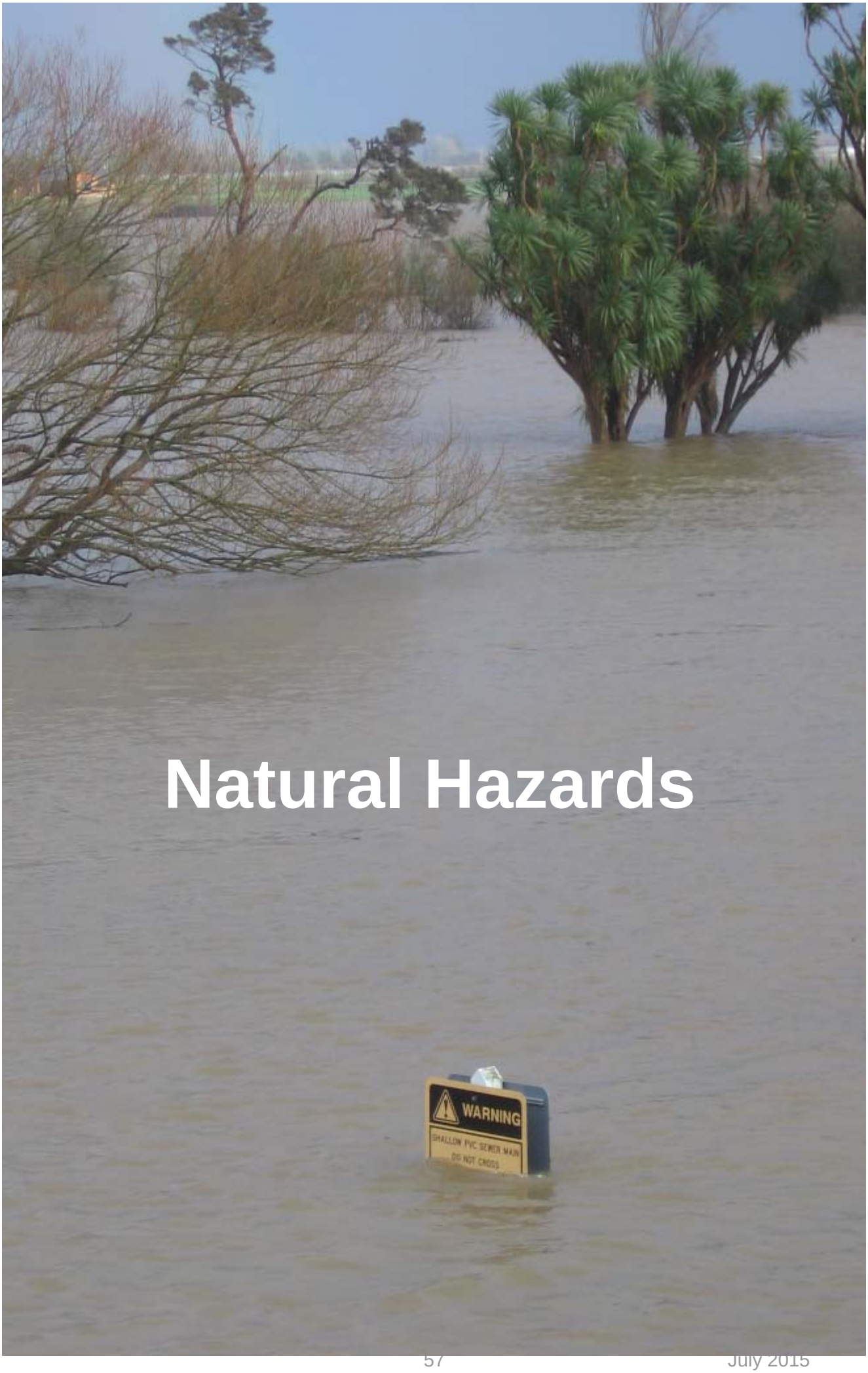


Natural Hazards

Natural Hazards

Key Issues

The District is subject to a wide range of natural hazards such as; flooding, forest fire, wind, earthquakes, volcanic activity, erosions, slips and landslides. The objectives in our District Plan attempt to ensure that development is discouraged in potentially hazardous areas for example, low lying areas close to major rivers. Is our District Plan achieving the anticipated environmental results?

