
7. NATURAL HAZARDS

7.1 SECTION INTRODUCTION

7.1.1 The Resource Management Act empowers Council to control any actual or potential effects of the use, development, or protection of land for the purpose of the avoidance or mitigation of natural hazards.

Natural hazards include:

"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".

7.1.3 Those natural hazards that have the potential to affect the district include:

- River flooding - inundation and erosion hazards
- Coastal hazards - inundation and erosion hazards
- Earthquake hazards - ground shaking and liquefaction
- Volcanic hazard - ash fall and lahars
- Storm surge - combination of low barometric pressure on-shore wind, and high tide events leading to coastal inundation.
- Tsunami
- Landslide and land erosion hazards
- Wind
- Fire

7.1.4 Natural hazard management is the responsibility of both Opotiki District Council and Bay of Plenty Regional Council. There is an overlap with functions of the Bay of Plenty Regional Council, which focuses on regional management of natural hazards through the Operative Bay of Plenty Regional Policy Statement and the Operative Regional Coastal Environment Plan. The New Zealand Coastal Policy Statement also has requirements for natural hazard management within the coastal environment that the District Plan must take into account.

7.1.5 The effects of natural hazards can include destruction of habitats, structural damage to buildings and services, disruption to transportation routes, destruction of commercial centres and residences, loss of crops and stock and can result in the loss of human life. There are resultant financial, personal, psychological, social, and environmental costs associated with the effects.

- 7.1.6 It is not possible to avoid natural hazard occurrence, however it is possible to manage the effects of land use activities with a view to avoiding of mitigating adverse effects of natural hazards. Council has collected information on natural hazards within the Opotiki district. This information relates to areas susceptible to hazard occurrence, frequency of occurrence, and intensity of the potential hazards. This work also identified information inadequacies on natural hazards, these inadequacies will be addressed over the next ten years as part of Council's state of the environment monitoring programme.
- 7.1.7 Good land management practices contribute to avoiding and mitigating natural hazards. Some practices such as planting forests and protecting wetlands, limit the vulnerability of some areas to flooding, land erosion, and other damage. Planning to reduce the adverse effects of natural hazards is important at a district level as hazards can have significant localised effects.
- 7.1.8 In addition, the Council has an interest in this matter as it is responsible for providing services and utilities necessary for the well being of communities. A major effect from hazard occurrence is the damage done to physical infrastructure and the temporary loss of service that occurs. The safe and efficient delivery of water supplies, sewerage networks, electricity networks, and telephone services can be disrupted. Transportation networks can also be disrupted with areas within the district being isolated, and vital links to areas outside the district being severed.
- 7.1.9 The district community is aware of the natural hazard risk from river flooding, ponding of waters, coastal erosion, coastal inundation, land erosion, and storm surge events which have occurred within the last five years. The objectives and policies of the Plan, and the assessment criteria for controlled and discretionary activities, will assist in ensuring that natural hazards, and the effects of the hazards, are taken into account in resource management decisions.
- 7.1.10 In the future it may be necessary to assess, in conjunction with Environment Bay of Plenty, long term options for managing potential effects of flooding on the residential and commercial areas of Opotiki township.
- 7.1.11 Council is in the formative stages of developing a Coastal Hazards Monitoring Programme. The programme will consist of an initial assessment of risk relating to the coastal hazard areas. This initial assessment will provide an indication of priority areas where more detailed assessments of coastal hazards are required. The Coastal Hazards Monitoring Programme will be undertaken in conjunction with Environment Bay of Plenty to ensure integrated management of the coastal environment.

