease from the south by early afternoon. Winds of this

strength can cause damage to trees, powerlines and insecure roofs. Driving conditions could also become hazardous, especially for motorcyclists and high sided vehicles such as campervans, buses and trucks.

Example: Severe weather warning (continued)

FOR THE LATEST WEATHER AND FORECAST CHARTS PLEASE GO TO
<http://metservice.com/default/index.php?alias=mapsandobservations>

MORE DETAILED INFORMATION FOR EMERGENCY MANAGERS AND TECHNICAL USERS FOLLOWS:

=====
HEAVY RAIN WARNING
=====

AREA/S AFFECTED: THE SOUTH ISLAND WEST COAST FROM MILFORD SOUND TO THE RANGES OF NORTHWEST NELSON, THE CANTERBURY HEADWATERS, AND THE TARARUA RANGES.

FORECAST:

FIORDLAND NORTH OF MILFORD SOUND:

The heavy rain is easing, however 10-25mm of rain is still possible between 8am and 10am.

WESTLAND NEAR THE RANGES:

In the 5 hours from 8am to 1pm Saturday, 75 to 100mm of rain is expected. Rainfall rates may reach 25-35mm/hr at times.

THE RANGES OF BULLER AND NORTHWEST NELSON:

In the 7 hours from 8am to 3pm Saturday, 70 to 100mm of rain is expected, with rainfall rates of 15-25mm per hour.

THE HEADWATERS OF THE MAIN LAKES AND RIVERS OF CANTERBURY:

In the 4 hours from 8am to midday Saturday, expect 40-60mm of rain near the main divide, and up to 30mm to spread about 15km east of the divide.

THE TARARUA RANGES:

In the 10 hours from 10am to 8pm Saturday, 75 to 100mm of rain is expected, especially about the higher slopes.

FREEZING LEVEL: About 2500 metres, lowering to 1200 metres about Fiordland during the day.

=====
STRONG WIND WARNING
=====

AREA/S AFFECTED: EASTERN SOUTHLAND, MID AND NORTH CANTERBURY, MARLBOROUGH, WELLINGTON AND WAIRARAPA.

FORECAST:

EASTERN OTAGO:

Northwesterly winds should ease this morning, however between 8am and 11am, wind gusts may still reach 120 km/h in exposed places.

MID AND NORTH CANTERBURY:

In the 6 hours from 8am to 2pm on Saturday, expect northwest winds to reach 70

Example: Severe weather warning (continued)

km/h gusting 120 km/h at times in exposed inland places and about the higher parts of Banks Peninsula.

MARLBOROUGH:

In the 9 hours from 8am to 5pm Saturday, expect northwesterlies of 70 km/h gusting to 120 km/h at times in exposed places.

WELLINGTON AND WAIRARAPA:

In the 12 hours from 8am to 8pm Saturday, expect northwesterlies of 80 km/h gusting up to 140 km/h at times, especially about exposed hilltops such as the Rimutaka Hill Road.

=====
WARNINGS NO LONGER IN FORCE
=====

HEAVY RAIN WARNINGS HAVE BEEN LIFTED FOR: FIORDLAND SOUTH OF MILFORD SOUND

NO FURTHER WARNINGS WILL BE ISSUED FOR THIS EVENT FOR THE ABOVE AREAS.

STRONG WIND WARNINGS HAVE BEEN LIFTED FOR: INLAND FIORDLAND AND SOUTHLAND

NO FURTHER WARNINGS WILL BE ISSUED FOR THIS EVENT FOR THE ABOVE AREAS.

NEXT SEVERE WEATHER WARNING WILL BE ISSUED AT OR BEFORE 9:00pm Saturday 01-Nov-2008

Forecast prepared by: John Crouch

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River flow forecasting

Scientists use a weather forecast model to feed a network of environmental forecasting models. The weather model provides meteorological inputs to a river runoff forecast model, which in turn provides real-time river flow forecasts.

CORE ACTION MESSAGES

- ▶ Determine your risk.
- ▶ Get your household ready.
- ▶ Make an evacuation plan.
- ▶ Keep an 'in case of flood' to-do list.

