

9 NATURAL HAZARDS

9.1 INTRODUCTION

Natural hazards are those atmospheric, earth or water related occurrences which pose a potentially adverse effect on human life, property or other aspects of the environment. Within the Grey District these include; flooding, coastal erosion, [land](#) instability and seismic hazard. Natural hazards can also be taken to include the outcome of human induced hazards such as a poorly constructed dam or unconsolidated landfill.

The [Council's](#) function under **Section 31** of the [Act](#), is to control any actual or potential effects of the use, development or protection of [land](#), including for the purpose of avoiding or mitigating natural hazards. Therefore, it is not [Council's](#) role to reduce the probability of a natural hazard event occurring, rather it is the responsibility of [Council](#) to ensure that the effects of such an event are minimised.

In view of the historical building patterns on the West Coast, much of the district's population is in close proximity to natural hazard prone areas (flood prone areas, steep hillsides, adjacent to the main divide, etc). Such development is therefore particularly at risk to the effects of a natural hazard event.

The West Coast Regional Council has provided the following information for natural hazards specific to Grey District:

1. **Flooding:** Within the Grey River catchment, much of the settlement of Greymouth, farmland up the Grey valley and the lower reaches of its tributaries, farmland south and east of Lake Brunner, and around Flagstaff Flat and Lake Haupiri in the upper catchment. The flood hazard maps published by the West Coast Regional Council give an indication of the areas known to have flooded.
2. **Coastal Erosion:** Long-term erosion of between 0.6m and 3.5m annually, north of the Grey River and particularly high on the Barrytown Flats and at Cobden and Rapahoe. Harbour and river mouth works have resulted in sediment accumulation or accretion south of the Grey River mouth, although localised erosion still occurs (19m in late 1980's - early 1990's at Karoro). Protection against erosion and sea level rise can be provided by "natural systems" in particular the gravel beach ridges along the Greymouth Coast and the hard rock shores of the District.
3. **Land Instability:** An assessment of [land](#) suitability for urban development based on its inherent stability has been undertaken for the hills behind Greymouth and Cobden. Heavy rainfalls, a lack of protection by vegetation and steep topography (over 12°) are major factors influencing [land](#) instability and erosion. Extensive areas of potentially unstable [land](#) arise from mining operations where unconsolidated material has been spread back into mined areas.
4. **Seismic Activity:** The Grey District is situated adjacent to the Alpine Fault. The most active part of the Fault is the central section, which forms the western boundary of the Southern Alps from Haast to the Taramakau River at Inchbonnie. Further north the fault becomes progressively less active as movement is transferred to numerous branch faults within Marlborough. The next Alpine Fault earthquake is likely to produce very strong shaking in locations close to the Southern Alps. Greymouth will also be strongly shaken. Other faultlines in the District are generally more remote

from human settlement, including to the east of Hohonu Range and in the Paparoas, although it is noted the Paparoas commence immediately north of Greymouth.

Additionally, [land](#) may be particularly susceptible to natural hazard events that have been altered in the past by human activity such as underground mines.

It is anticipated that the threat of certain natural hazards will accentuate under changing climatic conditions. An example of this is potential sea level rise that may result in a requirement to amend policies and rules.

9.2 ISSUES

1. Natural hazards such as flooding, storm surge, tsunami, coastal erosion, landslides, subsidence and earthquakes are natural phenomena that have the potential to compromise human safety and place property, infrastructure, and the natural environment at risk of damage.

The District is a relatively dynamic landscape with potential hazards existing in various situations throughout the District. These hazards have the potential to impact on landowners and development.

9.3 OBJECTIVE

1. The adverse effects of natural hazards on people, property and the environment are avoided, or mitigated.

9.4 POLICIES

1. To adopt an integrated approach to minimising the potential adverse effects of natural hazards on the community.
2. To gather and make available information regarding natural hazards to assist resource management decisions.
3. Development should not occur in areas that are prone to natural hazards, unless the applicant has shown adequate avoidance or mitigation of natural hazards.
4. An assessment by an appropriately qualified person will be required, where appropriate, for resource consent applications.

9.4.1 EXPLANATION AND REASONS

[Council](#) is under an obligation in terms of the [Act](#) to avoid or mitigate the effects of natural hazards which are prevalent in the District. The Regional Policy Statement, Regional Plans (such as the Coastal Plan) and the New Zealand Coastal Policy Statement (coastal hazards only) also contain provisions on natural hazards.

The policy of adopting an integrated approach recognises the natural and long-term effects of natural hazards and ensures the best defence against potential adverse effects. Another aspect of the integrated approach to natural hazards is enhanced cooperation and liaison between the West Coast Regional Council and the Grey District Council. This should provide additional knowledge and information on natural hazards for the District which can be made

available to property owners and developers so that they are informed of the natural hazard risks relating to a [site](#).

Council does not consider it reasonable to apply an arbitrary ban on activities within areas identified as being prone to natural hazards, although it is considered necessary to control some forms of development unless adequate precautions have been provided by the developer. The first priority, is to avoid potential hazards and if avoidance is unrealistic, then mitigation of the adverse effects of such hazards is required.

9.5 IMPLEMENTATION METHODS

1. **Land** use and subdivision consent applications will require an assessment of natural hazards by an appropriately qualified person as part of the resource consent process where natural hazards are a risk.
2. Where risk from natural hazards can be mitigated, conditions will be imposed on consents and in the case of subdivision, notices will be placed on the certificate of title where appropriate.
3. In terms of building consent under the Building Act, **Council** will require a certificate from a suitably qualified person when a potential problem with a natural hazard is identified, so it can be shown that it can be adequately avoided, remedied or mitigated.
4. Provision of information through Land Information Memoranda (LIM) and Project Information Memoranda (PIM) to those who will potentially use, develop or protect [land](#).
5. Develop, maintain and make available a hazards register to provide information to the public, including the monitoring of sea level rise and coastal shoreline changes, as provided by the Regional Council.
6. Develop on-going consultation and liaison with the West Coast Regional Council in order to provide for enhanced natural hazard cooperation between councils, including the provision of a hazards register.
7. Where appropriate regulate by rules in the District Plan and Regional Plans.

9.5.1 REASONS

Where [land](#) use, subdivision and building consents are applied for, an assessment of natural hazards must form part of the application and if necessary shall be undertaken by a qualified person. This is considered appropriate given the dearth of readily available information. **Council** is able to impose conditions on these consents addressing the effects of natural hazards or in the alternative refuse to grant or issue the consent.

Information is also an important method and this can be obtained from a hazards register developed by the District and Regional Councils and disseminated through documents such as LIMs and PIMs. Effects arising from sea level rise are not known with any certainty at this stage and will therefore continue to be monitored to enable a change to the Plan if necessary. The District Plan contains a rule which requires assessment of [buildings](#) within 100m of the coast which will allow an assessment of natural hazards. Some of the regional plans such as the Regional Coastal Plan and Soil Conservation and Erosion Control Plan

also contain rules to manage activities that could potentially exacerbate the adverse effects of natural hazards.

9.6 ENVIRONMENTAL RESULTS ANTICIPATED AND MONITORING

Anticipated Environmental Results	Monitoring and Review Data
<ul style="list-style-type: none"> • Increased understanding and enhanced decision making, of the threat posed by natural hazards. 	<ul style="list-style-type: none"> • Gathering and dissemination of information about natural hazards • Improved decision making when natural hazards are involved
<ul style="list-style-type: none"> • Land use, subdivision and development applications will be assessed against the possibility of being affected by natural hazards. 	<ul style="list-style-type: none"> • Resource consent process - compliance with conditions etc. • Building Act requirements