7.2 RESOURCE MANAGEMENT STRATEGY

7.2.1 *Resource management issues*

1. Opotiki township is subject to flood occurrences, with particular areas of the urban area subject to ponding of flood waters.
2. Accelerated land degradation has resulted from inappropriate land practices, such as clearing of steep slopes, overgrazing or over cropping of land, and poor subdivision and development design. Resultant effects include increased sediment run-off, soil structure instability, destabilisation of hill slopes, and increased downstream flooding.
3. There is potential for damage to existing and future coastal and river settlements from the effects of coastal erosion and inundation.
4. There is a need for mitigation measures to be taken by those persons wishing to locate on areas susceptible to natural hazards, particularly river inundation and coastal hazard areas.
5. Some parts of the district are unsuitable for development due to coastal erosion and land erosion.
6. There is an increased risk of some areas in the district from flooding due to the inability of watercourses to handle run-off from intensive rainfall, and inadequate on-site ponding.
7. In some instances the effects of natural hazards can be mitigated by the acquisition of esplanade areas adjoining inland and coastal water bodies.
8. The ponding areas within the Opotiki township that act as natural flood water catchment areas need to be protected from development that may decrease their effectiveness.
9. The need to locate and design new subdivision, use and development so that the need for hazard protection works is avoided.
10. There is increased risk in some areas of the district from fire, particularly where there is plantation forestry and a limited capacity of water for fire-fighting purposes.

7.2.2 *Objectives and policies*

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| Objective | 1. Ensuring that the effects of natural hazard occurrence within the district are avoided or mitigated when making resource management decisions. |
| Policies | <ol style="list-style-type: none"> 1.1 To control activities and the location of buildings to avoid or mitigate the effects of natural hazards. 1.2 Require detailed site investigations prior to subdivision, use, or development of land subject to or likely to be subject to natural hazards. 1.3 Apply conditions on subdivision and resource consents to mitigate adverse effects of natural hazards from the use and development of land. 1.4 Ensure that the ponding areas of the Opotiki township are kept free from activities that affect the effectiveness of the ponding areas. |

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- 1.5 Require esplanade reserves or esplanade strips where appropriate as a mechanism to mitigate potential effects from natural hazards.
- 1.6 To avoid new development in areas at risk of coastal hazards in the Ohiwa Spit Coastal Hazard Overlay Area.
- Objective 2. Encourage the use of sustainable land management practices that assist in avoiding and mitigating the effects of natural hazards on the land and coastal environment.**
- Policy**
- 2.1 To encourage land management practices that reduce soil loss.
- 2.2 To locate and design subdivision, land use, and development within coastal areas so that the need for hazard protection works is avoided.
- 2.3 Where subdivisional land use activities are threatened by a coastal hazard, the following options will be considered:
- Abandonment of buildings and other assets.
 - Relocation of buildings and other assets.
 - Alteration of buildings to reduce vulnerability (including the raising of floor levels).
 - Soft protection works, including beach replenishment.
 - Protection works (protection works should only be permitted where they are the best practicable option for the future).
- Objective 3. An informed community aware of the natural hazards that can occur in the district, including the likely frequency, scale, and intensity anticipated from these hazards.**
- Policies**
- 3.1 Ensure that all Council databases on natural hazards are kept as current as possible.
- 3.2 Provide the community and resource consent applicants with all available information that Council holds on natural hazards within the district.
- 3.3 Council will undertake a programme of natural hazard risk assessment for the district. As this natural hazard information is obtained it will be inserted into the District Plan by way of variation or through the Plan Change process

7.2.3 *Methods of implementation*

The objectives and policies of this section will be implemented by the following objectives.

1. Rules
2. Other methods

7.3 RULES

The following rules provide for permitted activities, controlled activities, discretionary activities and non-complying activities.

7.3.1 *Permitted activities*

The permitted activities with respect to the management of the effects of natural hazards are:

1. Structures located within the ponding areas, as identified on **Planning Maps 3A, 3B, and 3C** that have a floor level of 3.6 metres or higher above Moturiki datum.

7.3.2 *Controlled activities*

The following activities are controlled activities in any Zone except in the Ohiwa Spit Coastal Hazard Overlay Area in relation to natural hazard management. The activities may be established after a land use consent has been granted by Council.

1. Structures located within the ponding areas, as identified on **Planning Maps 3A, 3B, and 3C** that have a floor level lower than 3.6m above Moturiki datum except where:
The structure is a garage or carport
 - i. The part of the structure to be so located is a basement.
 - ii No part of the structure will be used for residential purposes.
2. Activities that comply with **7.3.3 2. B.**
3. Activities located within areas sensitive to coastal hazards (ASCH) as defined by the Operative Regional Coastal Environment Plan [or identified coastal hazard areas] where a report from a suitably qualified person detailing:
 - (i) The impacts of the perceived hazard on the proposed activity;
and
 - (ii) The impacts of the proposed activity on the perceived hazard;
and
 - (iii) Where the outcome of the report indicates there will be no significant adverse effects from the activity, or from the hazard.