Indicators

Te Aroha Flood 1985

Pressures

- Number of resource or building consents applied for/granted within flood protection area;
- Number of buildings within flood protection area;
- Number of buildings within identified fire buffer;
- Number of dwellings built on potentially unstable land (i.e. land classed as having a degree of erosion of two or greater and/or slopes of >20 degrees); and
- Number of resource or building consent applications applied for/granted for development on potentially unstable land.

State

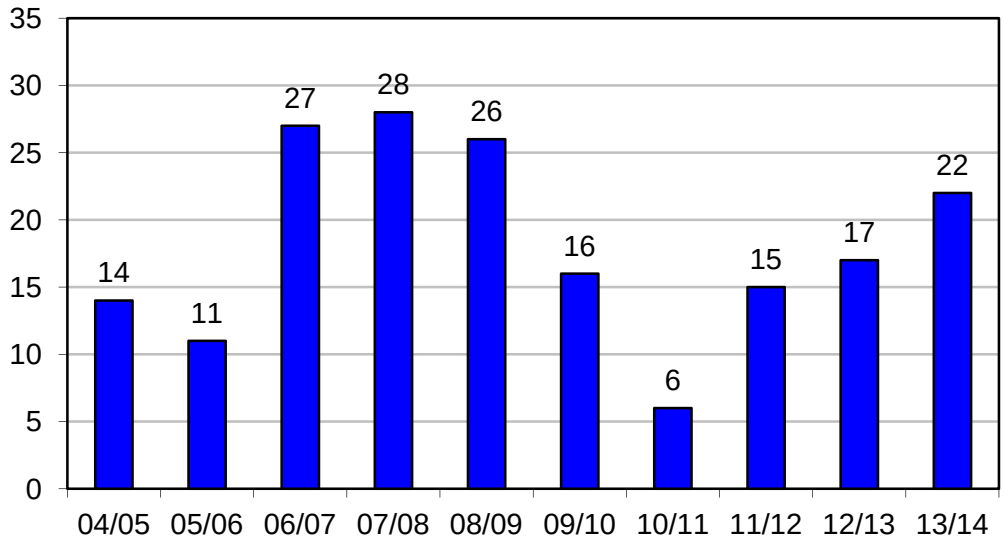
- Number and severity of flood events annually;
- Area of land subject to flooding;
- Number and area affected by rural fires annually;
- Area of vegetated and un-vegetated land classified as having a degree of erosion of two or greater;
- Area of headwater catchment in vegetation;
- Number and size of earthquakes recorded annually; and
- Annual damage ($) to public and private property.

Response

- Area of land identified on planning maps being subject to flooding;
- Amount of Council spending on resourcing rural fire fighting emergency services;
- Area of land being identified on planning maps as being subject to land instability;
- Number of resource and building consents declined in areas identified as being subject to flooding, fire or instability;
- Council expenditure on educating community about hazards; and
- Number of fire-fighting emergencies.

