

# Natural Hazards

## 8. Natural Hazards

### Explanatory Statement

While acknowledging the *Council's* statutory responsibilities, this section recognises the constraints imposed by the nature of some potential hazards affecting the Western Bay of Plenty District as well as the limitations of the level of existing information.

Areas considered most at risk from coastal erosion and inundation are those already developed for urban purposes and which adjoin the open coastline (e.g. Waihi Beach - Bowentown, Pukehina). The stretches of coastline concerned have been the subject of a detailed study commissioned by Council. The study findings are reflected in that land identified on the District Planning Maps as being within the "Coastal Protection Area".

The Coastal Protection Area has been divided into two parts, the Primary Risk Area and the Secondary Risk Area. The Primary Risk Area includes all private properties within the Coastal Protection Area that are considered to be subject to an immediate threat from coastal hazards. The Secondary Risk Area includes all land in the remainder of the Coastal Protection Area. All private property within the Secondary Risk Area is likely to be affected by coastal hazards at some future time but within the next 100 years.

The main area of known land instability is in the Minden where there exists land with the potential to slip when saturated. These and other potentially unstable areas have been identified on the District Planning Maps.

Heavy rain is a common feature of the Bay of Plenty Region and this may increase with global climate change. Low-lying areas, especially those in proximity to watercourses are at risk from inundation, scour and sedimentation. Within established urban areas land known to be susceptible to flooding exists in parts of Waihi Beach, Katikati, Te Puke and Pukehina. Again, such land has been identified on the Planning Maps.

Land identified on the Planning Maps as being at risk from the foregoing hazards is subject to various controls on development either through District Plan rules or other methods outside the District Plan. In many cases because of the quality of existing information such identification is very "broad brush" and where more detailed study of specific areas eliminates land from the identified potential hazard then otherwise complying development will be able to proceed through the resource or building consent processes without additional restriction (e.g. consent or S74 Building Act 2004 notices). Nevertheless there are some areas where Council has good information on the level of hazard risk and in these areas it is considered appropriate to control the intensification of development.

The Western Bay of Plenty adjoins the Taupo Volcanic Zone and is therefore considered to be subject to a "high" risk from earthquakes as well as at risk from volcanic eruptions originating from outside the District. Notwithstanding the limitations of addressing these potential natural hazards through the District Plan, much is achievable in terms of public education and preparedness through other methods such as Emergency Management plans.

## 8.1 Significant Issues

1. The Western Bay of Plenty District is subject to a range of actual or potential natural hazards which will or may adversely affect human life, property or other aspects of the environment. The principal hazards affecting the District are coastal erosion and inundation, tsunamis, land instability, flooding, earthquake, and volcanic eruption.
2. Areas actually or potentially under threat from such natural hazards as coastal erosion and land instability can be identified in advance. Specific areas more at risk than others from some hazards such as earthquakes and volcanic eruptions are more difficult to identify in advance and the potential effects of the hazards themselves so widespread and devastating that avoidance or control through the District Plan is not realistically possible.
3. Some areas now known to be at risk from actual or potential hazards have already been developed for urban purposes.
4. Some natural hazard avoidance, remedial, or mitigation measures have the potential to adversely impact on natural character and on significant ecological values existing within the coastal and other environments.

## 8.2 Objectives and Policies

### 8.2.1 Objectives

1. Minimisation of the threat of natural hazards to human life and the natural and physical environment.
2. Protection of the existing natural character of the coastal environment and other natural features having recognised ecological, landscape or other significance to the District.

### 8.2.2 Policies

1. Adopt the best practicable options (including the “do nothing” option) in the management of areas actually or potentially at risk from natural hazards and where possible adopt avoidance rather than mitigation or remedial measures.
2. Control or prevent the establishment of activities which have the potential to increase the extent to which natural hazards have or may have an adverse effect on human life or the natural or built environment.
3. Enable the development or redevelopment of land already subdivided or otherwise developed for urban purposes in areas now known to be at risk from natural hazards only where any likely adverse effects can be avoided or appropriately mitigated.
4. Ensure that new subdivision, land use activities or other development is located and designed so as to avoid the need for further hazard protection works.