Council has reserved control over the following matters.

7.3.2.1 Natural hazard mitigation matters

- i. The extent to which the effects of the hazard, or the effects of the activity on the hazard, can be remedied or mitigated.
- ii. The ground level or floor level height required to give protection.
- iii. Mitigation measures used to avoid, remedy, or mitigate the adverse effects of erosion, falling debris, subsidence, slippage or inundation.
- iv. The need for the erection of sea walls and their subsequent environmental effects.
- v. Adequacy of existing outfalls and any need of upgrading.
- vi. Any need for retention basins to regulate the rate and volume of surface run-off.

7.3.2.2 Extent of the natural hazard

- i. The extent to which the natural hazard applies only to part of the site, and consequently whether the proposed activity would be unaffected by the hazard, and would not in turn affect the hazard itself.
- ii. The extent to which the activity would worsen the risk posed by the natural hazard, or would accentuate the effects of the natural hazard.
- iii. The type of flooding likely to be experienced, whether it is stormwater, ponding, tidal inundation, or some combination of circumstances which could lead to surface flooding.

7.3.2.3 Stability and geology of the site

- i. The need for a geotechnical assessment of the site.
- ii. The geology of the site including any relationship of effect on areas of actual or potential instability of the site. Any susceptibility of the hazard from over steepening of the slope and/or water saturation.

7.3.2.4 Excavation and fill effects

- i. The nature of any fill and its effects on the stability of the site, and the potential of the fill to become unstable during natural hazard events.
- ii. Whether there is a need for large excavations to be carried out in stages, with each stage being retained before the next stage is started.
- iii. The effects of any proposed filling being undertaken to avoid inundation and the consequential effects on the natural drainage pattern adjoining the land.

7.3.2.5 Effects on the environment and adjoining properties

- i. Effects of the activity on the functioning of the district's flood ways.
- ii. Any flooding being accentuated on adjacent sites, or of additional water being directed onto adjacent sites as a result of the activity.
- iii. The nature of the activity proposed, and whether the activity will involve the use, storage, or disposal of hazardous substances, and the effect of this on neighbouring properties and the environment.
- iv. The effects of stormwater run-off on neighbouring properties.

- v. Any proposed boundary drainage to protect surrounding properties.

Council may impose conditions on a resource consent for a controlled activity only in relation to those matters stated above.

7.3.3 *Discretionary activities*

The Council may grant or refuse a resource consent for a discretionary activity. The following activities may be established after a land use consent has been granted by Council.

1. Activities undertaken within the urban areas of the Opotiki township, excluding the Woodlands residential area, that adversely affect the functioning or capacity of the Volkners Island ponding area, including the deposition of any fill within the Volkners Island ponding area as shown on Planning Maps 3A and 3C
2. A. With the exception of buildings located within the Ohiwa Spit Coastal Hazard Overlay Area activities located within Areas Sensitive to Coastal Hazards (ASCH) as defined by the Operative Regional Coastal Environment Plan, that are:
 - (a) A new structure requiring consent under the Building Act, other than decks, fences and internal alterations, and
 - (b) Any new network utility.

Applications for resource consent must include as assessment of the coastal hazard risk, which is to take into account the following:

- Erosion impacts of sea level rise: the Intergovernmental Panel on Climate Change best estimate should be used (currently IPCC 1995 IS92a scenario of) 0.49 metres by the year 2100.
- Shoreline response to erosion and flooding: scientifically appropriate models should be used.
- A 100 year planning horizon.
- Historical long term trends in the erosion or accretion of the shoreline.
- Short term fluctuations in the shoreline.
- A factor of safety.