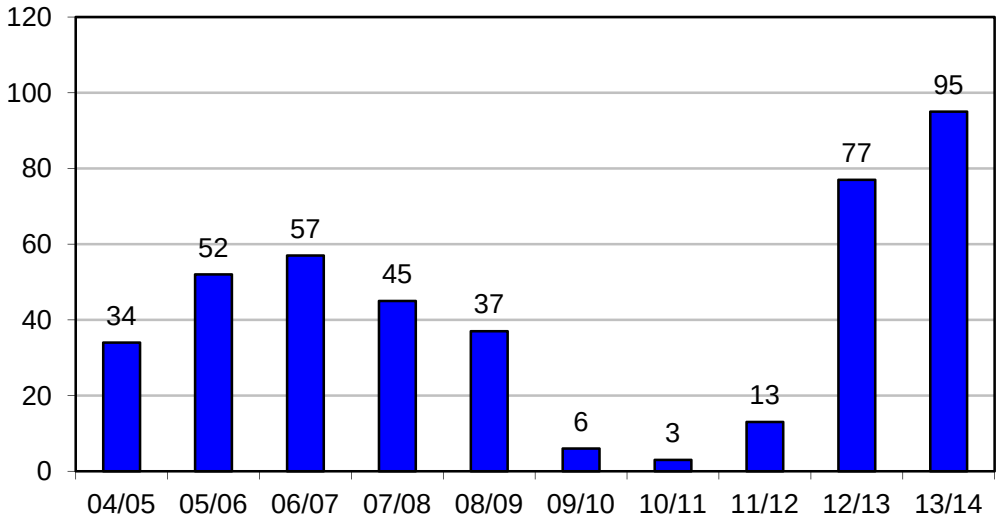
Results

Number of resource consents applied for within flood protection area



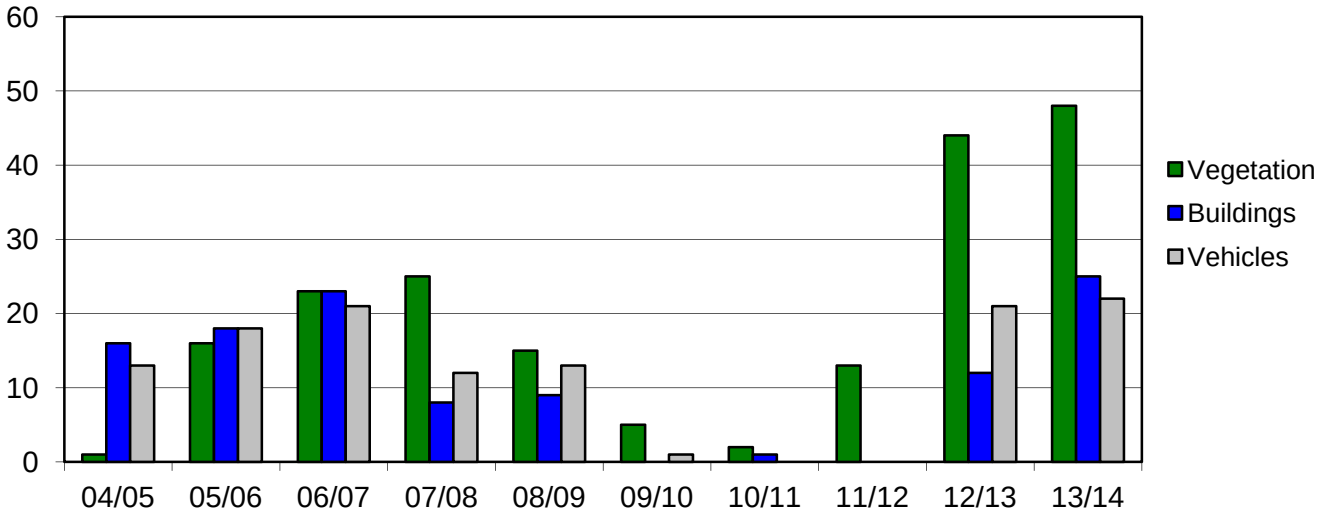
New developments in known hazard zones are potentially at high risk of being damaged by hazard events. From 2009/10 to 2013/14 a total of 76 resource consents have been applied for within the flood protection area in the District. All 76 consents were granted, subject to conditions to mitigate potential adverse effects. These consents were for activities such as building new garages, relocating dwellings, and upgrading buildings. This rise in figures post the 2010/11 financial year is likely due to the increase in building consents overall.

Number of rural fires



Rural fires are hazardous events that occur in the District. The number of rural fires in 2012/13 and 2013/14 was higher than in previous years, due to an increase in the number of vegetation fires.

Types of rural fires



Vegetation fires were the most common type of fires attended, while building and vehicle fires were less common. Even though the number of vegetation fires has increased in recent years, the area of vegetation affected by the fires has not increased significantly compared to previous years.

Area affected by rural fires	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14
Area of vegetation affected (ha)	0.25	0.75	8*	6	7*	3.25	0.5	0.04	3.5	3.0

*Approximate figure

Erosion can also be a potential problem on the steeper slopes of the District. According to data taken from the 1992 Regional Indigenous Vegetation Inventory, there is approximately 20,686 hectares of vegetated land classified as having severe erosion potential in the District.

Earthquakes occur infrequently within the District. For instance, during 2010/11 a total of 11 earthquakes ranging in magnitude from 1.6 – 3.5 occurred. In 2011/12 there were 9 earthquakes, and 10 earthquakes occurred in 2013/14.

