

14

Natural Hazards



14.1 Introduction

Natural hazards are those naturally occurring events that threaten human life, property or other aspects of the environment. 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.*

Natural hazards occur where natural physical coastal processes threaten, or result in the loss of, human life or property, or parts of the environment of value to the community. In considering the use, development or protection of Otago's coastal marine area, it is important that the potential adverse effects of any natural hazard are considered and taken into account.

14.2 Issues

14.2.1 Natural hazards which occur within and adjacent to Otago's coastal marine area can adversely affect the use and enjoyment of the area by Otago communities.

Explanation

Natural hazards can cause the loss, within the coastal marine area, of structures such as wharves and jetties, as well as the damage to natural features such as biological communities and habitats. This can be brought about by such natural physical coastal processes as the eroding effect of natural currents and tides, or the natural sedimentation of estuaries or inlets. Those natural processes can also result in the erosion of the shoreline and the possible exposure of property or areas of value to the community. Some natural hazards such as a blocked river mouth may be a result of longshore sediment transport which is a natural coastal process. This natural process may be an important part of the natural character of the coastal marine area. The types of events or processes that give rise to natural hazards in Otago's coastal marine area include the following:

- (a) Erosion of the land adjacent to the coastal marine area as a result of the action of tides and waves can be accentuated by high rainfall events on the land. These areas have been specifically identified in Policy 6.4.4, and shown in Schedule 3 of this Plan as coastal hazard areas;
- (b) Flooding and overtopping of structures within the coastal marine area as a result of storm surges or abnormally high water levels, which may be accentuated around inlets and estuaries when high rainfall events on the land cause rivers to flood;
- (c) The potential for longer term flooding or overtopping of structures within the coastal marine area as a result of sea level rise;
- (d) Blocking of river mouths through sediment movement which can result in flooding;

- (e) Tsunamis or tidal waves causing possible loss of life and property as a result of inundation of areas within and adjacent to the coastal marine area.

Objective 14.3.1

Policies 14.4.1, 14.4.2, 14.4.3

14.2.2 Natural hazards can affect the use and enjoyment of the coastal environment by Otago’s communities and activities in the coastal marine area can exacerbate the adverse effects of natural hazards occurring in and adjacent to Otago’s coastal marine area.

Explanation

Natural hazards can damage structures, landforms and the intrinsic values associated with the coast. The level of damage has often been increased because human activity within or adjacent to the coastal marine area exacerbates the effects of the natural hazards, examples are:

- (a) Coastal erosion rates can be increased because a structure has been inappropriately placed. A structure can stop or reduce a continuous flow of beach sediment. The result is a beach out of equilibrium because it cannot effectively absorb the energy of the waves. An inappropriately located structure may also focus the energy of the incoming waves, which can cause or accelerate erosion;
- (b) Sediment extracted from the foreshore and seabed within or near a coastal hazard area may accelerate erosion. A beach needs a stable supply of sediment to assist in dissipating the wave energy which causes erosion;
- (c) Coastal erosion rates may be increased when the flow rates of a river are modified to the point where the river carries significantly less sediment to the ocean beaches;
- (d) Land use practices near the coast may alter the stability of the land adjoining mean high water springs. The land will be more susceptible to coastal erosion. An example is the cliffed North Otago coast, an area, which is considered prone to erosion.

Objective 14.3.1

Policies 14.4.2, 14.4.4, 14.4.

14.3 Objective

14.3.1 To take into account the potential adverse effects of natural hazards within and adjacent to Otago’s coastal marine area when considering the use, development or protection of the area.

Principal reasons for adopting

Natural hazards within and adjacent to Otago’s coastal marine area have the potential to result in the loss of human life and property, and of areas important to the community. Taking into account the potential for adverse

effects resulting from any natural hazard will assist in avoiding, mitigating or remedying those adverse effects wherever possible. Some natural hazards such as a blocked river mouth may be a product of natural coastal processes which are part of the natural character of the coastal marine area.

Policies 14.4.1, 14.4.2, 14.4.3

Other Objectives 5.3.1, 6.3.1, 8.3.4, 9.3.2

14.4 Policies

14.4.1 To avoid or mitigate the adverse effects of natural hazards through considering the need to protect areas within and adjacent to the coastal marine area.

Explanation

The action of natural physical coastal processes may result in threats to human life or property, or to areas of value to the community. In order to avoid or mitigate the adverse effect of such natural hazards, it may be necessary to consider measures to avoid or mitigate the threat. Such measures may include coastal protection works to reduce or halt erosion of the coastline, or groynes or other structures to assist in retaining material to reduce erosion rates.

Principal reasons for adopting

It may be necessary at times to provide protection against the threat posed by natural hazards to human life or property, or to areas of value to the community. This policy recognises that need.

