



# Working from the same page consistent messages for CDEM

## PART B: Hazard-specific information



Aerial view of the Waipawa River, Hurunui District, 2008

# Major storms

- ▶ Learn about your community's risks from hazards created by major storms.
- ▶ Contact your local council to find out if you live in an area prone to coastal storm inundation or visit the MetService website [www.metservice.co.nz](http://www.metservice.co.nz) to find out about storms.

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### **CORE ACTION MESSAGES IN THIS CHAPTER (p8)**

- ▶ **Determine your risk.**
- ▶ **Get your household ready.**
- ▶ **Make an evacuation plan.**
- ▶ **Keep an ‘in case of coastal storm inundation’ 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 storm specific precautions and plan for and practice what to do if a storm occurs.**

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

## Awareness messages

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### **Why talk about major, mid-latitude storms?**

Major storms affect broad areas, are accompanied by heavy rain and/or heavy snow and/or strong winds, and last for a few days. Heavy rain associated with major storms is usually less intense, but much more widespread than it is with thunderstorms. Therefore, rises in river levels and the onset 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.

Broad-scale strong winds, on the other hand, occur much more frequently on the downwind side of hills and ranges or in the gaps between them. For example, in a strong moist northwesterly over the South Island, the heaviest rainfalls are likely to be on the western side of the Southern Alps, while the strongest winds are to be expected in eastern districts. They last much longer – many hours – than the strong winds associated with thunderstorms.

If the winds blowing from the sea to the land (or in some cases, parallel to the shore) are very strong, they may push the sea onto the land and/or into river mouths and cause coastal flooding.

Perhaps surprisingly, the heaviest snowfalls seldom occur in the coldest outbreaks. Major storms produce a lot of snow high up in the atmosphere, but most often this melts before reaching the ground. In winter, occasionally conditions near the ground are cold enough for snow to fall all the way to the land surface.

### **What is a storm?**

Major storms are almost invariably associated with lows (depressions). While lows are common in the Tasman Sea – New Zealand – Southwest Pacific area, only the occasional one has the right characteristics to significantly affect New Zealand. In short, it has to be the right storm in the right place at the right time.

### **Forecasting/warning**

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

- 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 three-day Severe Weather Outlook for all of New Zealand at:

[www.metservice.co.nz/default/index.php?alias=severeweatheroutlook](http://www.metservice.co.nz/default/index.php?alias=severeweatheroutlook).

For example, a Severe Weather Outlook issued on Monday is effective for Wednesday – Friday.

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

**Example: Severe weather outlook**

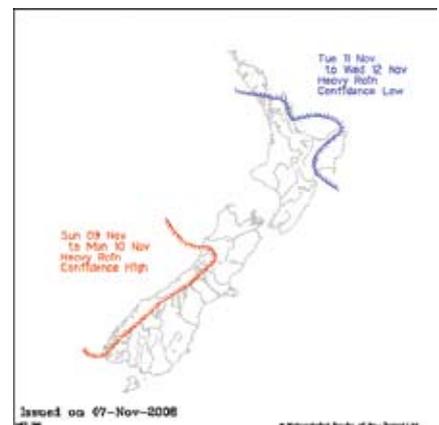
**Severe weather threat situation**

*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.*

**FOR THE LATEST WEATHER AND FORECAST CHARTS PLEASE GO TO**

**<http://metservice.com/default/index.php?alias=mapsandobservations>**

**Example: Severe weather warning (continued)**

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

**Example: Severe weather warning (continued)**

**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*

*A service provided through a contract with the Crown*

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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](http://www.metservice.com)), available through the broadcast media and by email.

