

SECTION 17 : HAZARDS

17.1 INTRODUCTION

Section 31 of the Act establishes the following function for every territorial authority:

"The control of any actual or potential effects of the use, development, or protection of land, including for the purpose of the avoidance or mitigation of natural hazards and the prevention or mitigation of any adverse effects of the storage, use, disposal or transportation of hazardous substances:"

[see the note at Section 1.2.1 page 1:7 of this Plan]

This duty is reinforced by clause 1(a) of Part II of the Second Schedule.

Section 2 of the Act defines a 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:"

[see the note at Section 1.2.1 page 1:7 of this Plan]

For the purpose of the plan, the definition of hazard includes technological or human induced hazards, such as slumping caused by abandoned mine shafts or filled land and the like.

Paying inadequate attention to the impacts of hazards could have the following effects:

- The loss of, or damage to, property, livestock and human life.
- Interference with the ability of people to undertake economic and social activities.
- Altering the manner in which resources can be sustainably used, either in the short or the long term.

Hazard management generally falls into three categories:

- Structural** - undertaking physical works to reduce the impact of hazards. The constructing of flood banks is an example of this approach.
- Non-structural** - reducing the effects or impact of natural hazards by:
 - a) Prevention – taking measures to ensure that the hazard itself does not occur. The unpredictable nature of hazards makes this a difficult task although some flooding and landslip hazards can be avoided by appropriate land management practices that assist in reducing the frequency and intensity of the hazard event.
 - b) Excluding certain types of development or imposing controls on development in areas subject to or likely to be affected by hazards.
- Loss Modification** - taking action to reduce the social and economic costs of hazards when they occur. Flood warnings systems, civil defence procedures and responses, and the taking out of insurance cover are all examples of this approach.

This Plan is largely concerned with the non-structural approach to hazard management.

It should also be noted that the Act (section 30(1)) also enables the Otago Regional Council to control the use of land for the purpose of avoiding or mitigating natural hazards.

Section 62(1) of the Act requires the Regional Policy Statement to state which local authority shall have responsibility within its own area for developing objectives, policies and rules relating to the control of the use of land for the avoidance or mitigation of natural hazards. This District Plan is consistent with the Regional Policy Statement in that regard.

17.2 ISSUES

17.2.1 **Hazards Within the District**

Some locations in the District are at risk from the effects of known or potential hazards. These hazards include:

- (a) Flooding.
- (b) Land instability.
- (c) Subsidence due to former underground mining sites or filled land.
- (d) Earth movement as a result of earthquakes.
- (e) The presence of hazardous substances and/or processes.

A hazard event can have significant adverse effects on people and resources (particularly buildings, roading and infrastructure) including personal injury and the loss of life.

Explanation

Allowing development in areas at risk from the effects of hazards could have disastrous results in the form of loss of life and significant damage to property. The cost of avoiding development in these areas is generally significantly less than the cost involved in remedial work after such an event.

Cross Reference
Objectives 17.3.1,
17.3.2
Policies 17.4.1 to
17.4.5

17.2.2 **Awareness of Hazards**

People owning or buying property may not appreciate that such property may be vulnerable to the adverse effects of actual or potential hazards. Some people are prepared to accept the risk of locating in hazard prone areas because of other benefits.

Explanation

People need to be made aware of potential risks of hazards which then enables them to manage their activities so as to reduce the risk to themselves and others.

Some people consider the benefits outweigh the potential costs when locating in such sites. To some degree this can be accommodated through the building and resource consent processes.

Cross Reference
Objective 17.3.1
Policies 17.4.1,
17.4.6

17.2.3 **Hazardous Substances and Procedures**

The location, use, transportation and disposal of hazardous substances and/or procedures can increase the potential risk to the environment particularly to people and communities.

Explanation

The location of hazardous substances and facilities in closely populated areas can present a significant danger to people. The location of a hazardous facility/substance in a hazard prone area has the potential to greatly increase the adverse effects of any hazard event.