- B. Provided that:

With the exception of buildings located within the Ohiwa Spit Coastal Hazard Overlay Area when a resource consent application is lodged with Council, and is accompanied with a report from a suitably qualified person detailing:

- i. The impacts of the perceived hazard on the proposed activity; and

- ii. The impacts of the proposed activity on the perceived hazard; and

Where the outcome of the report indicates that there will be **no** significant effects from the activity, then the activity shall be a controlled activity.

- C. Buildings within the Ohiwa Spit Coastal Hazard Overlay Area shall be non-complying activities.

7.3.4 Non-complying Activities

Any new building (including structures) as defined in the Building Act 2004 within the Ohiwa Spit Coastal Hazard Overlay Area shall be a non-complying activity.

In addition to the information required to be lodged with an application for resource consent, any application within the Ohiwa Spit Coastal Hazard Overlay Area must be accompanied by a report detailing consultation with iwi.

7.4 ZONE STANDARDS

The standards are stated in each of the Zone sections of the Plan.

7.5 SUBDIVISION

See **Section 10** Subdivision **10.4.2**.

7.6 OTHER METHODS

7.6.1 The objective and policies of the Zone can be implemented by the rules, as well as the following other methods.

1. Utilise Sections 71 and 72 of the Building Act 2004 where buildings are located within hazard areas.
2. Encourage Coast Care programmes as a mechanism to ensure that the integrity of the coast and dune systems are maintained.
3. Consideration of the effects of land re-contouring, and the effects of drainage networks on areas susceptible to natural hazards when assessing resource consent applications.
4. Encourage landowners to amalgamate natural hazard concerns into Environmental Plans that are lodged with the Bay of Plenty Regional Council.
5. Use consent notices as a mechanism to ensure that buildings within subdivisions are located on areas within a site where the effects of natural hazard occurrence can be avoided or mitigated.
6. As part of the overall state of the environment monitoring programme, Council shall:
 - i. Conduct a natural hazard assessment of the Coastal Zone and the Coastal Residential Zone; and
 - ii. Create and maintain a natural hazards register for the district.

7. Make submissions to Bay of Plenty Regional Council 's Annual Plan so that the natural hazard study requirements of the Opotiki District Council are considered for Annual Plan inclusion.
8. Provide information to raise landowners awareness of the different management practices that may increase or decrease the potential threat of erosion and other natural hazards.
9. Raise community awareness of natural hazards within the district through the use of Civil Defence education programmes.
10. Through the use of Land Information Memoranda (LIM) and Project Information Memoranda (PIM) to provide information on known hazards to potential developers and applicants.
11. Preparation by Environment Bay of Plenty in consultation with Opotiki District Council and other interested parties, of a floodplain management strategy for the Waioeka-Otara catchment.
12. Preparation by Environment Bay of Plenty in consultation with District Council's and other interested parties, of a region wide Natural Hazards Strategy.
13. Preparation by Environment Bay of Plenty and Opotiki District Council of their respective responsibilities under the Civil Defence legislation for disaster planning, response and recovery.

7.7 EXPLANATION

Other related legislation includes Soil Conservation and Rivers Control Act 1941, Local Government Act 1974 and Civil Defence legislation.

- 7.7.1 The reasons for the foregoing objectives, policies and methods are stated below.
- 7.7.2 Under the Act the Council has responsibility for the control of any actual or potential effects of the use, development, or protection of land, including for the purpose of avoidance or mitigation of natural hazards. Management of land to avoid or mitigate natural hazards, enabling people to provide for their safety, health, and wellbeing. Council will make resource management decisions based on all the information available to it at the time.
- 7.7.3 Hazards information held by Council will be updated on a regular basis as a part of Council's overall state of the environment monitoring. Some of the hazards information held by Council will not need to be updated, such as information on seismicity and ground shaking. Information related to inundation and coastal hazards will need to be kept as current as is possible.

7.8 **ANTICIPATED ENVIRONMENTAL OUTCOMES**

7.8.1 Below are the anticipated environmental outcomes from the implementation of the objectives and policies of this section.

- 4 Increased awareness by consent applicants, and consent holders, of the effects that natural hazards may have on their activities.
- 4 Placement of structures and vegetation so that the effects of natural hazards are avoided or mitigated.
- 4 Effective functioning ponding areas within the town.