### CORE ACTION MESSAGES

- ▶ Determine your risk.
- ▶ Get your household ready.
- ▶ Make an evacuation plan.
- ▶ Keep an 'in case of coastal storm inundation' 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 storm specific precautions and plan for and practice what to do if a storm occurs.**

### How can I protect myself from a mid-latitude storm?

Most people will take no special measures for a mid-latitude storm other than being sensible. However, it is recommended to:

1. Develop an emergency communication plan in your family (for all hazards) in case family members are separated from one another during a storm; likely during the day when adults are at work and children at school. Have a plan for getting back together.
2. Discuss where and how to shelter in your home.
3. Get familiar with your Household Emergency Plan.
4. Have an Emergency Survival Items on hand (**see** Emergency Survival Items and Getaway Kit section):
5. Make a list of emergency services telephone numbers (fire, police, council/civil defence emergency management office, ambulance, etc.). Farmers should also include emergency numbers for vets, local livestock transport companies, alternative powers supply equipment, Local Rural Support Trust etc. You may not have time in an emergency to look up critical numbers.
6. Check your household insurance policy for sufficient coverage and amount.
7. Make sure you and members of your household know how to switch off gas, electricity and water supplies at the mains – even in the dark.
8. For people with special needs, write down your specific needs, limitations and medication.
9. Keep insurance policies, important documents (birth certificates, ownership certificates, passport, etc.) and other valuables in a waterproof container. You may need quick, easy access to these documents.
10. Prepare a list of important information concerning medical information, bank account number, etc.
11. Make a list of items to bring inside in the event of a storm. A list will help you remember anything that can be broken or picked up by strong winds.
12. If farming, secure vehicles, tools and livestock feed that could be dangerous and/or become damaged in a storm.

13. Remove any debris or loose items in your yard. Branches and firewood may become missiles in strong winds.
14. Keep trees and shrubbery trimmed. Make trees more wind resistant by removing diseased or damaged limbs, then strategically remove branches so that wind can blow through. Strong winds frequently break weak tree limbs and hurl them at great speed, causing damage or injury when they hit. Debris collection services may not be operating just before a storm, so it is best to do this well in advance of approaching storms.
15. Consider installing permanent shutters to cover windows. Shutters can be closed quickly and provide the safest protection for windows.
16. Strengthen garage doors. Garage doors are often damaged or destroyed by flying debris, allowing strong winds to enter. As winds apply pressure to the walls, the roof can be lifted off, and the rest of the house can easily follow.
17. Discuss storms with your family. Everyone should know what to do in case all family members are not together. Discussing emergency preparedness ahead of time helps reduce fear and lets everyone know what to do in a storm situation.
18. Protect your animals. Ensure that outbuildings that house animals are protected in the same way as your home. When installing or changing fence lines, consider placing them in such a way that your animals are able to move to higher ground in the event of flooding. Get rid of debris around your home and any outbuildings as well as in pastures.
19. If farming, know in advance which paddocks are secure (those which allow livestock to move away from floodwaters, are not at risk from landslides and are not close to power lines). Do this research well before a storm strikes.

### **During a storm or if a storm is imminent**

20. Prepare your property for high winds. Strong winds can lift large, heavy objects and send them crashing into homes. Anything not secured may become a deadly or damaging projectile.
21. Bring inside outdoor furniture, decorations or ornaments, rubbish cans, hanging plants, or anything else that can be picked up by the wind.
22. Secure your home and critical buildings by closing the windows and doors and, if installed, close the shutters.
23. Pull curtains and drapes over unprotected glass areas. This could prevent injury from flying glass if the window is broken.
24. Moor your boat securely or move it to a designated safe place. Use rope or chain to secure your boat to a trailer. Use tie-downs to anchor a trailer to the ground or to a building.
25. Turn the refrigerator and freezer to the coldest setting. Open them only when absolutely necessary, then close them quickly. Keeping the coldest air in will help perishables last much longer in the event of a power failure.
26. Store valuables and personal papers in a safe-deposit box or in a waterproof container on the highest level of your home. Extreme winds could also cause

### **During a storm or if a storm is imminent (continued)**

water damage inside homes. Protecting valuables in this manner will provide the best security.