Cross Reference
Objective 17.3.1
Policies 17.4.2,
17.4.4, 17.4.5

17.2.4 **The Effects of Land Use**

The effects of some land use activities can increase the intensity and frequency of natural hazard events.

Cross Reference
Objective 17.3.1
Policy 17.4.7

Explanation

Some activities which use the District's natural and physical resources can result in an increased intensity and frequency of natural hazard events. Examples of this include the effect of land use activities on the water retention characteristics of land areas which may worsen the downstream situation. Development on the floodplain can modify flood flow and sedimentation processes, and increase the hazard to other properties.

17.2.5 The Effects of Physical Hazard Mitigation
Physical works for hazard mitigation and other hazard mitigation measures can have significant adverse effects on the natural and physical resources of the District.

Explanation

In the past, protection against hazards, particularly flooding, has tended to focus on physical works and these works have in some instances had significant adverse effects on natural ecosystems and landscape values; for example, the destruction of the habitat of indigenous species and the loss of mahika kai and of the natural character of river systems through works such as channelling and stopbank construction. Although it is important to protect people, communities, and resources from the adverse effects of hazards, it is also important that the impacts of protection mechanisms be taken into account in order that they can be avoided, remedied or mitigated.

Cross Reference
Objective 17.3.3
Section 4.4
(Rural
Resource
Area)
Policies 4.4.4,
4.4.6. 4.4.7

17.3 OBJECTIVES

- 17.3.1 **Objective - Avoidance or Mitigation of Hazards**
To avoid or mitigate the adverse effects of hazards, both natural and human induced, to limits acceptable to the community.
- Cross Reference*
Issues 17.2.1 to 17.2.4
Policies 17.4.1 to 17.4.7
- 17.3.2 **Objective – Integration with Structural Approach to Hazard Management**
To integrate all controls imposed on land use relating to hazard avoidance or mitigation with physical works undertaken for that purpose.
- Cross Reference*
Issue 17.2.1
Policies 17.4.1, 17.4.2
- 17.3.3 **Objective - Adverse Effects of Structural Hazard Mitigation**
To avoid, remedy or mitigate the adverse effects of structural hazard mitigation measures on natural and physical resources.
- Cross Reference*
Issue 17.2.5
Section 4.4 (Rural Resource Area)
Policies 4.4.4, 4.4.6, 4.4.7

17.4 POLICIES

17.4.1 **Policy - Information on Hazards**

To gather and maintain information on hazards including:

- (a) **The location or potential location of hazard events,**
 - (b) **The causes of hazard events, and**
 - (c) **The risks associated with hazard events,**
- in conjunction with the Otago Regional Council.**

Cross Reference
Objectives
17.3.1 to 17.3.3
Methods 17.5.1,
17.5.3 to 17.5.5

Explanation

The community, the Council, and other agencies need to be aware of the threats associated with hazards in order to make informed decisions about the use of the land, and to avoid or mitigate the adverse effects of hazards. A comprehensive information base that is kept up to date, provides for a greater understanding of the natural hazards affecting, or likely to affect land within the District and will enable informed decisions to be made. The Otago Regional Council and other agencies have expertise and an interest in hazards within the District, and the Council will work with them to secure relevant information and to increase public understanding.

17.4.2 **Policy - Control of Land Use in Hazard Areas**

To take into account the vulnerability of land and activities to hazard events when managing land uses in a particular area

Cross Reference
Objectives
17.3.1, 17.3.2
Method 17.5.2

Explanation

Imposing controls on land use is a means of avoiding or mitigating the adverse effects of hazards. Addressing hazards early in the planning process introduces a greater amount of certainty into the process of dealing with natural hazards. If the risk is great or the effect is likely to be significant, avoidance of vulnerable future land uses (ie. a nil risk situation) will be given serious consideration. Where the risk is not so great, conditions can be developed for vulnerable activities to mitigate the known effects.

17.4.3 **Policy - Subdivision and the Erection of Buildings**

To restrict subdivision and the erection of buildings in areas where there is a reasonable probability that a hazard may cause material damage.