For general readiness, every household should create and practice a Household Emergency Plan and assemble and maintain Emergency Survival Items and a Getaway Kit. In addition, every household should take flood specific precautions and plan for and practice what to do if the flood occurs.

Reducing the risk and planning pays off

The reality of having your home flooded is difficult to understand unless you have been through the experience – you can face months away from home while it is being repaired. A flood can also mean the prospect of losing some or all of your possessions as well as an immense amount of disruption to normal family life. The emotional impact can be equally devastating. Restoring your home whilst living in temporary accommodation will be stressful. However, the distress and disruption can be limited if you are prepared. Having a plan can help. Knowing who is going to do what and where to turn for help diffuses the sense of crisis.

Regardless of how a flood occurs, the rule for being safe is simple: head for higher ground and stay away from floodwater. Even shallow fast-moving floodwater produces more force than most people imagine. It is exceedingly dangerous to try to walk, swim, or drive in floodwater. 0.6 metres of water will carry away most vehicles. You can protect yourself best by being prepared and having time to act. You can protect your home best by taking measures to reduce potential flood damage (this is called mitigation) and having flood insurance. These measures will help reduce the amount of structural damage to your home and the financial loss from building and crop damage should a flood or flash flood occur.

How can I protect myself in a flood?

Before a flood

1. Find out from your local civil defence emergency management office if you live or work in a flood-prone area.
2. Avoid building in a floodplain. If there are no restrictions and you are building in a floodplain, take precautions to make it less likely the building will be damaged during a flood.
3. Ask if your property is above or below the flood stage water level and learn about the history of flooding for your region.
4. If you have been flooded before you will know that your home or business is at risk, but with the number of flood events increasing, it is worth checking whether you are in a 'high risk' area.
5. Learn flood warning signs and understand your community's public alerting system.

6. Have non-return valves installed in building sewer and effluent traps to prevent flood waters from backing up in drains. As a last resort, try to plug showers, tubs or basins.
7. Check with the local civil defence emergency management office if there is a community flood evacuation plan. If yes, plan and practice an evacuation route. This plan should show you the safest routes to high ground or evacuation centres. Individuals living in flash flood areas should have several alternative routes. All members of the household should know where to meet each other, where to evacuate to, and what route(s) to take if they have to leave. Making plans well in advance will help you avoid last-minute confusion.
8. In a large flood you may need to look after yourself for at least three days. Maintain Emergency Survival Items.
9. Develop an emergency communication plan. Family members can be separated from one another during floods or flash floods, for example, when adults are at work and children are at school.
10. Ensure that all family members know how to respond after a flood or flash flood.
11. Make a list of useful telephone numbers – the contact person of your insurance company, gas, electric, vet, farm technician, local authority etc, your landlord if applicable and keep it in a safe place – preferably upstairs.
12. Make sure you and your family members know how to switch off gas, electric and water supplies at the mains – even in the dark.
13. Check your insurance policy to ensure you have sufficient coverage
14. Keep insurance policies, documents, and other valuables in a safe-deposit box. You may need quick, easy access to these documents. Keep them in a safe place less likely to be damaged during a flood.
15. Consult with a construction professional for further information about damage-reduction measures. Check local building codes and ordinances for safety requirements.
16. Contact your local civil defence emergency management office for more information on mitigation options to further reduce potential flood damage. Your local council may be able to provide additional resources and information on ways to reduce potential damage.

During a flood or if a flood is imminent:

17. Listen to a battery-operated radio for the latest information.
18. Be ready to act quickly. Floods and flash floods can happen quickly and without warning. Be ready to act immediately and keep your previously assembled Getaway Kit is near.
19. Be prepared to evacuate.
20. Follow the instructions and advice of emergency services and civil defence emergency management authorities. Local authorities are the most informed about affected areas you should avoid.

