

3.9. NATURAL HAZARDS

3.9.1. OVERVIEW

Section 31 of the Act establishes the following functions for every territorial authority,

"(b) 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"

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

Section 2 of the Act defines natural hazards 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"

Human activities may aggravate or even cause the hazards through inappropriate land management practices, or they may have no effect at all.

Hazard management generally falls into three forms.

I. STRUCTURAL

undertaking physical works to reduce the impact of hazards, for example, the constructing of flood banks.

II. NON-STRUCTURAL

reducing the effects or impact of natural hazards by :

- (a) Prevention - attempting to ensure that the hazard itself does not arise. The unpredictable nature of hazards makes this a rather difficult task although some flooding and landslip hazards can be avoided by appropriate land management practices that reduce the occurrence of the hazard.
- (b) Prohibiting certain types of development or imposing controls on development in areas subject to or likely to be affected by hazards.

III. LOSS MODIFICATION

taking action to reduce social and economic costs of hazards when they occur. For example, flood warnings, civil defence, and the taking out of insurance cover.

Doing nothing or paying inadequate attention to the impacts of natural hazards could have the following effects –

- 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 long term.

Section 30(1) of the Act establishes the following functions for the Otago Regional Council;

"(c) The control of the use of land for the purpose of

.....

(iv) The avoidance or mitigation of 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.

The proposed Regional Policy Statement for Otago states Council’s responsibilities to be as follows;

- prepare information on site specific and localised natural hazards that may affect any component of the Districts built environment under the Building Act; (Note - the Regional Council will investigate and provide information to all agencies on regionally significant natural hazards).
- develop objectives, policies and rules for the control of the use of land that is affected by a natural hazard in the District or where that use may exacerbate a natural hazard situation (Note: the Regional Council will also develop objectives, policies and rules relating to the control of the use of land for the avoidance or mitigation of natural hazards).
- prepare and update the Clutha District Civil Defence Plan and take full first-line responsibility for dealing with the impact of a disaster in the District. (Note: the Regional Council will prepare and update a Regional Civil Defence Plan)

The Otago Regional Council will also enable community responses to flood hazard where necessary, which may involve carrying out works or services.

3.9.2. THE ISSUES

The following are considered to be the significant resource management issues in terms of natural hazards facing the District,

- **Several areas of the District are susceptible to flooding.**

Explanation

The areas below Balclutha, namely Inch Clutha and the Paretai Flats, form the flood plain of the Clutha River and have been subject to severe flooding in the past. Structural works are now in place to protect much of this area. Flooding has also caused disruption to other parts of the District, particularly the Pomahaka, Tokomairiro Plain, Waitahuna, Waihola and the Catlins areas, in recent years. The town of Kelso has in fact been dismantled due to the continuous threat of flood.

- **Some locations in the District are susceptible to land instability, but there is a lack of accurate information on this issue.**

Explanation

The New Zealand Land Resource Inventory (LRI) data and the Erosion Maps of New Zealand categorise units of land according to actual and potential erosion types and severity. This classification serves to flag potential problems for proposals within any given area however can not be relied on as a site specific hazard guide.

- **Land use activities can increase the incidence and severity of natural hazards in the District.**

Explanation

Activities such as clearance of bush in headwaters, drainage of swamps, mining or disturbance of sand dunes and straightening of natural watercourses can contribute to an increase risk of natural hazards. Sites of former underground coal mining in the District are also a source of potential natural

hazards in the form of subsidence. In other cases, some activities may reduce the structural soundness of protection works for example, the grazing of cattle on stop banks.

- **Several areas of the District's coast are under threat from dynamic coastal processes, including sea level rise and coastal erosion.**

Explanation

The Royal Society of New Zealand 1990 report on Climate Change noted that sea level rise in New Zealand ports since 1889 has averaged 16.7 (+ or -2.3) cm/century, and has predicted that sea levels are likely to rise between 7 and 17 centimetres by the year 2025 and between 17 and 35 centimetres by the year 2050. This work has been verified by overseas studies.

