

# 11 NATURAL HAZARDS

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**Key:**

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Underlined – Altered from Operative Text

# 11 NATURAL HAZARDS

The District is affected by a number of natural hazards. Parts of the urban area are particularly prone to flooding, while the coast and hill country are affected by land instability and erosion. The District is also dissected by fault lines and is vulnerable to sea level rise and tsunamis. The natural hazards occurring in the District have an impact on current and future development. They can cause loss of human life and significant damage to private property, roads and other District assets. They can also cause damage to the natural environment.

It is recognised that while a hazard may be present, the hazard potential is only realised when there are land use activities, buildings or structures and important natural values in the vicinity of the hazard. It is not possible to eliminate hazards, but it is possible to manage the location, design and operation of land use activities and hazardous facilities to avoid, remedy or mitigate the potential adverse effects of hazards on human life, property and the environment.

The Act requires both the regional and district councils to share management responsibility for the natural hazards of flooding, subsidence, seismic, volcanic and tsunami hazards, as well as for hazardous substances. The Regional Policy Statement defines the management responsibilities of local authorities for natural hazards and hazardous substances.

## 11.1 ISSUES

### 11.1.1 Variety of Natural Hazards

The District is affected by a number of natural hazards. The most significant ones are flooding, storms, tsunamis, erosion and earthquakes. Knowledge of the location and characteristics of natural hazards and their impacts on surrounding development and the environment is far from comprehensive. This along with lack of public awareness hinders the avoidance and mitigation of those hazards.

### 11.1.2 Inappropriate Land Use in Areas at Risk of Natural Hazards

Inappropriate land use and occupation of areas at risk from earthquake, flooding, ponding land instability can cause unnecessary risks for people and property.

### 11.1.3 Flood Hazard Risk

Much of the urban area of Whanganui is built upon the banks of the Whanganui River (Te Awa Tupua). Some of the lower lying areas towards the bottom of the catchment, along with some tributaries and

drains including Churton Creek and the Matarawa Stream, are prone to occasional flooding putting people, property and infrastructure at risk.

## **11.2 OBJECTIVES**

### **11.2.1 Informed Community of Natural Hazard Risks**

A community informed about the potential risks of natural hazards to people and property in the District.

### **11.2.2 Avoiding and Mitigating Natural Hazards**

The risks of natural hazards through inappropriate subdivision and development are avoided or mitigated whilst minimising adverse effects on natural, cultural and ecological values.

### **11.2.3 Riverfront Development**

To ensure that development of the Whanganui riverfront recognises and mitigates against the potential flood hazard from the Whanganui River.

### **11.2.4 Floodwater Inundation**

Minimise the risk to people, property and infrastructure from floodwater inundation.

## **11.3 POLICIES**

### **11.3.1 Promote Improved Understanding of Natural Hazards**

Promote improved understanding of natural hazards as development constraints and better knowledge and awareness of the risks to people and property in the District.

### **11.3.2 Protection from Natural Hazards**

Avoid or minimise risk of loss of life or injury or environmental damage due to use or development in hazard prone areas.

### **11.3.3 Natural Hazard Precautionary Approach**

Adopt a precautionary approach in relation to use or development affected by potential natural hazards, especially where hazards are not well understood or the effects of natural processes are difficult to assess or where the effect of activities on natural hazards are not well understood.

### **11.3.4 Geotechnical Report**

In assessing resource consents Council will require confirmation, including as appropriate the preparation of a geotechnical report, as to the suitability of the site for subdivision, use or development and that the effects of the hazard shall be avoided, remedied, mitigated.

### **11.3.5 Land Instability**

Identify areas susceptible to land instability where assessment of the hazard risk is required before land use or subdivision activities are carried out. Where there is an unacceptable geotechnical risk consent shall be declined.

### **11.3.6 Floodwaters**

In designing earthworks or roadworks any adverse effects of diverting floodwaters should be avoided, remedied or mitigated.

### **11.3.7 Flood Mitigation in the Arts and Commerce and Riverfront Zones**

Utilise alternative flood hazard mitigation techniques in the Arts and Commerce and Riverfront Zones.

### **11.3.8 Adopt a 1 in 200 Year Flood Level**

Subdivision and land use development must be managed in any area identified as being inundated in a 1 in 200 year flood event.

### **11.3.9 New Buildings in Flood Prone Areas**

Avoid the erection of new buildings in areas of higher probability of floodwater inundation (Area A) where this may induce or accelerate the impacts of flooding on people and property.

### **11.3.10 Reduce Risk to Existing Buildings**

Reduce the impacts of floodwater inundation in flood prone areas, by requiring that alterations or additions to existing buildings and structures adopt resilient building methods.

### **11.3.11 Hazard Mitigation**

Mitigate flood hazard impacts associated with the erection of new buildings and structures in areas of moderate probability of flood water inundation (Area B).

