14 NATURAL HAZARDS

14.1 Background

The particular geology, hydrology and topography of the Hutt Valley make Upper Hutt vulnerable to a variety of natural hazards. Earthquakes and flooding are the most important natural hazards that threaten Upper Hutt's communities.

Natural hazards cannot be prevented, but the effects they have on people and the environment can be mitigated. Flood protection measures and land use planning are two ways to minimise risks.

The Council's function is to manage the actual and potential effects of the use, development or protection of land. This includes the use of controls to avoid, remedy, or mitigate the effects of natural hazards.

14.2 Resource Management Issues

14.2.1 *The potential damage, disruption and threats to the safety of the community and property as a result of activities located on or near an area prone to seismic hazard.*

Within Upper Hutt, the Wellington Fault occupies the north-western margin of the Upper Hutt/Te Marua basins. The north west side of the valley is the eroded fault scarp of the Wellington Fault. In many parts of Upper Hutt the exact location of the active fault is unknown. The level of accuracy ranges from +/-5m within Totara Park, to more than +/-50m between the Silverstream Bridge and south of Totara Park. The variation in accuracy is due to the lack of surface evidence like active faulting and other surface obstructions.

The adverse effects of earthquakes impact on both physical resources and people. Fault ruptures are the most obvious cause of damage but ground shaking is more widespread. The severity of the effect depends upon factors like distance from the fault, local topography, geological conditions and ground water conditions. Showing the active fault on the Planning Maps assists in identifying areas most likely to be affected by earthquakes.

A major earthquake in Upper Hutt is likely to damage resources and injure people. Buildings and infrastructure that straddle the fault may be severely damaged. The severity of damage in other areas of Upper Hutt will vary depending on the location. Conditions such as soil structure, ground water, and local topography as well as geological conditions will either attenuate or amplify the earthquake. There are also areas that may be prone to liquefaction and seismically induced slope failure.

14.2.2 ***Inappropriate development and activities located within floodplains that may result in damage to infrastructure and property and the obstruction of flood flow paths.***

Upper Hutt is dissected by several tributary rivers which flow into the main Hutt River.

The area most at risk is the Hutt River floodplain. Recognising this, the Wellington Regional Council has undertaken protection works, such as stopbanks and river bank stabilisation. These stopbanks run parallel to the developed urban area from Totara Park to Trentham Memorial Park. During a large flood the stopbanks may be breached, causing severe damage and disruption to the City. The stopbanks have a maximum design flood capacity so that it is possible in a significant flood event that they could be overtopped or a breach could occur causing significant damage and disruption to the City.

In addition, the Heretaunga Flood Detention Embankment and outlet control structure (referred to as the Heretaunga Retention Dam) has been designed to reduce the frequency and severity of flooding in the downstream urban areas along the Heretaunga Drain. A line defining the predicted maximum extent of ponding behind the Heretaunga Dam has been identified on the Planning Maps. So that the ponding capacity of the Heretaunga Dam is not compromised, earthworks, buildings or structures should not be undertaken within the area encompassed by the Retention Line as shown on the Planning Maps.

Subdivision in the rural areas is likely to increase the potential for development close to rivers and will require careful consideration.

Certain upstream activities can increase the frequency and magnitude of flood events. For example, removal of vegetation can result in increased water run off, sedimentation and debris blockages, thus creating significant risks.

14.2.3 ***The need for on-going river management activities and development of flood protection works along the Hutt River.***

The Hutt River's water levels are subject to wide and sudden fluctuations. In order to avoid, remedy or mitigate the potential adverse effects of inundation, there is a need to manage activities on and near the Hutt River, and to provide for flood protection work.

14.3 Objective

14.3.1 ***The avoidance, remedying or mitigation of the adverse effects of natural hazards on the environment.***

The Council has the responsibility under the Act to protect all aspects of the environment, not just people and property, from the adverse effects of natural hazards. Amenity values of an area and its ecological systems should also be protected against natural hazards.

It is not always feasible or practicable to avoid, remedy, or mitigate all potential effects of natural hazards at all times for all aspects of the environment. Some priority must be placed on human life and property, but preferably this can be achieved in conjunction with achieving other goals. The goal in managing the effects of natural hazards within the City, therefore, is the avoidance, remedying or mitigation of the adverse effects of natural hazards on the environment as appropriate to the circumstances, with priority on community protection.

14.4 Policies

14.4.1 ***To identify and mitigate the potential adverse effects of natural hazards that are a potentially significant threat within Upper Hutt.***

Adequate information is necessary to make informed decisions on developments that may be affected by natural hazards. The main objective relating to natural hazards is knowing where they can occur so that the effects can be avoided, or the appropriate management strategies can be put in place.

The Council will co-ordinate the provision of information identifying these hazards and the areas at risk. This can be used by developers, the community and the Council to consider the potential risks when making decisions on developments and deciding on possible mitigation measures where natural hazards are involved.

14.4.2 ***In areas of known susceptibility to natural hazards, activities and buildings are to be designed and located to avoid, remedy, or mitigate, where practicable, adverse effects of natural hazards on people, property and the environment.***

This policy lessens the risk factor by restricting developments in hazard prone areas. These controls include appropriate separation distances from a river or fault, or designing structures and site development to meet acceptable levels of safety. This also enables applicants to consider the potential risks when making decisions on developments.

The effects of permitting more intensive subdivision (and subsequent development and infrastructure) could be substantial and controls on subdivision can reduce these.

14.5 Methods

14.5.1 District Plan provisions consisting of the following:

1. Control of the location, and design of subdivisions through standards for subdivision and building design to avoid or mitigate the risk from natural hazards.
2. Management of the location and use of buildings in close proximity to earthquake faults and areas susceptible to inundation.
3. Restriction of activities and structures within the river berms of the Hutt River.
4. Management of activities involving the removal of vegetation and earthworks located on unstable slopes.
5. Information on Planning Maps. These indicate the type and extent of the flooding and fault band hazards.

14.5.2 To maintain an up-to-date Hazard Register which will record areas and sites of known or potential hazards. The information will be used in the building consent process, as well as for land information memoranda, project information memoranda, and resource consent processes.

14.5.3 Information on liquefaction and slope failure hazards, which is held by the Council, will be supplied to persons applying for land information memoranda and project information memoranda.

14.5.4 The use of section 36 of the Building Act 1991 and compliance with the New Zealand Building Code in the Council's building consent process for the structural safety of buildings to withstand wind, inundation, earthquakes and unstable ground.

14.5.5 The continued civil defence emergency management role of the Council, and its staff, under the relevant legislation.

14.6 Anticipated environmental results and monitoring

The following results are expected to be achieved by the objective, policies and methods in this Chapter. The means of monitoring whether this Plan achieves the anticipated results are also set out below.

Anticipated environmental results	Monitoring indicators	Data source
The avoidance, remedying, or mitigation of adverse environmental effects of natural hazards on communities, including mitigation measures in place in areas identified as being of high risk	Effectiveness of conditions of consents and methods used in managing adverse effects Development in areas subject to natural hazards Reduction of downstream effects caused by flooding events	Council complaints register Council resource consent records for compliance with conditions
Prevention of development which increases the level of risk in areas identified as being at high risk from natural hazards	Development in areas subject to natural hazards	Council and Wellington Regional Council records
Communities informed about, and prepared for, the occurrence of natural hazards	Consultation and community initiatives	Various