Number of Earthquakes and their Magnitude	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14
Number of Earthquakes		6	2	1	0	2	11	9		10*
Magnitude of Earthquakes		3.8 3.5 3.3 3.1 3.1 3.0	3.0 2.9	2.6		2.6 2.8	3.5 3.4 3.3 3.1 2.5 2.5 2.4 2.1 2.0 1.8 1.6	3.4 2.8 2.5 2.5 2.2 2.2 2.2 2.0 1.9		Between 1-3*

Source: http://www.geonet.org.nz/

*Geonet now depicts earthquake information in map form over specified time periods so the numbers and magnitude of earthquakes is an approximate figure.

There are approximately 8,091 hectares of land that has been identified by Council as being at risk of flooding.

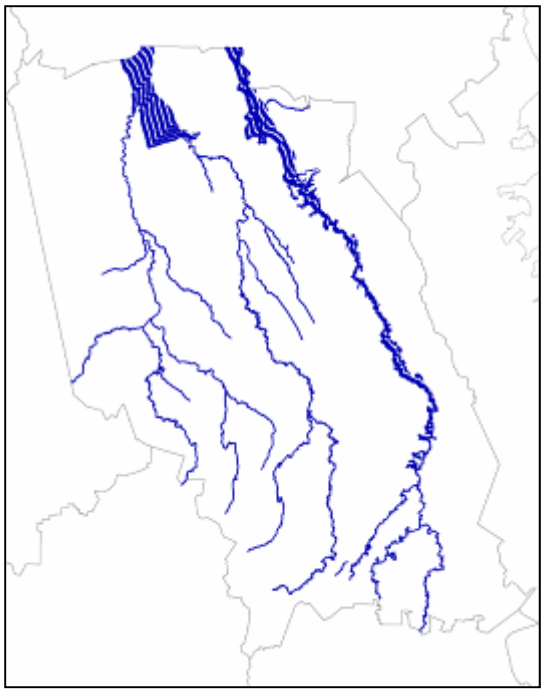
Potentially unstable land has also been identified as a hazard within the District Planning Maps. There are approximately 11.3 hectares of this land identified in the District.

Council spending on fire fighting	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14
Amount of Council spending ($)	52,000	68,058	58,214	99,563	78,648	155,459	175,178	172,193	110,310	218,156

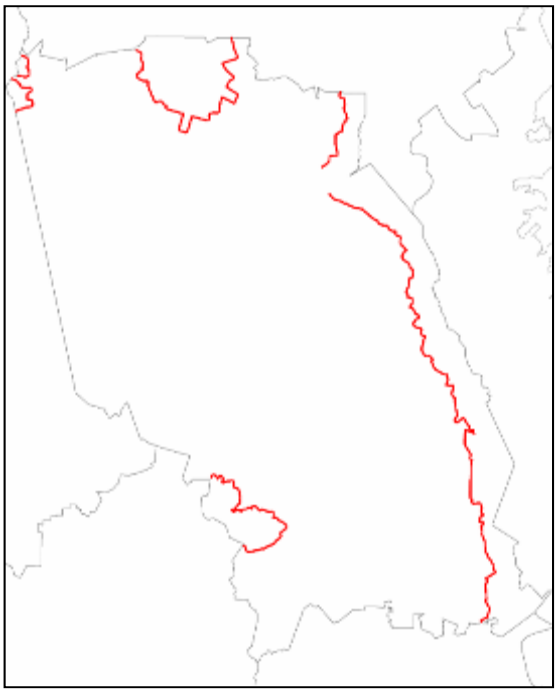
In 2007/08 Council purchased an extra rural fire engine. During the last five financial years (2009/10 – 2013/14) the Council spent, on average, approximately $170,000 per year on fire fighting.

In 2006/07 Council carried out an evaluation of earthquake prone buildings in accordance with the Earthquake Prone Buildings Policy.

During the period 2002/10 – 2013/14 no resource or building consents were declined on land subject to fire, flooding or instability.



Flood Hazards



Fire Hazard Buffer

Land Instability (Te Aroha township)

Land Instability (Morrinsville township)

Note: these are the only instability areas noted in the District Planning Maps

District Plan Provisions

Section 3.2.2 Natural Hazards

Flooding:

Objective:
- To minimise the risks of flooding affecting people and property in the district.

Policies:
- To ensure that all future development does not increase the flood risk for existing buildings and activities;
- To avoid building development below a known risk factor of 1% annual return flood levels.
- To ensure new developments and subdivision take cognisance of overland flow paths in their design to avoid adverse effects;
- To utilise public open space as natural floodways and ponding areas where this does not adversely affect protected natural environments and heritage features; and:
- To provide incentives to promote replanting and bush retention in catchment headwaters.