5. Ensure that where hazard protection works are necessary their form, location and design are such as to avoid or mitigate potential adverse environmental effects.
6. Enable natural ecosystems in currently undeveloped areas to migrate inland as a result of dynamic coastal processes (including sea level rise as predicted by recognised national or international agencies).
7. Encourage the conservation and enhancement of natural features such as sand dunes and wetlands which have the capacity to protect existing developed land.
8. Prevent the use of concrete and block work foundations, floors and walls in the Primary Risk Area.

## **8.3 Activity Lists**

### **8.3.1 Restricted Discretionary Activities**

Notwithstanding anything to the contrary in the provisions of the zone in which it is situated, where land is within the areas specified in clauses (a), (b) and (c) hereunder, the activities listed shall be Restricted Discretionary:

#### **(a) The Coastal Protection Area as defined on the Planning Maps**

New buildings and external additions to buildings within the Secondary Risk Area of the Coastal Protection Area which requires a building consent under the Building Act 2004. The Secondary Risk Area is defined as that area shown on the District Planning Maps.

An application for resource consent under this rule shall be considered without the need to obtain the written approval of affected persons, without notification, and without the need to serve notice provided the activity meets all relevant performance standards.

#### **(b) Floodable areas as identified on the Planning Maps**

Buildings or external additions to buildings, the erection of any structures including closed board fences, retaining walls, raised gardens and concrete block walls, or earthworks over 5m<sup>3</sup>.

The Council will restrict the exercise of its discretion to the extent to which the activity affects the capacity and functioning of ponding areas and on overland flow paths.

#### **(c) Minden Stability Areas**

Building, subdivision or other development including excavation, filling, removal of vegetation (excluding noxious plants), disposal of stormwater or domestic wastewater into or over the area delineated (see Section 8.4.2).

An application for resource consent under (a), (b) and (c) above shall be considered without the need to obtain the written approval of affected

persons, without notification, and without the need to serve notice provided the activity meets all relevant performance standards.

### 8.3.2 Discretionary Activities

Notwithstanding anything to the contrary in the provisions of the zone in which it is situated, where land is:

- Within the Coastal Protection Area as defined on the Planning Maps, or
- Within any land instability area identified on the Planning Maps, or
- Adjoining the open coastline, zoned Rural and within 100m of MHWS.

The following shall be Discretionary Activities:

- (a) New buildings and external additions to buildings (except as provided for in 8.3.1) which requires a building consent under the Building Act 2004.
- (b) Subdivision except as specified in Rule 8.3.1(c), 8.3.3(b) and 8.3.4(b).
- (c) Construction of new or currently unformed existing public roads.
- (d) Reticulated community or communal sewerage and water supply systems, including associated pumping stations, treatment works, and other ancillary equipment or facilities.
- (e) Coastal and river protection works including groynes, seawalls, and stopbanks except where The Regional Council consent is obtained. In this case they will be permitted.

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### 8.3.3 Non-Complying Activities

Notwithstanding anything to the contrary in the provisions of the zone in which it is situated where land is within the Primary Risk Area of the Coastal Protection Area, the following will be a Non-Complying Activity:

- (a) More than one dwelling (including a minor dwelling), and accommodation and educational facilities as provided for in Rule 13.3.1.

Notwithstanding anything to the contrary in the provisions of the zone in which it is situated where land is within the Secondary Risk Area of the Coastal Protection Area, the following will be a Non-Complying Activity.

- (b) Subdivision within the Secondary Risk Area (excluding minor boundary adjustments).

For the purpose of this rule, minor boundary adjustments means an adjustment of boundary between two adjoining lots and which will not increase the risk or potential risk to existing buildings or future buildings from coastal erosion or inundation.

### **8.3.4 Prohibited Activities**

- (a) Fixed (i.e. non-portable) solid waste management facilities including sanitary landfills and the disposal of hazardous substances (public or private) in the Primary and Secondary Risk Areas.
- (b) Subdivision (excluding minor boundary adjustments) within the Primary Risk Area of the Coastal Protection Area. (See Rule 8.3.3(b) for definition of minor boundary adjustment).

