

CHAPTER 38 NATURAL HAZARDS

OVERVIEW

One of the primary functions of territorial authorities under Section 31(b) of the Act is:

“The control of any actual and potential effects of the use, development or protection of land, including the implementation of rules for the avoidance or mitigation of natural hazards...”

The Act defines “natural hazard” as:

“Any atmospheric or earth or water related occurrence (including earthquake, tsunami, erosion, volcanic and geothermal activity, landslip, subsidence, sedimentation, wind, drought, fire or flooding) the action of which adversely affects or may adversely affect human life, property, or other aspects of the environment.”

The Council has some responsibility for protecting people and property, and, to some extent the environment, from the adverse effects of natural hazards occurrences. The amenity values of an area and its ecological systems should be protected as far as practicable, but it is not always feasible to mitigate all potential effects of natural occurrences at all times for all aspects of the environment. Some priority must be placed on human life and property, but preferably this can be achieved in conjunction with achieving other objectives. Management of natural hazards within the District is aimed at preventing loss of life, and reducing the costs of loss or damage to property and the environment. The District is vulnerable to a variety of natural hazards, these may include surface flooding, earthquake, tsunami, erosion, rockfall, wind, drought or fire. However, the principal hazards which this Plan addresses are flooding, slope instability and coastal hazards.

ISSUE 1	Human life, property and—other aspects of the environment are at risk from natural occurrences within the District, in particular, coastal and lakeside flooding, slope instability, earthquake and tsunami.
OBJECTIVE 1	To avoid or mitigate the costs resulting from natural hazards in terms of loss of life and loss or damage to property and the environment.

POLICIES

- 1A** New subdivision and development shall take into account any potential risks from natural hazards. The minimum protection aimed for is that there should be no damage:
- To new dwellings or their contents from flood events with a 1:500 probability of occurrence, or from events arising from slope instability.

CHAPTER 38 NATURAL HAZARDS

- To existing dwellings or their contents from flood events with a 1:200 probability of occurrence, or from events arising from slope instability.
- 1B** On areas around Te Waihora (Lake Ellesmere) and Wairewa (Lake Forsyth), shown on the planning maps as flood prone land, the erection of new dwellings and extensions to existing dwellings, including the setting of floor levels, should not be undertaken where it will create a significant risk to life or property, or risk of injury.
- 1C** Risk reduction measures shall be promoted where existing activities are located in areas of high existing or potential risk.
- 1D** People should be prepared for the occurrence of hazardous events.
- 1E** Council data on natural hazard events will be updated progressively, and consideration given to any need for a review of natural hazards provisions in the Plan.
- 1F** No measure intended to remedy or mitigate a natural hazard should have a significant adverse effect on the environment.
- 1G** In flood-prone areas earthworks should only be undertaken in such a way that they do not cause or worsen flood risk elsewhere.
- 1H** Building and subdivision should not be undertaken in areas of Low-Moderate or Moderate-High slope instability, as shown on the planning maps, unless an engineering/geotechnical report supports the development.
- 1I** In areas where existing development is at risk from the effects of slope instability, and a benefit can be provided to the wider community, the Council will give consideration to providing additional retaining structures or other means. Where the main benefit would be to individual property owners, the Council will encourage those owners to do the same.

EXPLANATION AND REASONS

It is the community which suffers the consequences of natural hazards in one way or another, and it is also the community which pays for mitigation measures, whether they be ratepayer funded or a cost to individuals. The levels set here allow for overall protection to gradually increase by setting a higher standard for future construction than for existing development. The costs of these different standards are similar, it being more costly to upgrade hazard management for existing development than for new. The calculation of costs recognises not just the tangible costs but also the intangible costs such as loss of life and social disruption in a disaster, and environmental effects.

Consent Stability maps included with the planning maps, indicate the risk of mass movement. The term 'mass movement' covers the category of gravity-driven soil

instability processes. The high and moderate hazard potential maps have been selected in accordance with the above policies and are intended to achieve the levels of protection indicated in the Environmental Results Anticipated. It should be noted that run-out zones peripheral to the areas of potential slope failure have been included in the areas shown. The categories 'Very Low' to Low Risk', 'Low-Moderate' and 'Moderate-High' indicate three distinct measures of risk. These indicate investigation zones which signal the level of specific engineering geological or geotechnical investigation considered necessary at the building consent or subdivision stage. The most stable zone would not require specialised involvement; the Low-Moderate assumes generally reasonable stability; and the Moderate-High assumes the area is generally unstable, these last two categories would require a specialist engineering geologist or geotechnical engineer to investigate.

The Rural and Settlement maps indicate the risk of lakeside flooding. The 2.74 metre flood control contour line around Te Waihora (Lake Ellesmere) marks the extent to which flooding has occurred in the recent past. To provide freeboard above flood levels recorded in recent years and for larger flood events, floor levels have been set at a minimum of 3.0 metres above mean sea level. The lake is only 1.7 metres above sea level which means that flood waters often take a long time to recede. This can create severe problems with the disposal of effluent.

The minimum floor level of 5.68m.a.m.s.l. in and around Little River is set at 300mm above the highest recorded flood level in this area in order to provide a reasonable margin of safety. Recorded flood levels are believed to be principally influenced by high lake levels, but can be compounded by overflows from poorly maintained streams draining the valleys.

Due to the indicative nature of the contour lines, a site survey may be necessary to determine the ground levels of sites both within and in the immediate vicinity of the contour lines. The Building Act sets a maximum on the level of protection from flooding that can be required under its provisions.