### **11.3.12 New Allotments in Floodable Areas**

Avoid subdivision which creates new allotments on sites where future development may increase the exposure of people and property to inundation from a 1 in 200 year flood event.

### **11.3.13 Critical Infrastructure in Floodable Areas**

Avoid the establishment of new critical infrastructure in the Flood Hazard Overlay unless there is satisfactory evidence to show that critical infrastructure;

- a. Will not be adversely affected by a 1 in 200 year flood event

- b. Will not cause any adverse effects on the environment in the event of a flood
- c. Is unlikely to cause a significant increase in the scale or intensity in the event of a flood
- d. Cannot be reasonably located in an alternative location

It is accepted that there are telecommunication facilities such as overhead or underground cables or masts, that can be sited in flood hazard areas without undue risk to the equipment and community or adverse effects on the environment in the event of a flood, and provision for these facilities has been included accordingly.

## 11.4 RULES - LAND STABILITY ASSESSMENT AREAS

This section contains the rules that apply to future activities in the Land Stability Assessment Areas, which covers areas of land instability in the urban area of Whanganui. There are two 'Land Stability Assessment Areas'. Area A are areas identified as having high to very high landslide hazard risk, and Area B are areas identified as having moderate landslide hazard risk.

Investigation of the extent of the land in the District at risk of land slip has identified a list of areas which are priorities for further study. These areas have been examined to identify the extent of susceptibility to land instability hazards. These hazard prone areas have been incorporated into the Land Stability Assessment Areas overlay

The investigations do not consider existing structures, rather the focus is on the underlying geology and data of historic landslides as a guide to potential risks of future land instability.

Existing lawfully established structures are assumed to be fit for purpose. The application of the overlay to particular properties does not diminish the suitability of existing structures for habitation or use. Rather the focus of regulation of activities in the LSAA overlay is to ensure that any future land disturbance activities are managed appropriately to avoid any increased risk to people or property in the wider vicinity.

Ten areas have been investigated and the following reports prepared:

- Hillside Stability Study – Anzac Parade/Putiki Drive, June 2011;
- Shakespeare Cliff, Whanganui – Building Line Restriction, Amended Report , November 2012.
- Land Stability Assessment Areas – Ikitara Road, Bastia Hill and Durie Hill, Risk Study Report, May 2014

- Land Stability Assessment Areas – Mowhanau and Roberts-Paterson, Risk Study Report, July 2015
- Land Stability Assessment Areas – Parkdale/Christies Hill/Virginia Road, Putiki and Marybank, Victoria Park, Denby Place, extension of Durie Hill Study Area, extension of Anzac Parade Study Area Risk Study Report, September 2018

The potential risks to people and property resulting from any future development in these areas will be managed through the Plan to achieve sustainable management.

In the Land Stability Assessment Areas instability and damage may occur from natural erosion processes or from activities which are incompatible with the soft rock of these escarpments. These erosive processes may lead to slips and consequent loss of property and landscape.

The purpose of the Land Stability Assessment Area is to recognise its potentially hazardous characteristics and ensure that effects from incompatible activities causing or accelerating natural erosion, are avoided or mitigated.

#### **11.4.1 Permitted Activities**

The following are permitted activities:

- a. Any activity permitted in an underlying zone and not excluded by Rules 11.4.2, 11.4.3, 11.4.4 or 11.4.5.
- b. Maintenance and minor upgrading of existing network utility facilities (excluding excavation or trenching).

#### **11.4.2 Controlled Activities**

The following are controlled activities provided performance standard 11.5.1 is complied with:

- a. Excavation, construction, alteration or modification to any structure or retaining wall.

Council retains control over:

- i. Implementation of conditions to ensure that the excavation and construction, alteration or modification to any structure or retaining wall does not worsen or accelerate the risk of land instability on the site or surrounding area.
- b. Network utilities involving excavation, trenching or construction to any structure or retaining wall.

Council retains control over:

- i. Implementation of conditions to ensure that the excavation and construction of any structure or retaining wall does not worsen

or accelerate the risk of or level of erosion on the site or surrounding area.

- c. Vegetation clearance (greater than 5m<sup>2</sup> area annually).

Council retains control over:

- i. Implementation of conditions to ensure that the activity does not worsen or accelerate the risk of or level of erosion on the site or surrounding area.

### **11.4.3 Restricted Discretionary Activities**

The following are restricted discretionary activities provided performance standard 11.5.1 is complied with:

- a. Any restricted discretionary activity in an underlying zone and not excluded by Rules 11.4.4 or 11.4.5.

Council restricts its discretion to the matters identified in the underlying Zone for the proposed activity and to:

- i. Whether the activity contributes to land instability.
- b. Subdivision for boundary adjustment where no additional building platforms are created.

