

3.8 NATURAL HAZARDS

3.8.1 - INTRODUCTION

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.

- (a) **Structural** - undertaking physical works to reduce the impact of hazards, for example, the constructing of flood banks.
- (b) **Use Modification** - reducing the effects or impact of natural hazards by:
 - (i) **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.
 - (ii) **Prohibiting certain types of development or imposing controls on development in areas subject to or likely to be affected by hazards.**
- (c) **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.

3.8.2 - 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

Experience with flooding, in particular the January 1984, floods has demonstrated that large parts of Southland District are prone to flooding. Susceptible areas include rural land adjacent to the Aparima, Waiau, Mararoa, Mataura, Oreti, Makarewa and Waihopai Rivers and the townships of Otautau, Tuatapere, Lumsden, Riversdale and Wyndham.

- **Some locations in the District may be 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. One particular area of land instability worthy of note is the Jobs Ford slip in the Nokomai Valley. This slip has the potential to block off the Mataura River and isolate upstream residents. As a result of thunderstorms, this slip has moved in the past to temporarily block the river. Thunderstorms most frequently occur in summer at a time when the population of the Nokomai Valley is visited by many campers.

- **Land use activities can increase the incident 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 increased risk of natural hazards. For example, coastal erosion at Colac Bay, Porpoise Bay, Ringaringa and Oreti Beach, and land instability at Stewart Island. 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 sea level rise and coastal erosion.**

Explanation

A number of sites within the District will be susceptible to sea level rise. 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 cm by the year 2025 and between 17 and 35 cm by the year 2050. This work has been verified by overseas studies.

- **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.

- **Other Coastal Processes.**

Explanation

In addition to the coastal process already identified, parts of the coastal environment are susceptible to other processes such as storm surges, tsunamis, river mouth migration and liquefaction that can also threaten the District's coast and the various activities already located there.

3.8.3 - 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.

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.

Objective NHZ.2 - Coastal Structures

To respond to coastal hazard mitigation by the construction of structures only where it can be demonstrated that such structures better meet the principles and purposes of the Resource Management Act.

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 supply it with the application rather than the District Council having to obtain it. (Refer Method NHZ.1)

Policy NHZ.2

To prepare and maintain a hazard register to identify areas subject to actual or potential 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 will need to accompany the register to quantify the hazard.

(Refer Method NHZ.2)

Policy NHZ.3

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

Explanation

Control of activities is a means of avoiding inundation 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 and 3)

Policy NHZ.4

To encourage appropriate land management practices in catchment areas that will reduce and/or mitigate erosion and the effects of flooding. Where bad management practices are obviously having an adverse effect, Council will act by issuing abatement notices.

Explanation

Retaining and increasing vegetation cover particularly indigenous vegetation 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.

(Refer Section 3.5 Water and 4.1 Rural Resource Area)

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 is the risk of inundation.

(Refer Rule NHZ.3)

Policy NHZ.6

To use the provisions of Section 36(2) of the Building Act only as a last resort and only where the building consent will not be issued unless 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 Council with a means of ensuring that its own liability is not compounded. The circumstances under which Council will exercise the provisions of Section 36(2) are set out under Rule NHZ.2.

(Refer Rule 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. Given that Civil Defence is principally concerned with human life, other methods are needed to address the financial effects on the community. To this end it is Council's intention to make budgetary allowance in each financial year for money to be set aside in a 'Disaster Recovery Reserve Fund'. In this way it is intended that a fund will be available to meet disaster requirements as they arise, rather than the current situation which tends to rely on the transfer of other already committed funds when a disaster occurs.

Policy NHZ.8

To consider alternatives to structural works to prevent coastal erosion.

Explanation

*There are a variety of methods to prevent coastal erosion including beach nourishment, dune fencing and planting. These alternatives to structural works are often very successful in preventing erosion and down stream adverse effects.
(Refer Method NHZ.3)*

Policy NHZ.9

To ensure that any works constructed in the coastal environment do not cause down-drift erosion.

Explanation

When constructing coastal protection works care must be taken to ensure that the erosion problems are not transferred to another site.

Policy NHZ.10

To ensure that any planting in the coastal environment does not increase dune instability.

Explanation

Planting of marram grass can result in dunes becoming too tall and steep. After vegetation removal, these dunes can be easily eroded by wind.

Policy NHZ.11

To recognise that coastal erosion can be rapid and thus the perceived option of relocatable buildings is inappropriate.