Anticipate Environmental Results:
- Negligible additional runoff from new development (typical performance measure: runoff calculations pre and post development should be similar);
- Concentration of building development above a 1% flood level risk (typical performance measure: building permits check);
- Establishment of identified flooding and ponding areas within public open space;
- Increase in extent of catchment headwater vegetation cover; and
- Negligible net increase in stormwater loads generated by development in flood prone areas.

Fire hazard:

Objective:
- To minimise fire hazard for people and property in the District.

Policies:
- To avoid new dwellings being erected in high risk bush and forest areas of the District; and
- To ensure that rural fire and emergency services are adequately resourced.

Wind Hazard:

Objective:
- To minimise wind hazards for people and property in the District.

Policies:
- To avoid new dwellings being erected in known, specific design wind risk areas such as exposed ridges or sites subject to known wind tunnelling effects; and
- To manage activities so as to avoid increasing wind erosion or hazard.

Anticipated Environmental Results:
- Concentration of building development away from high fire and wind hazard areas such as bush tracts, forested hill country and exposed ridges;
- No increase in the net cost of damage to persons and property through incidence of forest fire or severe wind events; and
- No new habitable development in known high flood, wind, forest fire or land stability risk areas where mitigation cannot be readily or economically achieved.

Land Movement:

Objective:
- To minimise hazards for people and property caused by erosion, slipping, slumping and land instability.

Policies:
- To ensure that future development does not aggravate instability or erosion problems;
- To avoid development in areas subject to high risk of land movement;
- To encourage WRC to provide incentives for bush retention and replanting of steep land and alongside erosion prone stream and river margins; and
- To encourage the retirement of high risk land to regeneration by covenant protection, public purchase and subdivision where feasible.

Anticipated Environmental Results:
- Concentration of building development away from high land movement hazard areas such as steep exposed land, soft sediments and along eroding waterway margins;
- No increase in the net cost of damage to persons and property through incidence of land movement;
- Increase in extent of bush regeneration and planting on erosion prone land.

Earthquake hazard

Objective:
- To minimise the risks of earthquakes affecting people and property in the District as far as practicable.

Policies:
- To take a precautionary approach to development in suspected risk areas until further information on the extent and nature of earthquake risk becomes available;
- To support initiatives aimed at designing and establishing public works and infrastructure which is more earthquake resistant; and
- To support initiatives for improved earthquake prediction and monitoring at district, regional and national levels.

Anticipated environmental results:
- Increased awareness of the extent of earthquake and volcanic hazard affecting the District.

Efficiency and Effectiveness

Are the District Plan's objectives and policies the most effective and efficient way to achieve the following anticipated environmental results?

- *Negligible additional runoff from new development (typical performance measure: runoff calculations pre and post development should be similar);*
- *Concentration of building development above a 1% flood level risk (typical performance measure: building permits check);*
- *Establishment of identified flooding and ponding areas within public open space;*
- *Increase in extent of catchment headwater vegetation cover;*
- *Negligible net increase in stormwater loads generated by development in flood prone areas;*
- *Concentration of building development away from high fire and wind hazard areas such as bush tracts, forested hill country and exposed ridges;*
- *No increase in the net cost of damage to persons and property through incidence of forest fire or severe wind events;*
- *No new habitable development in known high flood, wind, forest fire or land stability risk areas where mitigation cannot be readily or economically achieved;*
- *Concentration of building development away from high land movement hazard areas such as steep exposed land, soft sediments and along eroding waterway margins;*
- *No increase in the net cost of damage to persons and property through incidence of land movement;*
- *Increase in extent of bush regeneration and planting on erosion prone land; and:*
- *Increased awareness of the extent of earthquake and volcanic hazard affecting the District;*

The Matamata-Piako District is subject to a wide range of natural hazards. For areas with known or suspected hazards, the most effective control technique available involves the retention of Council discretion in order to control activities that occur in known hazards areas. The RMA obliges Council to address the cause and effects of natural hazards and avoid, remedy or mitigate the hazards.

There are approximately 8,091ha of land in the District that has been identified by Council as being at risk of flooding.