Preparing your home or business

21. Try to enlist some helpful friends to help you move your furniture upstairs.
22. Bring outdoor belongings, such as patio furniture, indoors.
23. Construct barriers such as stopbanks and flood walls to stop floodwater from entering the building. Check with local authorities about building codes and safety requirements.
24. If flooding is expected, consider using sand bags to keep water away from your home. It normally takes two people about one hour to fill and place 100 sandbags, giving you a wall 0.3m high and 6m long. Make sure you have enough sand, or plastic bags, shovels, strong helpers, and time to place them properly.
25. Move valuable household possessions to the upper floors or to safe ground if time permits. Raising this equipment will prevent damage.
26. If your home is in a flood-prone area, fill plastic bottles with clean water for drinking. Water may become contaminated or water service may be interrupted. An undamaged water cylinder may be your best source of fresh water after a flood.
27. Fill bathtubs, sinks, and jugs with clean water in case water becomes contaminated. Use the water also for flushing the toilet or washing the floor or clothing.
28. Turn off utilities if told to do so by authorities. Authorities may ask you to turn off water or electricity supply to prevent damage to your home or within the community.
29. Unplug small appliances. Small appliances may be affected by electrical power surges. Unplugging them reduces potential damage.

Preparing to evacuate

30. Fill your car's fuel tank in case an evacuation notice is issued. However, be aware that if electric power is cut off, fuel stations may not be able to operate pumps.
31. Consider a precautionary evacuation of your animals, especially any large or numerous animals. Waiting until the last minute could be fatal for them and dangerous for you. Where possible, move livestock to higher ground.
32. If advised by authorities to evacuate, do so immediately. Move to a safe area before access is cut off by floodwater. Follow recommended evacuation routes. Shortcuts or alternative, non-recommended routes may be blocked or damaged by floodwater.
33. Leave early enough to avoid being marooned by flooded roads. Delaying too long may allow all escape routes to become blocked.
34. Check with your local authorities if you are allowed to take your pets to evacuation centres if you are evacuated.

If outdoors

35. Climb to high ground and stay there.
36. Never try to walk, swim, or drive through swift water. Many flood fatalities are caused by people attempting to drive through water, or people playing in high water. If it is moving swiftly, even water 15 centimeters deep can sweep you off your feet.

If in a car

37. If you come to a flooded area, turn around and go another way.
38. If your car stalls, abandon it immediately and climb to higher ground. Many deaths have resulted from attempts to move stalled vehicles.
39. Avoid already flooded areas, and areas subject to sudden flooding. Do not attempt to cross stream or river fords, flowing streams or water covered roads. The majority of all flood fatalities are vehicle related. As little as 30cm of water may cause you to lose control of your vehicle. The depth of water is not always obvious. The road may be washed out under the water, and you could be stranded or trapped. Also, standing water may be electrically charged from underground or downed power lines. Rapidly rising water may stall the engine, engulf the vehicle and its occupants, and sweep them away. Look out for flooding at highway dips, bridges, and low areas. 0.6 metres of water will carry away most vehicles, including SUVs, utility vehicles and light trucks.
40. Stay away from underpasses. Underpasses can fill rapidly with water, while the adjacent roadway remains clear. Driving into an underpass can quickly put you in 1.5 to 1.8 metres of water.

After a flood / returning home

41. Flood dangers do not end when the water begins to recede. Continue to listen to radio or television stations and don't return home until authorities indicate it is safe to do so. There may be flood-related hazards within your community, which you could hear about from local broadcasts.
42. Get medical care at the nearest hospital or clinic, if necessary. Contaminated floodwater can cause infection. Severe injuries will require medical attention.
43. Help people who require special assistance - infants, elderly people, those without transportation, families who may need additional help in an emergency situation, people with disabilities, and the people who care for them.
44. Stay away from damaged areas. Your presence might hamper rescue and other emergency operations, and put you at further risk from the residual effects of floods, such as contaminated water, crumbled roads, landslides, mudflows, and other hazards.