Explanation

*Coastal erosion often happens during major storm events. Such events are impossible to predict and their speed of movement and severity makes the option of relocatable buildings in a coastal hazard zone inappropriate.
(Refer Rule NHZ.2)*

3.8.4 - METHODS AND RULES

Method NHZ.1 - Consultation

To consult with the Regional Council on all matters that involve natural hazard issues.

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.

Method NHZ.2 - Hazard Identification

The District planning maps contained in Volume 2 of this Plan identify areas of the District that are at risk from actual or potential hazards.

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

- Flood prone areas
- Areas that may be prone to instability
- Coastal sites susceptible to erosion and the effects of sea level rise
- Former mining sites that could give rise to subsidence
- Areas of significant filling
- Fault lines
- Known areas of high wind and heavy snowfalls.

These maps will be used to assist Council in determining resource consents, building consents and the appropriateness of activities in any particular area.

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 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 and building consents, and also allow the public to make a judgement themselves as to appropriate activities on these sites.

(Refer also Section 3.6 Subdivision)

Method NHZ.3 - Coastal Hazard Analysis

Council in consultation with the Southland Regional Council and Department of Conservation shall complete a coastal hazard analysis which identifies all areas likely to be subject to erosion or inundation and other coastal hazards.

Upon completion of this analysis Council will implement a plan change to incorporate in the District Plan all areas where coastal hazards exist.

Reason

Within the District Council is aware of areas which have historically experienced problems from past erosion and which may be susceptible to future hazard.

The areas which are considered vulnerable are Waikawa Harbour, Stewart Island and Te Wae Wae Bay, Porpoise Bay, Horseshoe Bay and Taramea Bay. Examples where Council's own facilities are at risk are the rubbish tips at Stewart Island, Riverton and Colac Bay - roading on Stewart Island at Ringaringa, Butterfields Beach, and Horseshoe Bay and Colac Bay.

At Riverton the sewage ponds could be considered to be at risk.

Rule NHZ.1 - Discretionary Activities

Landfill, waste disposal or the storage or use of commercial quantities of hazardous substances in hazard areas shall be discretionary activities. For the purposes of this Rule, farm tips and offal holes are excluded.

Reason

The effects of these activities have great potential to cause significant environmental damage if associated with a natural hazard. Therefore Council wishes to retain discretion to refuse consent to such facilities if it is considered that the potential for adverse effects on the environment is unacceptable. Small scale farm landfills and offal holes have been excluded from this Rule on the basis that they would have minimal effects as opposed to large public waste disposal areas. Further, existing lawfully established facilities have been excluded on the basis that they have existing use rights in terms of Section 10 of the Resource Management Act 1991.

However, the Council wishes to recognise that there are some situations where waste disposal within a hazard prone area may be acceptable - with the onus being on the applicant to demonstrate to the Council that they have mitigated the potential effects of locating in a hazard-prone area effectively.

Rule NHZ.2 - Residential Buildings in Hazard Areas

With respect to residential buildings and other buildings whose principle purpose is to accommodate the living or working space of people that are required to be located within a hazard area, the following procedures will apply:

- (a) The applicant shall obtain the relevant hazard information and recommendation from the Southland Regional Council.
- (b) 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.
- (c) Where the applicant does not wish to, or cannot conform with these requirements, consent will be refused.
- (d) 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 3.6 Subdivision)*

Rule NHZ.3 - Natural Hazards in the Coastal Environment

In order to avoid and mitigate natural hazards in the coastal environment above mean high water springs, the following provisions shall apply to the activities identified:-

- (a) The construction of fencing capable of holding sand on sand dunes, and the planting of native vegetation is a permitted activity.
- (b) The construction of fencing capable of holding sand on sand dunes and the planting with introduced vegetation is a limited discretionary activity. The discretion is limited only to the species of plant.
- (c) The construction of walls of timber, rock or any other material whose length in total is in excess of 20 m or height exceeds 2 m within 50 m of the mean high water spring is a discretionary activity.
- (d) Any subdivision, use or development on mud (clay and silt) sand, gravel or sedimentary rocks less than 3 m above mean high water springs shall be a discretionary activity.

In any application for resource consent as a discretionary activity the applicant shall prepare a coastal hazard analysis which identifies the risk of that activity from sea level rise, coastal erosion, liquefaction and other coastal hazards.

3.8.5 - ANTICIPATED ENVIRONMENTAL RESULTS

- (a) Less damage to physical environment through inappropriate location of activities.
- (b) Greater awareness of the potential hazard threats.
- (c) Less cost involved in cleaning up after a natural hazard.
- (d) Greater public awareness of the effects of erosion and inundation arising from the natural coastal processes.
- (e) The adoption of methods to avoid natural hazards and to preserve the natural character of the coastline.