Council restricts its discretion to the matters identified in the underlying zone for the proposed activity (this includes the matters Council has limited its control to for subdivision in the Outer Commercial Zone) where applicable and to:

- i. Whether the subdivision contributes to land instability.

### **11.4.4 Discretionary Activities**

The following are discretionary activities:

- a. Any discretionary activity in an underlying zone not excluded by Rule 11.4.5;
- b. Subdivision where additional building platforms are created in Area B and where Rule 11.5.1 is complied with; or
- c. Vegetation clearance (greater than 5m<sup>2</sup> area annually), where Rule 11.5.1 is not complied with.

### **11.4.5 Non-Complying Activities**

The following are non-complying activities:

- a. Excavation where Rule 11.5.1 is not complied with;
- b. Subdivision where additional building platforms are created in Area A, or where Rule 11.5.1 is not complied with for sites in Area B;

- c Construction, alteration or modification of any structure or retaining wall where Rule 11.5.1 is not complied with;
- d Network utilities involving excavation, trenching or construction of any structure or retaining wall where Rule 11.5.1 is not complied with; or
- e. Any other activity which is not provided for as a permitted, controlled or discretionary activity.

## **11.5 PERFORMANCE STANDARDS – Land Stability Assessment Areas**

### **11.5.1 Geotechnical Report**

Where required by rules 11.4.2, 11.4.3, 11.4.4 or 11.4.5, the person proposing to undertake the activity shall provide Council with a report from a suitably qualified and experienced geotechnical engineer, prior to commencement of any works onsite. Council shall consider this rule is complied with where the report confirms that:

1. The risk of the activity is no more than low, using the qualitative risk assessment process described in 'Practice Note Guidelines for Landslide Risk Management 2007' (Australian Geomechanics Society, 2007); and
2. Associated works will not worsen or accelerate land instability on the site or surrounding area.

Note: Council shall maintain a list of suitably qualified and experienced geotechnical engineers.

## **11.6 RULES – FLOOD HAZARD OVERLAY**

### **11.6.1 Permitted Activities**

The following are permitted activities (excluding sites in the Arts and Commerce Zone and Riverfront Zone) provided they comply with performance standards 11.7.1 – 11.7.3:

- a. Earthworks (provided they comply with Chapter 14);
- b. Building maintenance and minor works;
- c. Minor upgrades to infrastructure; and
- d. New infrastructure (excluding critical infrastructure) including buildings up to 5m<sup>2</sup> gross floor area.

### **11.6.2 Restricted Discretionary Activities**

The following are restricted discretionary activities (excluding sites in the



Arts and Commerce Zone and Riverfront Zone) provided they comply with performance standards 11.7.1 – 11.7.3:

- a. New buildings and structures in Flood Risk Area B;
- b. Additions and alterations to existing buildings; and
- c. Subdivision to create boundary adjustments or conversion of leasehold to freehold titles.

Council's discretion is restricted to:

- i. The establishment of a suitable finished floor or ground level after allowing for freeboard above the 200 year flood level on the subject site;
- ii. The provision of, and ability to, achieve safe access/egress;
- iii. In addition to establishing a finished floor or ground level in (i) above, the requirement for, and use of, resilient building methods that provide resilience for up to a 1 in 200 year flood event; and
- iv. The avoidance of significant diversion of flood flows as a result of the development.

**Note:** For the purposes of this rule, buildings or structures associated with infrastructure are excluded.

### **11.6.3 Discretionary Activities**

The following are discretionary activities (excluding sites in the Arts and Commerce Zone and Riverfront Zone):

- a. New critical infrastructure and works to critical infrastructure not provided for as permitted or restricted discretionary activities; and
- b. Earthworks that do not comply with performance standard 11.7.3.

### **11.6.4 Non-Complying Activities**

The following are non-complying activities (excluding sites in the Arts and Commerce Zone and Riverfront Zone):

- a. Subdivision, excluding boundary adjustments or conversion of leasehold to freehold titles;
- b. New buildings and structures in Flood Risk Area A; and
- c. New buildings and structures and additions to existing buildings and structures that do not comply with performance standard 11.7.2.

**Note:** For the purposes of this rule, buildings or structures associated with

infrastructure are excluded.

## **11.7 PERFORMANCE STANDARDS– Flood Hazard**

**11.7.1** In the Arts and Commerce Zone and Riverfront Zone, structures shall be required to meet the following:

New buildings and additions to buildings are required to be designed and constructed to either:

- a. Be protected from inundation; or
- b. Be able to recover efficiently following inundation.

**11.7.2** For all new buildings or additions to existing buildings, the following minimum freeboard level above the 0.5% AEP (200 year event) shall be required:

- a. 0.5 metres for occupied buildings, AND
- b. 0.2 metres for non-habitable buildings
- c. No freeboard will be required for
  - i. carports and other similar non-enclosed structures, and,
  - ii. infrastructure where inundation by floodwater in a 200 year event will not adversely affect the level of service provided.