Health hygiene and clean up

45. Throw away food and drinking water that has come in contact with floodwater, including canned goods. It is impossible to know if containers were damaged and the seals compromised. Food contaminated by floodwater can cause severe infections.
46. Discard wooden spoons, plastic utensils, and baby bottle teats and dummies if they have been covered by floodwater. There is no way to safely clean them.
47. Disinfect metal pans and utensils by boiling them in clean or properly treated water.
48. Avoid drinking or preparing food with tap water until you are certain it is not contaminated. If water is of questionable purity, boil the water or add unscented bleach to it. Wells inundated by floodwater should be pumped out and the water tested for purity before drinking. If in doubt, call your local public health authority. Ill health effects often occur when people drink water contaminated with bacteria and germs.
49. Service damaged septic tanks, cesspools, pits, effluent and leaching systems as soon as possible. Damaged sewage and effluent systems are health hazards.
50. You can clean and disinfect your property using ordinary household products.
51. A garden hose is useful for washing down. Do not use high-pressure hoses as they blast contaminated matter into the air.
52. If you are drying your property naturally, keep doors and windows open as much as possible. If using dehumidifiers, close external doors and windows.
53. Flood water can make the air in your home unhealthy. This is because when things get wet for more than 2 days they usually get mouldy. There may also be germs and bugs in your home after a flood. Hence, it is important to clean and dry your house and everything in it.
54. Mould may be more likely to make some people with asthma, allergies, or other breathing problems sick. So talk to your doctor or another medical professional if you have questions about cleaning or working in a home that has been flooded.
55. If there is a large amount of mould, you may want to hire professional help to clean up the mould.
56. Fix any leaking pipes and other water problems and then dry things, or the mould will grow again.
57. When cleaning protect yourself by wearing a certified respirator, goggles, gloves, long pants, long-sleeved shirt, and boots or work shoes.
58. Throw away anything that was wet with flood water and can't be cleaned.
59. If you use a generator because of a power outage, use it OUTSIDE and far away from buildings. Do not use portable generators inside your house or garage. Do not put portable generators on balconies or near doors, vents, or windows. Do not use portable generators near where you or your children are sleeping as generators emit poisonous gases.
60. Prevent livestock or other animals from accessing pooled water where there is a risk of contamination from effluent or chemicals.

Building and utility safety

61. Stay out of any building if floodwater remains around the building. Floodwater often undermines foundations, causing sinking. Floors can crack or break and buildings can collapse.
62. Avoid entering any building (home, business, or other) before local officials have said it is safe to do so. Buildings may have hidden damage that makes them unsafe. Gas leaks or damage to electric lines or water lines can create additional problems.
63. Report broken utility lines to the appropriate authorities. Reporting potential hazards will get the utilities turned off as quickly as possible, preventing further hazard and injury.
64. If entering buildings, use extreme caution.
65. Wear sturdy shoes and use a battery-powered torch when examining buildings.
66. Examine walls, floors, doors, and windows to make sure that the building is not in danger of collapsing.
67. Watch for loose plaster, wall claddings and ceilings that could fall.
68. Look for fire hazards and inspect utilities in a damaged house
69. Check for gas leaks - if you smell gas or hear blowing or hissing noise, open a window and quickly leave the building. Turn off the gas at the outside main valve if you can and call the gas company from a neighbor's home. If you turn off the gas for any reason, it must be turned back on by a professional.
70. Look for electrical system damage - if you see sparks or broken or frayed wires, or if you smell hot insulation, turn off the electricity at the main fuse box or circuit breaker. If you have to step in water to get to the fuse box or circuit breaker, call an electrician for advice.
71. Check for sewage and water pipe damage – if you suspect sewage pipes are damaged avoid using the toilets and call a plumber. If water pipes are damaged, contact the water company and avoid the water from the tap.
72. Watch out for flammable or explosive materials that may be transported onto your property by floodwaters.
73. Avoid smoking inside buildings. Smoking in confined areas can cause fires.
74. Look Before You Step: after a flood, the ground and floors are covered with debris including broken bottles and nails. Floors and stairs that have been covered with mud can be very slippery.
75. Wear long pants, a long-sleeved shirt, and sturdy shoes. The most common injury following a disaster is cut feet.
76. Use a battery-powered torch when examining buildings. **DO NOT USE CANDLES!**
77. Inspect foundations for cracks or other damage. Cracks and damage to a foundation can render a building uninhabitable.
78. Pump out flooded basements gradually (about one-third of the water per day) to avoid structural damage. If the water is pumped out completely in a short period of time, pressure from water-saturated soil on the outside could cause basement walls to collapse.