Settlements such as Taieri Mouth, Toko Mouth, Jacks Bay and Pounaweia may be adversely affected by sea level rise. Newhaven is currently affected by erosion and this is likely to be accelerated by sea level rise. However the community of Newhaven has established protection work which is currently having a positive effect on mitigating erosion problems.

The coastal environment is also susceptible to other coastal processes such as storm surges, tsunamis, river mouth migration and movement of the boundary of estuaries, dunes and wetlands.

- **People owning or buying property often do not appreciate their vulnerability to the adverse effects of actual or potential natural hazards.**

Explanation

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

- **Some landowners are prepared to accept a level of risk from natural hazards because of other benefits of remaining in a hazard-prone area.**

Explanation

In some instances people may consider the benefit of carrying out a particular activity in a hazard prone area outweighs the associated risk. Such decisions, within reason, can be accommodated through the building and resource consent process.

- **The areas of commercial and indigenous forests located within the District are potentially at risk from fire hazards.**

Explanation

The Clutha District contains significant tracts of commercial and indigenous forests. These resources are potentially at risk from fire hazards that could be caused by people using these resources (for example, trampers, campers, sightseers etc) or nearby activities (for example, tussock burnoffs).

3.9.3. OBJECTIVES AND POLICIES

OBJECTIVE NHZ.1 - NON-STRUCTURAL APPROACH

To reduce the adverse effects from any actual or potential natural hazard by providing a non-structural strategy to avoid and/or mitigate these effects which takes account of and integrates with physical works or structures for the mitigation of natural hazards in the district.

Explanation

The principal reason for adopting a non-structural approach to natural hazard mitigation is because the level of structural defences is now reasonably well developed, particularly in regard to flooding. The protection provided however, is far from absolute and certainly could not, on its own, be considered to constitute sustainable management of the rural flood plains. To place undue reliance on structural protection (stop banks) as a flood management tool could leave the community very vulnerable to a flood event. Therefore, further measures are needed to complement the mitigatory works that are currently in place. By identifying and planning for potential natural hazards, the economic and social impact of such events should not be as devastating or costly as in the past and therefore development will be more sustainable.

(Refer Policy NHZ.1 to 7)

POLICY NHZ.1

To consult, and to act in a consistent manner, with the Regional Council on natural hazard mitigation.

Explanation

The Regional Council also has a major role to play in the mitigation of natural hazards and is generally responsible for structural defences and the collection of data. There needs to be consistency between how each authority is dealing with their responsibilities. With respect to resource consents and building consent applications, it is more appropriate for the applicant to obtain natural hazard advice from the Regional Council and/or other relevant experts (for example engineers) and supply it with the application rather than the District Council having to obtain it.

(Refer Rule NHZ 1 and Method NHZ.3)

POLICY NHZ.2

To prepare and maintain a hazard register to identify areas subject to actual or potential natural hazards.

Explanation

Such a register would identify areas of inundation, instability, coastal erosion, potential areas of subsidence (eg. mine shafts) and the like. The purpose of the register is to enable the public to readily identify these areas. However because the risk of natural hazards (for example, inundation) sometimes varies within each area shown on the register, additional information may need to accompany the register to quantify the hazard.

(Refer Method NHZ.1)

POLICY NHZ.3

To take into account the vulnerability of land to natural hazards when determining the range of activities, permitted, controlled or otherwise provided for in a particular area.

Explanation

Control of activities is a means of avoiding inundation etc and its associated adverse effects. Where risk is a consideration, avoidance is virtually equivalent to a nil risk situation. By addressing natural hazards early in the planning process, a greater amount of certainty is introduced into the process on how natural hazards will be dealt with. If the hazard is such that it would be a significant limiting factor to the implementation of particular uses, those uses are best identified as activities that are categorised into the various classes for any one area. It is particularly important when looking at new

areas for residential, industrial and commercial uses to identify areas that could be affected by natural hazards.

(Refer Method NHZ.2, and Rule NHZ.2).

POLICY NHZ.4

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

Explanation

Retaining vegetation cover on upland catchments and maintaining wetlands in mid-catchment areas can assist in reducing flood risks. Retaining vegetation in areas of known instability can assist in reducing the likelihood of that hazard occurring.