The objective '*to minimise the risk of flooding affecting people and property in the District*' is technically not being met as it is difficult to 'minimise' without extremely strong rules restricting or prohibiting further development on land subject to flooding. However, the number of buildings located within the flood zone depicted on the District Plan is seen to be relatively low as there are (as at July 2008) only 248 buildings. It is noted that the majority of these buildings are not dwellings.

New developments in known flood hazard zones are potentially at risk of being damaged by hazard events. Policies regarding flooding seek to avoid additional hazards by directing development away from known flood hazard areas. The efficiency and effectiveness of policies *'to ensure that all future development does not increase the flood risk for existing buildings and activities'* and *'to avoid building development below a known risk factor of 1% annual return flood levels'* is measured by the number of resource consents granted within flood protection areas.

This number has been increasing steadily post-2010/11. This is generally in line with the increase of the overall number of building consents applied for, as the District recovers from the global financial crises. Overall this number, although increasing, is considered to be relatively minor in terms of the overall amount of land in the District (182,500ha) and the amount of land recognised as a flood hazard, (8,091ha).

All consents which have been granted for development within the flood protection area have been subject to conditions to mitigate potential adverse effects. Some of these conditions imposed through subdivision include raising the land level, especially near major rivers. Where ground levels have been raised, it has not been reflected in the Planning Maps. Therefore these areas are still classed as “flood hazard areas” on the Planning Maps. This may need to be looked at in the future.

Plan Change 41 which is now operative, “locked” the MPDC Development Manual in, as an integral part of the District Plan. The Development Manual requires that additional runoff from new development be detained on site. Since the Development Manual has been finalised, all new development is required to have on-site stormwater detention.

Other external measures that affect flood management are:
- Council’s creation of water channels through the town of Te Aroha;
- Application of the Building Act 2004 s.71-74; and
- On-going works by the Regional Council in maintaining and upgrading flood protection structures within the Waihou Catchment have also contributed to a reduction in flood hazard risk.

The new Waikato Regional Policy Statement which is now essentially beyond challenge, provides additional guidance on the management of flood risk. The RMA requires district plans to give effect to an RPS once operative. Therefore, our District Plan will need to be reviewed in the foreseeable future, and changes made where necessary to give effect to the RPS provisions.

The forested areas of the Kaimai Ranges and western foothills represent both a valuable resource and a potential fire threat to the residents of Matamata-Piako. The rules and methods included in the Plan are intended to protect the forest resource from accidental fires caused by human activity and to provide a safety factor for homes and public buildings near forest areas should a fire occur. A fire hazard buffer has been drawn around those areas which are identified as "high risk areas". The line has been drawn a standard distance of 200m from the area to be protected.

The objective *‘to minimise fire hazard for people and property in the District’* is effectively achieved by the fire hazard buffer guiding development to lower risk areas. Forest fire is a natural phenomena with the potential hazard greatly exacerbated by human settlement patterns and activities. In particular, it is likely that fire hazard would significantly increase if intensified development is permitted in forested hill country areas, particularly the Kaimai Range.

The policy *‘to avoid new dwellings being erected in high risk bush and forest areas of the District’* is technically not being achieved as the term ‘to avoid’ implies that there should be no new dwellings at all. Perhaps a better term could be ‘to minimise’ development. Few resource consents have been granted for development within the fire hazard buffer. Where consents have been granted, these were generally not for dwellings. As the number of consents granted is reasonably small it is considered that the District Plan provisions are effective in controlling development within the fire risk area.

The policy ‘*to ensure that rural fire and emergency services are adequately resourced’* is effectively achieved through Council contributing money towards emergency fire fighting. It is however, acknowledged that this does not arise through particular rules in the Plan. Council’s financial contribution to fire fighting emergencies increased post-2008/09. This does not show whether the service is ‘adequately’ resourced. However, funding is provided by Council to contribute towards ensuring that rural fire and emergency services are resourced.

The number of rural fires generally increased post 2010/11. The main type of rural fire is vegetation fire, while building and vehicle fires occur less frequently. While the number of vegetation fires has increased, the area of vegetation affected has not increased significantly, when compared to previous years.