Because of the scale of the mapping and incompleteness of the information on flood risk areas, there are areas outside the flood hazard areas identified which may also have a significant flood risk. A site specific assessment of any site considered to be susceptible to flood risk should be carried out to determine whether any flood risk exists.

Earthworks can worsen flooding, but if used in the right way, can raise building sites and direct floodwaters away from buildings, thereby avoiding or reducing damage.

For natural hazards such as earthquake, tsunami, erosion, wind, drought and fire, neither event modification nor measures to alleviate the effects of these events are considered practicable, but preparedness can still minimise damage and loss should they occur. The Council will play its part in passing on warnings it has received and preparing people in a number of other ways to deal with emergencies.

ISSUE 2	Natural hazard protection measures can have adverse effects on the environment, especially on habitat and amenity values, heritage places, mahinga kai and other taonga.
OBJECTIVE 2	To avoid or mitigate significant adverse effects on the environment as a result of methods used to manage natural hazards.

POLICY

- 2A** No measure intended to remedy or mitigate a natural hazard should have a significant adverse effect on the environment.

EXPLANATION AND REASONS

The management of natural hazards can itself result in adverse effects on the environment. By stopping natural disturbances such as flooding, the viability of some indigenous habitats may be reduced. Protection works also have to be designed carefully to prevent transferring a problem, such as flooding, from one area to another.

METHODS TO ACHIEVE OBJECTIVES AND POLICIES

- Areas of Low-Moderate potential risk and Moderate-High potential risk of mass movement have been identified on the Planning maps.
- A flood hazard area is shown on the Planning maps adjacent to the shores of Te Waihora (Lake Ellesmere). This is located on the lake side of the 2.74 metre flood control contour line.
- A flood risk area is shown on the Planning maps as extending from beyond the head of Wairewa (Lake Forsyth) to the settlement of Little River.
- Providing information in disaster preparedness, and setting out how emergency warnings will be communicated.
- The maintenance of an effective Civil Defence operation.
- District Plan rules, such as those on earthworks and indigenous vegetation clearance to control any adverse environmental effects of hazard protection measures.
- Investigation and identification of possible natural hazards within the District (in conjunction with the Canterbury Regional Council where appropriate).

CHAPTER 38 NATURAL HAZARDS

- The Council will collect information regarding waterway floodplains to include in the District's Hazards Register.
- The Council is to review and programme improvements to retaining structures as its resources permit.
- The Council is to promote the erection of improved retaining structures by individual property owners.

REFERENCE TO REQUIREMENT FOR BUILDING CONSENTS

On sites classed as Low-Moderate or Moderate-High slope instability, an engineering/geotechnical investigation which satisfies the Council, is required prior to any building consent application being approved.

RULES

1. Permitted Activities

The following are permitted activities in relation to this chapter, (but they are still subject to the relevant Zone rules and the General Provisions).

- a) No new dwellings or extensions to existing dwellings shall be located inside 2.74 metre flood control contour line around Te Waihora (Lake Ellesmere) on condition that floor levels are at least 3.0 metres above mean sea level.
- b) New dwellings and extensions to existing dwellings on sites identified as being within the flood hazard area around Wairewa (Lake Forsyth) as defined by the 5.68 metre contour line shall have floor levels no less than 5.68 metres above mean sea level.

2. Controlled Activities

Earthworks undertaken in flood-prone areas (as indicated on the planning maps) is a controlled activity when the following quantities are exceeded in any continuous period of five years:

- a) 10m^3 (volume) or 50m^2 (area) per site where a site is 1 hectare or less in area; or
- b) 10m^3 (volume) or 50m^2 (area) for every hectare of site area where a site is greater than 1 hectare in area.

Note: Any additional restrictions set out in the earthworks rule of the underlying Zone still apply.)

2.1 Matters over which control may be exercised

In considering an application for a controlled activity the Council may exercise its discretion in relation to:

- The scale, form and location of earthworks.

3. Discretionary Activities

On sites classed as Low-Moderate or Moderate-High slope instability, subdivision is a discretionary activity.

4. Non-complying Activities

The following are non-complying activities:

- a) Any new dwelling or extension to an existing dwelling below the flood control contour lines specified in Rule 1 (above).
- b) Any new dwelling or extension to an existing dwelling where the floor level is below the floor levels specified in Rule 1 (above).

REFERENCE TO REGIONAL RULES

The rules of the Regional Coastal Environment Plan apply to parts of the coastal areas of Le Bons Bay, Birdlings Flat and Kaitorete Spit.

ASSESSMENT OF APPLICATIONS

5. Discretionary Activities

Applications for discretionary activities will be assessed against the following:

- The relevant objectives and policies of the Natural Hazards Chapter.
- Any other objectives and policies of the Plan which are relevant to consideration of the application.
- Any relevant criteria set out in Chapter 30 (Resource Consent Procedures).

On sites classed as Low-Moderate or Moderate-High slope instability, an engineering/geotechnical investigation with satisfies the Council is required prior to any subdivision consent application being approved.

ANTICIPATED ENVIRONMENTAL RESULTS

The following environmental results are anticipated from the implementation of the objective and policies relating to natural hazards:

CHAPTER 38 NATURAL HAZARDS

- The location of new subdivision and development away from areas at high risk from natural hazards to avoid any major damage, injury, or loss of life or property.
- Provision for appropriate development in areas of low-moderate slope instability risk, subject to measures being undertaken to mitigate hazards.
- Minimal damage to new dwellings or their contents, or to new extensions to existing dwellings from flooding or slope instability.
- People in the District are prepared in such a way as to minimise the effects of any natural disaster on them, should it occur.
- Measures to mitigate natural hazards to not impact adversely on the District's environment.