Council will promote appropriate land management practices in conjunction with other relevant bodies, but where management practices are having an obvious adverse effect, Council may act by issuing abatement notices.

(Refer Method NHZ.7 and Method RRA.1 page 211)

POLICY NHZ.5

To utilise the building consent process to specify building requirements for new buildings in flood prone areas to minimise the potential for future losses from flooding.

Explanation

There are many existing lots in flood plain areas that are capable of being built on but where the potential for inundation has not previously been considered in any detail. Depending on the nature of the proposed building and the nature of the risk, options to mitigate the risk include refusal of consent, floor level requirements, building material requirements, or the provision of advice. Minimum floor levels are a recognised means of either avoiding or mitigating the adverse effects of flooding, and when related to site level can usually be implemented at little extra cost to the owner. When related to flood levels the cost of implementation may be somewhat higher but so to is the risk of inundation.

(Refer Method NHZ.2)

POLICY NHZ.6

To use the provisions of Section 36(2) of the Building Act only as a last resort and only where a building consent has been refused, and the owner is prepared to accept the risk.

Explanation

Section 36(2) of the Building Act provides for circumstances where a territorial authority can issue building consents on land that is subject to actual or potential inundation but the owner is prepared to accept the risk. It is an option which provides Councils with a means of ensuring that its own liability is not compounded.

(Refer Method NHZ.2)

POLICY NHZ.7

To promote and encourage methods outside the District Plan such as developing contingency plans for the implementation by Civil Defence in natural hazard events; and establishing a disaster damage contingency fund.

Explanation

No matter how much effort is put into preventing and avoiding the effects of natural hazards, there will always be natural hazards and damage and losses arising from those natural hazards. Consequently, Council must be prepared. Civil Defence is principally concerned with the preservation of human life and the welfare of people affected by a disastrous event. Civil Defence acts as a back stop which comes into play when all other elements of the overall natural hazard mitigation strategy are shown to be inadequate. It is response orientated. To effect an efficient response, Civil Defence organisations must be prepared for likely scenarios, and this can only be achieved if contingency plans are based on the findings of hazard analysis.

(Refer Method NHZ.5)

3.9.4. RULES

RULE NHZ.1 CONSULTATION

In any application for a resource consent which involves a site or activity that is at risk, or in Council's opinion is potentially at risk from natural hazards, the applicant shall, in addition to the information required by Section 3.1.3 (page 58) provide the relevant hazard information and recommendation from the Otago Regional Council and/or other relevant expertise.

REASON

As pointed out in *Policy NHZ.1*, the Regional Council also has a significant role to play in the mitigation of natural hazards. It is essential that both Councils have a consistent approach on this issue.

RULE NHZ.2 NON-COMPLYING ACTIVITIES

Landfills, waste disposal, or the storage or use of commercial quantities of hazardous goods or substances are non-complying activities in any area identified as being a natural hazard site.

Provided that for the purposes of this rule, farm tips and offal pits permitted by the Regional Waste Plan are excluded from the definition of landfills or waste disposal.

"Commercial quantities" means quantities used or stored for the purpose of supplying or offering a service to the general public and does not include substances or goods to be used solely on the property upon which it is kept, for the purpose of maintaining or improving the health of stock, crops, land quality or for eradicating pests and/or undesirable weeds or plants from that property.

REASON

The effects of these activities have great potential to cause significant environmental damage if associated with a natural hazard. Council considers the best means to avoid such effects is not to permit activities of this nature in actual or potential natural hazard sites. Small scale farm landfills and offal pits have been excluded on the basis that they would have minimal effect as opposed to large public waste disposal areas.

3.9.5. OTHER METHODS

METHOD NHZ.1 HAZARD IDENTIFICATION

The District planning maps identify some areas of the District that are known to be at risk from actual or potential natural hazard occurrences.

These maps identify the following actual or potential natural hazard sites where Council knows of their existence in the District.