Cross Reference
Objectives
17.3.1, 17.3.2
Method 17.5.2

Explanation

The presence of potential hazards is considered to be a significant restriction on subdivision and development potential. It is more sensible to avoid intensive development in areas that are known to be at risk from hazards rather than compromising the safety of people and property. There are, however, certain measures that can be adopted to mitigate adverse effects. These are dealt with in Policy 17.4.5 below and Policy 16.4.8 at page 16:7 of the plan.

17.4.4 **Policy - Intensification of Hazard Effects**

To ensure that the location, design and/or operation of

Cross Reference
Objective 17.3.1

subdivision and land use activities does not increase the intensity and frequency of existing hazards unless such adverse effects can be avoided, remedied or mitigated.

*Method 17.5.2
Rules 4.7.6A(c),
5.7.4A*

Explanation

Where a hazard is known to exist, activities locating in such areas will need to be designed and operated to ensure that the effects of the hazard are not intensified. Where this is not possible consent may be refused.

17.4.5 Policy - Hazardous Substances and Processes

To ensure that activities which involve the use, production or transportation of hazardous substances, and/or hazardous processes are designed and/or located in a manner that avoids or mitigates any risk to the environment and the community's health and safety, to a level that is acceptable to the community.

*Cross Reference
Objective 17.3.1
Methods 17.5.2,
17.5.5
Rules 4.7.5(iii),
7.3.5(i), 8.3.5,
9.3.4, 10.3.5(i)*

Explanation

Hazardous substances and processes often provide social and economic benefit to the community. While the use and/or storage of hazardous substances, or activities that contain a noxious element are not necessarily dangerous in themselves, the advent of a hazard event could have significant implications for neighbouring properties and the wider community, particularly when water bodies are involved, particularly in a flood event. An appropriate balance between the benefits of these substances and processes and the potential effects of a hazard occurrence must be reached.

Note: Attention is drawn to Policies 7.8.2 and 9.4.20 of the Regional Plan : Water that requires that all practical alternative locations for the storage of hazardous substances be considered in certain circumstances.

17.4.6 Policy - Acceptance of Risks

To recognise that some landowners are prepared to accept a level of risk from natural hazards because of the benefits of remaining in a hazard prone area.

*Cross Reference
Objective 17.3.1
Method 17.5.3
Building Act 1991*

Explanation

In some instances people may consider the benefit of carrying out a particular activity in a hazard prone area outweighs the associated risks. Such decisions, within reason, can be accommodated through the building and resource consent process. In these instances the relevant certificates of title will contain information to ensure that the hazard is recognised for the benefit of future owners.

17.4.7 Policy - Land Management Practices

To encourage appropriate land management practices in catchment areas and other areas threatened by erosion that will reduce and/or mitigate the effects of erosion and the effects of flooding.

*Cross Reference
Objective 17.3.1
Methods 17.5.5
4.5.2(i) & (ii)*

Explanation

Retaining vegetation cover in upland catchments and maintaining wetlands in mid catchment areas can assist in reducing the intensity

and frequency of flood events. Development on the floodplain can modify flood flow and sedimentation processes, and increase the hazard to other properties. Retaining vegetation in areas of known instability can assist in reducing the likelihood of slumping and landslides. Council will promote appropriate land management practices in conjunction with other relevant bodies.

17.5 METHODS OF IMPLEMENTATION

17.5.1 **Hazard Identification on Planning Maps**

*Cross Reference
Policy 17.4.1*

The planning maps identify areas of the District that are known to be at risk from actual or potential hazards. These maps identify actual or potential hazard sites where Council knows of their existence in the District. Sources of information include:

- (i) Flood prone areas (Source : Otago Regional Council Reports, plans and photographs. See Schedule 19.11)
- (ii) Mined areas that could give rise to subsidence (Sources : Compiled from Mine Survey Plans held by the Ministry of Commerce, Energy and Resources Division, Greymouth).
- (iii) Areas of land subsidence and slippage (Source : Council files).
- (iv) Active geological fault lines (Source : NZ Geological Survey Maps, Department of Scientific and Industrial Research and Otago Regional Council Report, Earthquake Hazards in the Otago Region, September 1995).
- (v) Areas of filled land (Source : Council files).
- (vi) High voltage lines.