Building and utility safety (continued)

79. Only pump out water when flood levels outside your property start to be lower than inside. This reduces the risk of structural damage.
80. Shovel mud away evenly from both sides of a wall. This stops pressure building up on one side.

Insurance

If your property sustains any damage:

81. Ring your insurer as soon as possible. In almost all cases the insurance company will send an insurance assessor to look at your property. They will confirm what repairs and replacements are needed and covered by your policy.
82. Always make your own record of flood damage
83. Use a permanent ink pen to mark on the wall the maximum height of the flood water. Do this in every room affected by flooding.
84. Photograph or video record your damaged property.
85. List the damage to your property and belongings.
86. If your insurance policy covers you for loss of perishable goods, make a list of all the foods you throw away. Include any food touched by flood water and anything in your fridge or freezer ruined by loss of power.

Ask the insurance company:

87. How long it will be before the assessor visits.
88. If you are to clean your property or if they will get a company to do it for you.
89. If they will provide you with temporary accommodation. This could be a nearby motel, bed and breakfast, a static caravan or a rented house.

Things to help with your insurance claim:

90. Confirm the insurance company will pay for any service or equipment you need.
91. Make a note of all telephone calls. Record the date, name and what was agreed.
92. Keep copies of all letters, emails and faxes you send and receive.
93. Keep receipts.
94. Don't throw anything away until told (except ruined food).
95. Depending on your policy, the insurance company may only offer to clean and repair something, not replace it.
96. If you rent your property, contact your landlord and your contents insurance company as soon as possible.
97. If you do not have insurance, your local council should be able to provide information on hardship grants or charities that may be able to help you.

Recovery

Following a flood, there are a whole range of measures that can be taken to reduce the impact of the next flood should it happen and now is the time to think about these. Before you start making changes get advice from a specialist. Making flood resistant alterations to your home may cost more than just restoring it to its previous state, but it is money well spent – especially if your property is at high risk of flooding again. In future floods these measures can speed up the drying out time and get you back home quicker. They will also reduce the cost of future repairs.

98. Lay ceramic tiles on your ground floor and use rugs instead of fitted carpets. Rugs can be moved and will suffer less damage in a flood than a fitted carpet.
99. Replace chipboard kitchen and bathroom units with plastic or solid wood. Or raise cupboards up on stilts so that water can flow beneath them.
100. Fit water resistant door and window frames.
101. Install non-return valves in drainage pipes to prevent sewage backing up into the house.
102. Replace usual plaster with a more water resistant version such as lime plaster or cement render.
103. Always use waterproof sealant on external walls and water resistant paint on internal walls.
104. You can also buy a number of ready-made flood defences to minimise damage, e.g. mobile flood barriers.
105. Raise the height of electrical sockets to at least 1.5 metres above ground floor level.
106. Position any main parts of a heating or ventilation system upstairs or raised well above the ground floor.
107. Take good care of yourself: recovering from a flood is a big job. It is tough on both the body and the spirit. The effects a disaster has on you and your family may last a long time. Learn how to recognize and care for anxiety, stress, and fatigue.

Media and community education ideas

108. Ask your local newspaper or radio or television station to:
 - Do a series on the dangers of floods and flash floods.
 - Do a story featuring interviews with local officials about land use management and building codes in floodplains.
 - Highlight the importance of staying informed about local weather conditions.
 - Run public service ads about how to protect lives and property in a flood.
109. Help the reporters to localise the information by providing them with the local emergency telephone numbers and hospitals. Also provide the business telephone numbers for the local emergency management office.
110. Work with officials of the local fire, police, and emergency medical services; utilities; hospitals; and civil defence emergency management office to

Media and community education ideas (continued)

- prepare and disseminate guidelines for people with mobility impairments about what to do if they have to evacuate.
111. Periodically inform your community of local public warning systems. Explain the different warning stages.
 112. Help hospitals and other operations that are critically affected by power failures to obtain auxiliary power supplies.
 113. Contact your local civil defence emergency management office for information on local flood warning systems. Advanced warning provided by early detection is critical to saving lives. Automatic flood detection systems are available commercially for flood-prone communities.
 114. Publish emergency evacuation routes for areas prone to flooding.