### **11.7.3 Earthworks**

Earthworks shall not alter the existing ground level in a manner that diverts flood flows or adversely affects channel capacity.

## **11.8 RULES – KAI IWI COASTAL HAZARD OVERLAY**

This section contains the rules that apply to activities in the Kai Iwi Coastal Hazard Overlay which applies to land along the coast at Kai Iwi. The Kai Iwi Coastal Hazard Overlay comprises three areas: Kai Iwi Extreme Risk Area; Kai Iwi High to Moderate Risk Area; and Kai Iwi Safety Buffer Area.

The Kai Iwi Coastal Hazard Overlay stems from the knowledge that it is not possible to control the occurrence of natural hazards, however it is possible to reduce the hazard potential to protect human life, property and the environment.

The potential for coastal erosion in some coastal areas is severe. At Mowhanau, the cliffs have been subject to significant erosion.

The reduction of hazard potential needs to address:

- The location and operation of new land use activities in areas affected by natural hazards;
- Protection of existing developments in high risk areas; and
- Land instability.

Traditionally there is a reluctance to identify and recognise hazards as development constraints as there is concern that the identification will alarm people and reduce the value of properties. However, not recognising the presence of hazards can also lead to increased risks of environmental damage, property damage or loss of life.

The purpose of the Kai Iwi Coastal Hazard Overlay is to recognise the coastal landslip hazard risk at Kai Iwi and to ensure that any future development in this area occurs in a way that minimises risks to both people and property.

#### **11.8.1 Application of Rules**

The rules in this section apply where structures in the Kai Iwi Coastal Hazard Overlay are being constructed, extended or altered or when earthworks or subdivision of land is proposed.

The rules in this section apply in addition to all the rules which apply in the underlying zone.

#### **11.8.2 Precedence of Rules**

Where there is a conflict between rules of the underlying zone and the rules of this overlay, the more stringent activity status applies.

#### **11.8.3 Permitted Activities**

Any activity other than a prohibited, controlled or discretionary activity is permitted in the Kai Iwi Coastal Hazard Overlay subject to the provisions of the underlying zone.

#### **11.8.4 Controlled Activities**

The following are controlled activities in the Kai Iwi Coastal Hazard Overlay:

- a. Subdivision for the purpose of minor boundary adjustments and alterations or vesting of reserves.

Refer to Section 13 for subdivision performance standards.

#### **11.8.5 Restricted Discretionary Activities**

The following are restricted discretionary activities:

- a. Erection of any building or structure in the Safety Buffer Area;
- b. Erection of any non-habitable building or structure in the High to Moderate Risk Area;
- c. Extension/alteration to any building or structure in the Safety Buffer or High to Moderate Risk Area;
- d. Demolition of a building or structure in the High to Moderate Risk Area;

- e. Earthworks or vegetation clearance;
- f. Subdivision of land in the Safety Buffer Area or partly in the High to Moderate Risk Area other than allowed by a controlled activity for the Kai Iwi Coastal Hazard Overlay;
- g. The installation, alteration or removal of works designed to mitigate the effects of coastal hazards;
- h. The erection, maintenance or construction of any network utility in the Safety Buffer Area and the High to Moderate Risk Area.

Council's discretion is restricted to:

- i. Whether the proposal would be consistent with the objectives and policies relating to the Natural Hazard Potential as set out in Chapter 11;
- ii. The extent to which activities and buildings and structures can be relocated or demolished with minimal disturbance to the site or adjacent site;
- iii. The degree to which the proposal is likely to:
  - Accelerate, worsen or result in further damage to that land, other land, or structures or buildings caused either directly or indirectly by erosion;
  - Be subject to erosion or cliff failure;
  - Reduce the net risk of coastal hazards;
  - Provide for the disposal of stormwater and wastewater including discharges from septic tanks; and
- iv. Whether, in the High-Moderate Risk Area or Safety Buffer Area, consent should be granted for a limited duration.

#### **11.8.6 Prohibited Activities**

The following are prohibited activities for which no resource consent shall be granted:

- a. The erection of or extension to, any building or structure other than structures for coastal management in the Extreme Risk Area;
- b. Erection of any occupied building or structure in the High to Moderate Risk Area;
- c. Subdivision of land in the Extreme Risk Area or wholly within the High to Moderate Risk Area, other than allowed by controlled activity for the Kai Iwi Coastal Hazard Overlay;
- d. Installation of septic tanks or soakage pits in the High to Moderate Risk Area and the Extreme Risk Area;

e. Construction of any new network utility in the Extreme Risk Area.

Note: Consents may also be required from the Manawatu-Wanganui Regional Council for activities involving soil disturbance or vegetation clearance.