## **8.4 Matters of Discretion**

### **8.4.1 Restricted Discretionary and Discretionary Activity Criteria**

Council will have particular regard to:

- (a) The proposed avoidance, remedial, or mitigation measures relating to the identified hazard.

For 8.3.1(a) above these measures include:

- (i) The provision of an access yard of at least 6.0m as shown on the Planning Maps (this is to enable the creation of alternative legal access should the seaward road be removed).
- (ii) The extent to which the entire building is relocatable (design, location of building on site, practical access for relocation).
- (iii) Prevent the use of concrete and block wall foundations, flooring and walls.

For 8.3.2(a) above these measures include:

- (iv) New buildings or significant redevelopment of existing buildings should be situated as far back from the sea as is practicable to provide the greatest distance between the hazard and the building. In determining what is practicable the location of adjacent buildings will be taken into account, and
- (v) Additions or alterations to any building should be landward of the existing building.
- (vi) The extent to which the entire building is relocatable (design, location of building on site, practical access for relocation).
- (vii) Prevent the use of concrete and block wall foundations, flooring and walls.

and

- (b) The potential environmental effects of or likely to result from the proposal including those relating to any measures referred to in (a) above, and
- (c) The effect of proposed buildings or other works on the capacity of ponding areas and on floodwater flow paths, and

- (d) The extent to which the proposal addresses any identified natural hazard in a way that enables the existing natural character of the coastal environment and other natural features having recognised ecological, landscape or other significance to the District to be protected, and
- (e) Verifiable new information which demonstrates that any land within an area identified on the District Planning Maps as potentially subject to natural hazard is not in fact under threat from the hazard concerned.

## 8.4.2 Stability Requirements - The Minden Rural 3 Zone

The Minden Rural 3 Zone is divided into four stability risk areas i.e. A, B1, B2 and C Stability Areas (see Planning Maps). The following provisions set out a description of each stability area (in italics) followed by the stability requirements applying to development in that area.

### (a) Stability Area A

*An area in which processes or factors have been identified which indicate that past or active erosion or mass movement is evident or is likely to occur and which presents or may present an identifiable hazard to structures within the delineated area.*

Area A may be summarised as land subject to or likely to be subject to instability.

Building, subdivision or other development including excavation, filling, removal of vegetation (excluding noxious plants), disposal of stormwater or domestic wastewater into or over the area delineated will not be permitted unless the following documentation is produced to the satisfaction of the Council:

Geomorphological and geological evidence and a "stability analysis" demonstrating that the proposed development area will not be subject to instability or be inundated by debris from upslope, and how the proposed development will ensure that any structure will not become damaged by land slippage arising on or off the site.

A **stability analysis** shall include:

- (i) Topographical Survey (if not already available).
- (ii) Definition of the nature and continuity of the strata over the whole area of land involved and to a depth below which slipping is most unlikely, by means of test pits and/or continuous recovery core drilling.
- (iii) Definition of the density, effective stress shear strength parameters, residual shear strength parameters and the sensitivity of the soil in each stratum in which sliding is possible.
- (iv) Definition of ground water levels and piezometric pressures in the strata during extreme infiltration conditions.
- (v) Analysis of possible mechanisms of failure, relevant to the specific geomorphology of the site using effective stresses.

- (vi) A professional opinion as to the stability of the ground.

Even with a thorough stability analysis, complete avoidance of all risk cannot be obtained and no guarantee of safety expected.

**(b) Stability Area B1**

*Area B1 is land where mass movement is evident or where the slope gradient is such that instability or erosion could occur, particularly if developed.*

*Area B1 may be summarised as land potentially subject to instability.*

Building, subdivision or other development including excavation, filling, removal of vegetation (excluding noxious plants), disposal of stormwater or domestic wastewater into or over the area delineated will not be permitted unless the following documentation is produced to the satisfaction of the Council:

Geomorphological and geological evidence and a "**stability analysis**" as outlined in 8.4.2(a) demonstrating that the proposed development area will not be subject to instability or be inundated by debris from upslope, and how the proposed development will ensure that any structure will not become damaged by land slippage on or off the site.