Fiction and facts

Fiction: A 100-year flood occurs only once every 100 years.

Facts: The 100-year flood is a statistical average; the same area could experience, for example, two 100-year floods in the same year. There is a 1% chance that a 100-year flood will occur in any given year.

Fiction: Flash floods occur only along flowing streams.

Facts: Flash floods can occur in areas where no streams are present.

Fiction: Flash floods occur mainly in the late afternoon and evening.

Facts: Flash floods occur at any time.

Fiction: Larger vehicles, such as SUVs and utes, are safe to drive through floodwater.

Facts: 0.6 metres of rushing water can carry away most vehicles, including SUVs and pickup trucks.

Fiction: Water stored in porcelain bathtubs and sinks is a good source of drinking water if flooding interrupts or contaminates the public water supply.

Facts: Over time, lead can leach from the porcelain glaze in bathtubs and sinks into water stored in them. Water stored in porcelain bathtubs and sinks should never be used for drinking or for bathing young children. You can use water stored in bathtubs and sinks for tasks such as flushing the toilet or washing the floor or clothing.

Useful links

Flood hazards

- www.teara.govt.nz/EarthSeaAndSky/NaturalHazardsAndDisasters/Floods/en

Flood preparedness

- www.getthru.govt.nz
- www.health.state.ny.us/environmental/emergency/flood/
- www.fema.gov/areyouready/flood.shtm

Floods general information

Useful links (continued)

- www.pep.bc.ca/floods/preparedness.html
- www.environment-agency.gov.uk/subjects/flood/826674/
- www.redcross.org/services/prepare/0,1082,0_240_,00.html
- www.maf.govt.nz/mafnet/rural-nz/adverse-events/
- www.rural-support.org.nz/

Flood insurance

- www.ami.co.nz/products/contents/
- www.state.co.nz/
- www.tower.co.nz/Web_Home.asp
- www.vero.co.nz/
- www.icnz.org.nz/

Flood risk management

- www.mfe.govt.nz/issues/land/natural-hazard-mgmt/flood-protection.html
- www.niwa.co.nz/news-and-publications/publications/all/wa/15-3/flood
- www.niwa.co.nz/our-science/natural/hazards

Regional flood protection

- www.ecan.govt.nz/Resource+Consents/WaimakFloodProtection/
- www.hbrc.govt.nz/Water/FloodProtection/tabid/119/Default.aspx
- www.gw.govt.nz/section1208.cfm
- www.horizons.govt.nz/default.aspx?pageid=45

Maps and weather

- www.metservice.co.nz/default/index.php?alias=weatherwarnings

Flood warning/alert schemes:

- www.hbrc.govt.nz/Water/FloodProtection/tabid/119/Default.aspx
- www.gw.govt.nz/story2421.cfm?
- www.wcrc.govt.nz/river_level_rainfall/about/flood_warning.htm
- www.horizons.govt.nz/default.aspx?pageid=18
- www.niwa.co.nz/news-and-publications/publications/all/wa/15-3/forecast

Floods general information

Useful numbers

Your important emergency plan telephone numbers. Fill this out and keep this leaflet with your Emergency Items.

Contact	Details
Local authority emergency helpline	
Insurance company 24-hour	
Insurance number and policy number	
Local radio station (Frequency)	
School	
Family and neighbours	
Bank phone number and details	
Work phone numbers	
Medical Center/GP	
Local police station	
Vet/kennel/cattery	
Local hotel or B&B	
Gas supplier and meter number	
Electricity supplier and meter number	
Water supplier and meter number	
Electrician	
Plumber	
Builder	