The planning maps will be used to assist Council in considering applications for resource consents, building consents and the appropriateness of activities in any particular area. Hazards may be present elsewhere which cannot be readily identified on the planning maps. An example of this is the risk of flash flooding during heavy rainfall events on the Bengier Faces and other elevated land between Coal Creek and Raes Junction.

Reason

Mapping the actual and potential hazard sites and incorporating them into the District Plan will assist in raising public awareness of areas known to be at risk. The availability of such user friendly information will enable Council to make more informed judgements when considering the appropriateness of activities in a particular area particularly when considering resource consent and building consent applications. It also allows members of the public to make a judgement themselves as to what is an appropriate activity on these sites.

17.5.2 **Rules**

*Cross Reference
Policies 17.4.2,
17.4.3, 17.4.4,
17.4.5
Rules 4.7.4(ii),
4.7.4(iii), 4.7.5(ii),
4.7.5(iii), 5.7.4(A),
7.3.4(ii), 7.3.5(i),
7.3.5(ii), 8.3.5,
9.3.4, 10.3.4(iii),
10.3.5(i), 10.3.5(ii)*

To develop rules that restrict subdivision and development in areas of the District known to be at risk from actual or potential hazards and rules that manage the use, storage and transportation of hazardous substances.

Reason

The use of rules to control activities in risk areas reduces the need for structural protection against the effects of hazards and reduces the impact on the community, should a hazard event occur.

17.5.3 **Information**

*Cross Reference
Policies 17.4.1,
17.4.6*

Council will ensure hazard information will be included on all Land Information Memorandums issued, where this information is known

to Council.

17.5.4 Site Investigation

Council shall require site investigations and assessments to be carried out by suitably qualified persons where any proposed activity is to be located on a site identified on the planning maps as subject to a hazard or a site where Council has good cause to suspect that a hazard may exist.

Cross Reference
Policies 17.4.1 to
17.4.3
Section 16
Subdivision

17.5.5 Liaison

- (i) The Council will liaise with the Otago Regional Council and other agencies to gather, collate, share and provide information on known hazards and develop measures to encourage sustainable land use practices in hazard prone areas.
- (ii) The Council will liaise with agencies responsible for preparing industry and building codes of practice in order to seek the avoidance or mitigation of hazards, and to improve the community's awareness of hazards.

Cross Reference
Policy 17.4.1

17.5.6 Civil Defence Plans

Council shall continue to maintain and update a Civil Defence Plan for the Central Otago District in accordance with the requirements of the Civil Defence Act 1983.

Cross Reference
Policy 17.4.1
Civil Defence Act
1983

17.6 PRINCIPAL REASONS FOR ADOPTING OBJECTIVES, POLICIES AND METHODS

The Council has a function in respect of controlling the effects of land use, including a responsibility for avoiding or mitigating hazards and preventing or mitigating the effects of hazardous substances. The objectives, policies and methods contained in Section 17 of the Plan establish a framework for identifying known hazards and ensuring that development does not occur on these sites unless specific measures have been taken. This will reduce any cost to the community when hazard events occur.

The Council's response to the occurrence of a hazard event is controlled by the Civil Defence Act 1983 and is set out in the Central Otago District Civil Defence Plan.

17.7 ENVIRONMENTAL RESULTS ANTICIPATED

- 17.7.1 A reduction in the potential damage to communities and infrastructure as a result of a hazard event.
- 17.7.2 A reduction in the potential costs of responding to a hazard event and remediation after the occurrence of a hazard event.
- 17.7.3 Increased public awareness of the potential threats to subdivision and land use posed by hazards.