Wind hazard is a particular problem in areas adjacent to the Kaimai Ranges and in known wind tunnelling areas. Wind zones can be identified, with building standards and locations controlled according to the predicted level of risk. Due to Matamata-Piako's topographical features and particular weather phenomena, the District has a large amount of land in high, very high, and specific design wind zones. Wind zones are based on accepted national standards and provide the simplest technique for defining the relative degree of hazard for different geographical areas. Land defined as being in high or greater wind zones cover 45% of our District. A further 54.6% of the District is classified as being located within the medium wind zone, with only 4% being classed as low. This small area of wind zone identified as low, is predominantly over the towns of Matamata and Morrinsville.

The Building Act 2004 contains a range of provisions appropriate for wind hazard management in the District. To avoid confusion and unnecessary duplication, it is considered that the best approach is to use the provisions for wind hazard management and mitigation of the Building Act 2004, rather than directing development through methods in the District Plan.

We are not able to ascertain whether the AER *'concentration of building development away from high fire and wind hazard areas such as bush tracts, forested hill country and exposed ridges'* is being effectively achieved, as this is guided by the Building Act 2004 not the District Plan. Concentrating building development away from fire hazard areas is being effectively achieved due to the minimal development in these areas. Given that a resource consent is required to build within the fire hazard areas identified in the District Plan this may also encourage people to select building platforms outside this hazard area.

Hazards from slips, landslides and erosion are important concerns in the hill country of the District, particularly on the steep slopes of Mt Te Aroha and along the Kaimai Range. There are approximately 11.3ha of potentially unstable land in the District.

The most effective management technique available is to minimise development in high risk areas. Very few resource consents have been granted over the years for development on land identified as having a stability risk. Therefore, the objective *'to minimise hazards for people and property caused by erosion, slipping, slumping and land instability'* and the policies *'to ensure that future development does not aggravate instability or erosion problems'* and *'to avoid development in areas subject to high risk of land movement'*, are being effectively achieved.

Earthquake hazards from several parts of the central North Island need to be considered. These are natural phenomena but research is not sufficiently advanced to permit detailed land use management and planning controls to be implemented to mitigate against the risk of an earthquake or volcanic event.

Accordingly, it is appropriate that Council adopts a precautionary approach to development in suspected risk areas near fault lines or on unconsolidated ground until further work to quantify the extent of hazard is completed. Council should also support the various agency initiatives taking place to gain a better understanding of earthquake hazards. Although not part of the District Plan, the Building Act 2004 requires Council to adopt a policy on earthquake prone, dangerous and insanitary buildings. Council's policy was adopted in 2006 and reviewed in 2011.

The policy classifies buildings within the District into risk categories. It requires owners of buildings with a high, moderate or low risk in a moderate earthquake, to undertake engineering assessments. If the assessment deems the building to be earthquake prone then Council will require strengthening or demolition of the building.

Overall the objectives and policies are working relatively well to achieve the AERs when considering alternatives. If we had strong rules completely restricting development in any known hazard zones this could prevent all development including accessory buildings such as barns, which may be appropriate in some locations. If we were to do nothing, for example not identify known hazard zones which guides development, then people's lives and property could be at risk. The resource consent process is an efficient way of achieving the AERs with the ability to place consent conditions on resource consents to avoid, remedy or mitigate effects.

It is acknowledged that it is not solely the District Plan that contributes to guiding development. Changing perceptions of hazards as well as restrictions on house and contents insurance, also contribute to guiding development away from hazardous areas.

Summary

Anticipated Environmental Results **Natural Hazards**	**Achieved?** ☺ - Achieving → - Progress towards achievement ☹ - Not achieving ? - Not monitored
Negligible additional runoff from new development	?
Concentration of building development above a 1% flood level risk	☺
Establishment of identified flooding and ponding areas within public open space	?
Increase in extent of catchment headwater vegetation cover	?
Negligible net increase in stormwater loads generated by development in flood prone areas	☺
Concentration of building development away from high fire and wind hazard areas such as bush tracts, forested hill country and exposed ridges	☺
No increase in the net cost of damage to persons and property through incidence of forest fire or severe wind events	?
No new habitable development in known high flood, wind, forest fire or land stability risk areas where mitigation cannot be readily or economically achieved	→
Concentration of building development away from high land movement hazard areas such as steep exposed land, soft sediments and along eroding waterway margins	→
No increase in the nett cost of damage to persons and property through incidence of land movement	?
Increase in extent of bush regeneration and planting on erosion prone land	?
Increased awareness of the extent of earthquake and volcanic hazard affecting the district	?