27. Unplug small appliances. Small appliances may be affected by electrical power surges that may occur as the storm approaches. Unplugging them reduces potential damage.
28. If power is lost, turn off major appliances to reduce the power surge when electricity is restored. When electricity is restored, the surge from many major appliances starting at the same time may cause damage or destroy the appliances. Turning off or unplugging major appliances will allow you to decide when it is best to turn them back on.
29. Listen to a local radio station on a portable, battery-powered radio or television for weather updates.
30. If it should be necessary to evacuate take your Getaway Kit and go to a shelter or to the out-of-town contact identified in your Household Emergency Plan. Local officials will advise you to evacuate only if they think that you are in danger. It is important to follow their instructions as soon as possible. Roads may become blocked and the storm can worsen, preventing safe escape.
31. If you evacuate, take your pets with you. If it is not safe for you, it is not safe for them. Be sure to take your pet emergency kit with you. Leaving pets will endanger not only them, but also yourself and emergency responders who may have to rescue them later.
32. If you are not advised to evacuate, stay indoors, away from windows, skylights, and doors.
33. Close all interior doors. Secure external doors. Closed doors will help prevent damaging winds from entering rooms.
34. Have a supply of torches and extra batteries handy. Torches provide the safest emergency lighting source. **DO NOT USE CANDLES.** Do not use kerosene lamps, which require a great deal of ventilation and are not designed for indoor use.
35. Store drinking water in clean plastic bottles and cooking utensils. Electric pumps may be inoperative if power is lost. Often, a person's greatest need following a major storm is water.
36. Fill bathtubs and sinks with water to use for flushing the toilet and washing floors and clothing. Do not use water that has been stored in glazed tubs or sinks for drinking or to bathe young children because over time lead can leach from the glaze into the water.
37. Watch out for flooding. Storms often drop large amounts of rain and cause severe flooding, even when they are weakening or are no longer a named storm.

### **After a storm**

38. Turn on the radio or television to get the latest weather information.
39. Check for injuries. Give first aid and get help for injured or trapped persons.

Taking care of yourself first will allow you to help others safely until emergency responders arrive.

40. Help people who require special assistance – infants, elderly people, those without transportation, large families who may need additional help in an emergency situation, people with disabilities, and the people who care for them.
41. Wear sturdy shoes or boots, long sleeves, and gloves when handling or walking on or near debris.
42. Use the telephone for emergency calls only.
43. If you are evacuated, only return home when local officials tell you that it is safe. Local officials on the scene are your best source of information about accessible areas and passable roads.
44. Stay alert for extended rainfall and subsequent flooding.
45. Stay away from floodwater. Drive only if absolutely necessary and avoid flooded roads and washed-out bridges. Continue to follow all flood safety messages.
46. If someone needs to be rescued, call professionals with the right equipment to help. Many people have been killed or injured trying to rescue others in flooded areas.
47. 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.
48. If you are farming check your livestock if it is safe to do so.

### **Building and utility safety**

49. Be careful when entering any structure that has been damaged. Examine walls, floors, doors, staircases, and windows to make sure that the building is not in danger of collapsing.
50. Be aware of hazards from exposed nails and broken glass.
51. Do not touch downed power lines or objects in contact with downed lines.
52. 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.
53. Stay out of any building that has water around it. Floodwater often undermines foundations, causing buildings to sink, floors to crack, or walls to collapse.
54. Use battery-powered lanterns or torches when examining buildings. **DO NOT USE CANDLES.**
55. Look for fire hazards. There may be broken or leaking gas lines, flooded electrical circuits, or submerged furnaces or electrical appliances.
56. Check for gas leaks. If you smell gas or hear a blowing or hissing noise,

### **Building and utility safety (continued)**

open a window and get everyone outside quickly. Turn off the gas, using the outside main valve if you can, and call the gas company from a neighbour's home. If you turn off the gas for any reason, it must be turned back on by a professional.

57. Look for electrical system damage. If you see sparks or broken or frayed wires, or if you smell burning 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 first for advice. Electrical equipment should be checked and dried before being returned to service.
58. Check for sewage/effluent and water system damage. If you suspect sewage lines are damaged, avoid using the toilets and call a plumber. If water pipes are damaged, contact the water company, and avoid using water from the tap. You can obtain safe water from undamaged water heaters or by melting ice cubes made before the hurricane struck. Turn off the main water valve before using water from these sources.

### **Insurance**

If your property suffered any damage ring your insurer as soon as possible. In almost all cases the insurance company will send a loss adjuster to look at your property. They will confirm what repairs and replacements are needed and covered by your policy.