Restrictions on and requirements for subdivision, building or other development are the same as for Area A but it shall be sufficient to demonstrate that the risks of instability and damage are at an acceptable level.

**(c) Stability Area B2**

*Area B2 is land where the slope gradient is such that instability is not considered likely to occur, and no mass movement is evident, but is similar to land where instability and erosion has occurred elsewhere in the Western Bay of Plenty in similar materials due to cutting and/or filling and/or on site disposal of stormwater.*

*The risk of instability or erosion is greater in areas delineated B1 than B2.*

*Area B2 may be summarised as land potentially subject to instability but less so if there is no on-site disposal of sewage or stormwater concentration, no significant vegetation removal, no significant cutting or filling.*

Buildings, subdivision or other development such as excavation, filling, removal of vegetation (excluding noxious plants), disposal of stormwater or domestic wastewater into or over the area delineated will be allowed to proceed only if supported by the following documentation to the satisfaction of the Council:

A "stability assessment" demonstrating that the proposed development will not result in the risks of instability or damage being at an unacceptable level.

A stability assessment shall include:

- (i) Topographical Survey (if not already available).
- (ii) Definition of the nature and continuity of the strata over the whole area of land involved and to a depth below which slipping is most unlikely, by means of test pits and/or drilling, and/or auguring.
- (iii) Assessment of the density, relative strength and the sensitivity of the soil in each stratum in which sliding is possible.
- (iv) Assessment of ground water levels and piezometric pressures in the strata during extreme infiltration conditions.
- (v) A professional opinion as to the stability and instability of the ground.

A stability assessment is likely to be sufficient where there will be no significant interference with existing vegetation, no cutting or filling in excess of 0.5m in depth and no in ground disposal of stormwater runoff.

**(d) Stability Area C**

*Area C is land not considered to be at risk from instability. A stability analysis or assessment investigations would not generally be required.*

### **8.4.3 Activity Performance Standards – Non-Complying Activity Criteria**

*Council* will have particular regard to:

- (a) Scientific information from a suitably qualified coastal expert which demonstrates that the land within the Secondary Risk Area of the Coastal Protection Area is not under any actual or potential risk from coastal hazard. For the purpose of meeting this rule any assessment of coastal hazards shall include those standards outlined in the Bay of Plenty Regional Coastal Environment Plan.
- (b) The degree to which the ability of buildings or structures to be relocated is affected.
- (c) The degree to which the physical risk to buildings or structures from coastal erosion can be avoided and coastal inundation can be avoided or mitigated.

## **8.5 Other Methods**

### **8.5.1 Building Act 2004**

Where as a result of stability investigations the land in question is found to be subject to or likely to be subject to slippage, but the building work itself will not accelerate or worsen the situation or affect other land, then Council may grant a building consent subject to the title being notated that the land is subject to



or is likely to be subject to slippage pursuant to Section 72 of the Building Act 2004.

This will be used to exercise control over buildings within identified hazard prone areas. Such controls may include restrictions relating to building design and damage liability. Information on known site specific potential natural hazards will be recorded on Council's Geographic Information System and provided with all Project and Land Information Memoranda.

## **8.5.2 Coastal Protection Works**

The construction, repair and maintenance of coastal protection structures such as sea walls and the implementation of "dune care" programmes will be achieved pursuant to Council's powers under other legislation including the Reserves Act 1977 and the Local Government Act 1974.

Resource consents from The Regional Council are required for any coastal protection works within the coastal marine area (ie. below MHWS).

## **8.5.3 Earthworks and Vegetation Removal**

Consents to these activities are likely to be also required from The Regional Council.

## **8.5.4 Civil Defence**

Civil Defence plays an important education role. This, along with the Emergency Management Plans is aimed at mitigating potential hazards as well as preparedness for emergencies.