Methods 14.6.1, 14.6.2, 14.6.3

Other Policies 5.4.4, 5.4.9, 6.4.5, 6.4.6, 8.4.8, 9.4.6, 9.4.9

14.4.2 The potential effect of activities on natural physical coastal processes operating within the coastal marine area, and the potential for those effects to result in adverse effects within other areas of the coastal marine area will be recognised and taken into account.

Explanation

This policy recognises that activities in one area of the coastal marine area can result in adverse effects on other areas.

Principal reasons for adopting

Activities, such as the erection or placement of solid structures, or the reclamation of areas from the coastal marine area can cause changes to natural physical coastal processes that can result in adverse effects elsewhere. The potential for such adverse effects resulting from the activity need to be taken into account when considering applications for resource consents for those activities.

Methods 14.6.1, 14.6.3

Other Policies 5.4.9, 6.4.2, 6.4.5, 6.4.6, 8.4.8, 9.4.6, 9.4.9

- 14.4.3 Where a resource consent is required under this Plan, to ensure that adequate provision is made in the design of any structure, reclamation, or other physical feature, to recognise the possibility of sea level rise and other natural hazards which may damage that structure, reclamation or feature.**

Explanation

The coastal environment exposes structures, reclamations and features to sand, sea, and all weathers. The effects of these natural elements should be considered when deciding the design of new structures, reclamations or features to maximise their useful life.

Principal reasons for adopting

Natural hazards in the coastal marine area include storm inundation and tsunami.

Methods 14.6.1, 14.6.2, 14.6.3

Other Policies 5.4.4, 6.4.5, 6.4.6, 8.4.7, 9.4.7, 9.4.8, 9.4.9

- 14.4.4 To avoid locating structures and undertaking disturbances of the foreshore or seabed in a coastal hazard area when that activity may increase the adverse effects associated with the hazard.**

Explanation

The action of natural physical coastal processes may result in threats to human life or property, or to areas of value to the community. The effects of these natural processes can be increased when structures or activities within or adjacent to the coastal marine area adversely modify the coastal processes. In order to avoid or mitigate the adverse effects of such natural hazards, it may be necessary to consider measures to avoid or mitigate the threat. Such methods may be a passive avoidance method where a structure or activity is not allowed to locate in the area.

Principal reasons for adopting

Natural hazards can cause a considerable amount of damage to property and it is not appropriate to increase the potential damage by inappropriately locating structures or activities in hazard zones.

Methods 14.6.1, 14.6.2, 14.6.3,

Other Policies 6.4.5, 8.4.9, 9.4.2, 9.4.7

14.5 Rules

There are no rules contained within this chapter. The objective and policies contained within this chapter give guidance to the consideration of activities that require resource consents under any or all of the other chapters of this Plan.

14.6 Other methods

14.6.1 Consultation

14.6.1.1 The Otago Regional Council will consult with adjacent territorial local authorities over the need for, and appropriateness of joint management plans and joint works or action in order to address specific erosion issues.

Principal reasons for adopting

Consultation over natural hazards affecting the boundary of the coastal marine area is an appropriate means of identifying where joint plans, works or actions by both the Otago Regional Council and the relevant territorial local authority may be appropriate.

14.6.2 Promotion and encouragement

14.6.2.1 The Otago Regional Council will promote and encourage:

- (a) Means to avoid or mitigate natural hazards; and
- (b) The use of natural processes where practicable to avoid or mitigate any natural hazard; and
- (c) An awareness of those parts of the coast which have been identified as a Coastal Hazard Area.

Principal reasons for adopting

Promotion and encouragement of means of avoiding or mitigating natural hazards recognises the role that all persons have to deal with natural hazards.

14.6.3 Service delivery

14.6.3.1 Where appropriate, the Otago Regional Council may use its powers under the Soil Conservation and Rivers Control Act to undertake coastal protection works to help avoid or mitigate a natural hazard of regional significance.

Principal reasons for adopting

The Otago Regional Council has powers and functions under other Acts. The ability to undertake works is provided for by those other Acts. An assessment is required of each natural hazard situation to determine the response that may be made by the Otago Regional Council.

14.7 Anticipated environmental results

14.7.1 Human life or property, or areas of value to the community, are protected from the adverse effect of natural hazards originating in the coastal marine area.

14.7.2 Action taken to avoid or mitigate any natural hazard recognises the natural physical coastal processes acting on the area.

- 14.7.3** Activities do not result in unanticipated changes to areas within the coastal marine area as a result of the action of natural physical coastal processes.
- 14.7.4** Natural hazard problems in Otago's coastal environment are not created, exacerbated, or transferred to another location by works or structures in the coastal marine area.