- Flood prone areas (Source : Report on Flood Plains within Clutha District, Otago Regional Council, October 1991)
- Areas of land instability (Source : Council files)
- Coastal sites susceptible to erosion and the effects of sea level rise (Source : Proposed Regional Plan: Coast, July 1994)
- Former mining sites that could give rise to subsidence (Source: Compiled from Mining Survey Plans, held by Ministry of Internal Affairs, Mines Section, Greymouth)
- Fault lines (Source: New Zealand Geological Survey Maps, Department of Scientific and Industrial Research and Otago Regional Council report "Earthquake Hazards in the Otago Region" September 1995.)

These maps will be used to assist Council in determining resource consents, building consents and the appropriateness of activities in any particular area. Other natural hazards may be added to this list as they are identified.

REASON

Mapping actual and potential natural hazard sites and incorporating them into the District Plan is seen as the best available method to advise the public of areas with known 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 and building consents, and also allow the public to make a judgement themselves as to appropriate activities on these sites.

(Refer also Section 3.7 Subdivision page 137)

METHOD NHZ.2 BUILDINGS IN HAZARD PRONE AREAS

With respect to buildings that are to be located within a natural hazard site, the following procedures will apply;

- (i) The applicant shall obtain the relevant hazard information and recommendation from the Otago Regional Council and/or other relevant expertise.
- (ii) Where appropriate, Council, as part of the building consent procedure, will impose engineering requirements to avoid, remedy or mitigate the adverse effects of the natural hazard.
- (iii) Where the applicant does not wish to, or cannot conform with these requirements, consent will be refused.
- (iv) Where building consent is refused, the applicant has the option to request Council to issue a building consent subject to a notice under Section 36 of the Building Act 1991 being entered on the title.

REASON

Where Council wishes to avoid or mitigate the effect of any natural hazard by the imposition of conditions such as floor level requirements, the applicant has a number of options. If they do not wish to comply on the grounds of cost they may request the use of Section 36(2) of the Building Act.

In these circumstances the title is noted to identify the nature of the hazard to future owners and Council is absolved from liability.

(Refer also Section 3.7 Subdivision page 137))

METHOD NHZ.3 CONSULTATION

Council shall, where appropriate, consult with the following bodies on matters that involve natural hazard issues:

The Otago Regional Council, to ensure that both Councils have a consistent approach.

- The Institute of Geological and Nuclear Sciences
- The New Zealand Fire Service
- adjacent local authorities
- local communities and affected landowners
- landcare groups
- other bodies with relevant interests

REASON

The community and all other interested bodies must work together to ensure the development of an effective natural hazard management system.

METHOD NHZ.4 BUILDING CONSENTS

Any application for a building consent which involves a site that is at risk, or in Council's opinion is potentially at risk from natural hazards, Council may require the applicant to provide the relevant hazard information and recommendation from the Otago Regional Council and/or other relevant expertise.

METHOD NHZ.5

Council shall continue to prepare and update the following in accordance with the relevant legislation and in consultation with affected and interested parties;

- Civil Defence Plan for the Clutha District
- Disaster Damage Contingency Funds
- Rural Fire Plan for the Clutha District

REASON

Council is required by other legislation to prepare contingency plans in case of natural hazard events. The development of these plans is an important part of ensuring that effects of natural hazard events are kept to a minimum.

METHOD NHZ.6 MONITORING

To assess the effectiveness of these policies and rules Council shall

- analyse the cause of natural hazard events
- analyse the effects of natural hazard events

METHOD NHZ.7

With respect to the use, development or protection of land within Catchment areas of the District, Council shall,

- (a) assist the Otago Regional Council in establishing monitoring programmes to assess the degree to which long term trends in land use practices and patterns may increase the vulnerability to natural hazards such as flooding.
- (b) Promote and encourage the revegetation and retention and enhancement of vegetative cover and the retention and enhancement of wetland areas as natural methods of managing natural hazards.

REASON

Some land use activities can have an adverse effect on water retention characteristics of land which may worsen the downstream situation. More work needs to be carried out to determine the extent land use patterns increase the intensity and frequency of natural hazards. However, it is known that maintenance of vegetation cover and wetlands mitigate such effects.

3.9.6. ANTICIPATED ENVIRONMENTAL RESULTS

1. Less damage to physical environment through inappropriate location of activities.
2. Greater awareness of the potential hazard threats.
3. Less cost involved in cleaning up after a natural hazard.