Ask the insurance company:

59. How long it will be before the insurance assessor visits.
60. If you are to clean your property or if they will get a company to do it for you.
61. Always make your own record of your damaged property using photographs or video.
62. List the damage to your property and belongings.
63. Ask your insurance company or landlord 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

64. Confirm the insurance company will pay for any service or equipment you need.
65. Make a note of all telephone calls. Record the date, name and what was agreed.
66. Keep copies of all letters, emails and faxes you send and receive.
67. Keep receipts.
68. Don't throw anything away until told (except ruined food).

## Action messages

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69. Depending on your policy, the insurance company may only offer to clean and repair something, not replace it.
70. If you rent your property, contact your landlord and your contents insurance company as soon as possible.
71. 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.

## Major storms general information

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### Media and community education ideas

72. Ask your local newspaper or radio or television station to do a series on the dangers of storms.
73. Do a story featuring interviews with local officials about land-use management and building codes for coastal areas.
74. Highlight the importance of staying informed about local weather conditions.
75. Run ads about how to protect yourself and your property during severe winds.
76. Encourage schools to talk about major storms and invite experts to discuss preparedness.
77. Periodically inform your community of local hazards, warning systems and the importance of emergency plans and survival items.
78. Publish emergency evacuation routes.

### Fiction and facts

**Fiction:** Lunar cycles can be used to predict major storms.

**Fact:** The moon has a negligible impact on the development of major storms or any other weather system.

**Fiction:** A “100-year storm” happens only once every 100 years.

**Fact:** The term “100-year flood” is misleading. The truth is that an uncommonly big storm can happen any year. The term “100-year storm” is a statistical designation meaning there is a 1-in-100 chance that a storm this size or larger will happen during any year.

**Fiction:** New Zealand can't be hit by tropical cyclones.

**Fact:** Tropical cyclones have their origin in the tropics. By the time they reach New Zealand they have lost specific characteristics used by meteorologists to classify a storm as being a tropical cyclone (or hurricane) . However, they can still be very strong and dangerous and occasionally one of these ex-tropical cyclone systems has passed over New Zealand bringing some of the most destructive weather ever experienced in the country (e.g., ex-cyclone Bola in 1988). The worst cyclones tend to occur from December to April.

### Useful links

#### Facts about storms

- <http://en.wikipedia.org/wiki/Storm>
- [www.fema.gov/hazard/winter/index.shtm](http://www.fema.gov/hazard/winter/index.shtm)
- [www.niwa.co.nz/education-and-training/schools/students/storms](http://www.niwa.co.nz/education-and-training/schools/students/storms)
- [www.niwa.co.nz/our-science/natural-hazards](http://www.niwa.co.nz/our-science/natural-hazards)

#### Insurance companies

- [www.ami.co.nz/products/contents/](http://www.ami.co.nz/products/contents/)
- [www.state.co.nz/](http://www.state.co.nz/)

## Major storms general information

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- [www.tower.co.nz/Web\\_Home.asp](http://www.tower.co.nz/Web_Home.asp)
- [www.vero.co.nz/](http://www.vero.co.nz/)
- [www.icnz.org.nz/](http://www.icnz.org.nz/)

### Maps and weather

- [www.metservice.co.nz/public/weatherWarnings/warningMap.html](http://www.metservice.co.nz/public/weatherWarnings/warningMap.html)

### Preparedness

- [www.getthru.govt.nz](http://www.getthru.govt.nz)
- [www.maf.govt.nz/mafnet/rural-nz/adverse-events/](http://www.maf.govt.nz/mafnet/rural-nz/adverse-events/)
- [www.rural-support.org.nz/](http://www.rural-support.org.nz/)
- [www.fema.gov/hazard/winter/index.shtm](http://www.fema.gov/hazard/winter/index.shtm)
- [www.fema.gov/hazard/hurricane/index.shtm](http://www.fema.gov/hazard/hurricane/index.shtm)

## Major storms general information

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### Useful numbers

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

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/livestock transporter	
Local hotel or B&B	
Gas supplier and meter number	
Electricity supplier and meter number	
Water supplier and meter number	
Electrician	
Plumber	
Builder	