SECTION 8 – NATURAL HAZARDS

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8 NATURAL HAZARDS

8.1 Introduction

The term natural hazards covers situations where water, air and ground movement have the potential to adversely affect human life and property. They can also have adverse **effect**s upon structural assets and the natural values of areas. The hazards most relevant to the Manawatu District are flooding, earthquakes, land slippage, coastal erosion/deposition and tsunamis (tidal waves). Events such as storms, tornadoes, and volcanic ash showers may also happen, but land use planning could do little to reduce their **effect**s. The potential threats to the Manawatu District are outlined more fully in the **Council**'s Civil Defence Plan.

The first way of reducing adverse **effect**s on people, property and natural values from hazard events is to reduce the severity of the event itself, for example by planting stream catchments to reduce the speed of water runoff. The second is to avoid damage by keeping residents and development away from the hazard. The third method is to try and modify the **effect**s of the hazard, e.g. by constructing stopbanks to confine floodwaters.

When it comes to hazard avoidance, the level of risk determines the amount of development which is "acceptable". For example most people would agree that houses should not be built in places which flood every year, but the risk may be acceptable on a property which is flooded every two hundred years.

8.2 Objectives, Policies And Methods

Objectives

NH 1) To reduce the potential impact of natural hazard events, where these events represent a significant risk to human health and safety, to natural values or to property due to their potential severity and likelihood of occurrence.

NH 2) To avoid development which would adversely affect people's health and safety including by placing unnecessary demands upon response agencies, including Civil Defence, during and after a hazard event.

(Issues 8 and 9) (Refer also: Objectives S 6 and S 8).

Policies

a) To help improve the level of knowledge about the District's natural hazards, particularly amongst those at risk.

b) To take the potential **effect**s of tsunamis, coastal erosion / deposition processes, and the possibility of sea level rise into account when planning for the beach settlements and coastal areas.

c) To identify areas which are especially prone to damage from earthquakes, and consider special standards for **building**s in these areas.

d) To help reduce the severity of flooding and land erosion events.

e) To prevent construction of **dwelling**s in areas subject to deep and/or fast-flowing floodwaters.

f) To ensure that all **building**s which are potentially affected by 100 year flood events (i.e. those with a 1% probability of happening in any given year) do not significantly impede or divert the flow of flood waters.

g) To ensure that **dwelling**s which are potentially affected by 100 year flood events are designed so that floodwaters do not enter them.

h) To ensure that each new subdivided allotment has at least one **building site** (including effluent disposal area and suitable vehicular access) which is not prone to natural hazards, unless **Council** is satisfied that no **dwelling** will be required on the allotment. (Refer Policy 5.3.6 a.).

i) To require that the stability of new **building**s in areas which are potentially susceptible to land movement is investigated and assessed.

Explanation

The functions of territorial authorities under the **Act** include the *"implementation of rules for the avoidance or mitigation of natural hazards...."* Having a land use pattern which can coexist with natural hazards also helps to achieve the **Act**'s goal of long-term sustainability.

Under Section 36 of the Building Act a **building** consent can only be refused if the new structure would make a hazard problem worse, e.g. by accelerating ground slippage or erosion. Otherwise a **building** consent must be issued, and **Council** can register a certificate on the land title to note the hazard and to absolve itself from liability. The only way of exercising effective control is therefore instead through Regional and District Plans.

The **Regional Council** has identified its role in natural hazard management as:

1) Providing information on flooding and other hazards, particularly those of regional significance.

2) Identifying what form of development may or may not be suitable in areas subject to various hazard risks, especially flooding. This involves discussion with territorial authorities.

3) Providing flood protection works, warning systems, and education about these systems.

4) Requiring that land be designated under the District Plan, where appropriate, for river control purposes.

5) Controlling the use of land in the beds of rivers and adjacent land designated or zoned for river control. (i.e. between the stopbanks).

6) Soil conservation controls and works, to prevent unsuitable development of erosion prone land and to promote sustainable use of "at risk" catchments through planting etc.

7) Controlling the use of land to avoid or mitigate any adverse **effect**s of land movement resulting from soil disturbance and vegetation clearance.

8) Regional Civil Defence response.

The District **Council** will be responsible for:

1) Working with the Region to gather hazard information, particularly where local detail is required.

2) Controlling **building**, associated development and the use of land in hazard-prone areas, except that identified in 5) and 7) above.

3) Promoting sustainable use of hazard-prone areas through the District Plan and perhaps assisting in limited cases with the Region's soil conservation programmes.

4) Local Civil Defence response and recovery programmes.

Under the Building Act, **Council** is required to keep information about hazards and to pass it on to the public. A great deal still however needs to be learnt about hazards in the District. Comparatively little is known about seismic, tsunami and land subsidence hazards in particular. Even this Plan's flood hazard information was prepared at a broad scale. More detailed survey work is often needed to define the degree of flood risk to any particular property.

The District's coastal area is potentially threatened by tsunami, coastal erosion and by shifting sand/sandblows. The NZ Coastal Policy Statement also requires that the possibility of sea level rise be considered. While stabilisation planting and sensible land use practices can reduce sand movement hazards, the only fully effective response to tsunami, marine erosion and sea level rise is avoiding development in the coastal area. (Refer: Objectives LU 23 and S 8).

The Building Code requires that **building**s be designed/protected so that water from a 50 year flood event would not enter them. This provides authority for setting minimum floor levels, and is very much a "bottom line" requirement. District Plan rules may be more stringent.

Based on recommendations from the **Regional Council**, this Plan sets out two Flood Channel **zone**s. These are shown on the District Planning Maps.

The Flood Channel 1 **zone** comprises three areas where, based on flood flow velocities and/or depths, development is inappropriate and new **dwelling**s are a non-complying activity. These areas are:

1) Downstream of the Flygers Line, Hamilton's Line and Kopane spillways. All of these places are subject to deep, fast-flowing water on a reasonably regular basis. In addition, development within these areas has the potential to either dam or divert floodwaters and cause previously non-floodable areas to flood.

2) The Taonui Basin. The depth of ponded floodwater can be approximately 4 metres at the downstream end of the basin and depths of over one metre are common over much of the remainder.

3) Between the stopbanks of the Manawatu and lower Oroua Rivers. Floodwater between the banks is deep and fast-flowing. Any development within the floodway also reduces the effectiveness of the stopbanking system.

The Flood Channel 2 **zone** identifies other areas which are likely to be inundated by a 100-year flood event and/or affected by poor drainage. In these areas however the flood risk is such that development may be able to proceed as a discretionary activity if appropriate conditions are imposed, e.g. minimum floor levels. **Council** will consider the impact of any such **dwelling**s upon the available Civil Defence response. It would be undesirable to have people in pole houses or on "islands" during flooding if their access is lost and extra demands are placed on limited rescue resources.

Non-residential **building**s in the flood plain can also have adverse **effect**s. They can make flood control measures less effective by impeding floodwaters, and can divert water into places which would not otherwise be floodable. They will therefore be a controlled activity in both Flood Channel **zone**s.

Fig. 5 shows an area between Pyke, Kellow and Milner Roads which contains a high concentration of small lakes which appear following a wet winter or intense localised rainfall. This area is shown for information only and does not have any special controls associated with it.

Examining a **site**'s potential for landslip hazards is part of the "duty of care" involved in the **building** consent process, i.e. reasonable steps must be taken to find out the extent of the possible problem. This duty exists whether or not Section 36 of the Building Act is being used. Using Section 36 is not automatic, and depends upon what geotechnical reports say about the particular **site**.

District Plan Methods

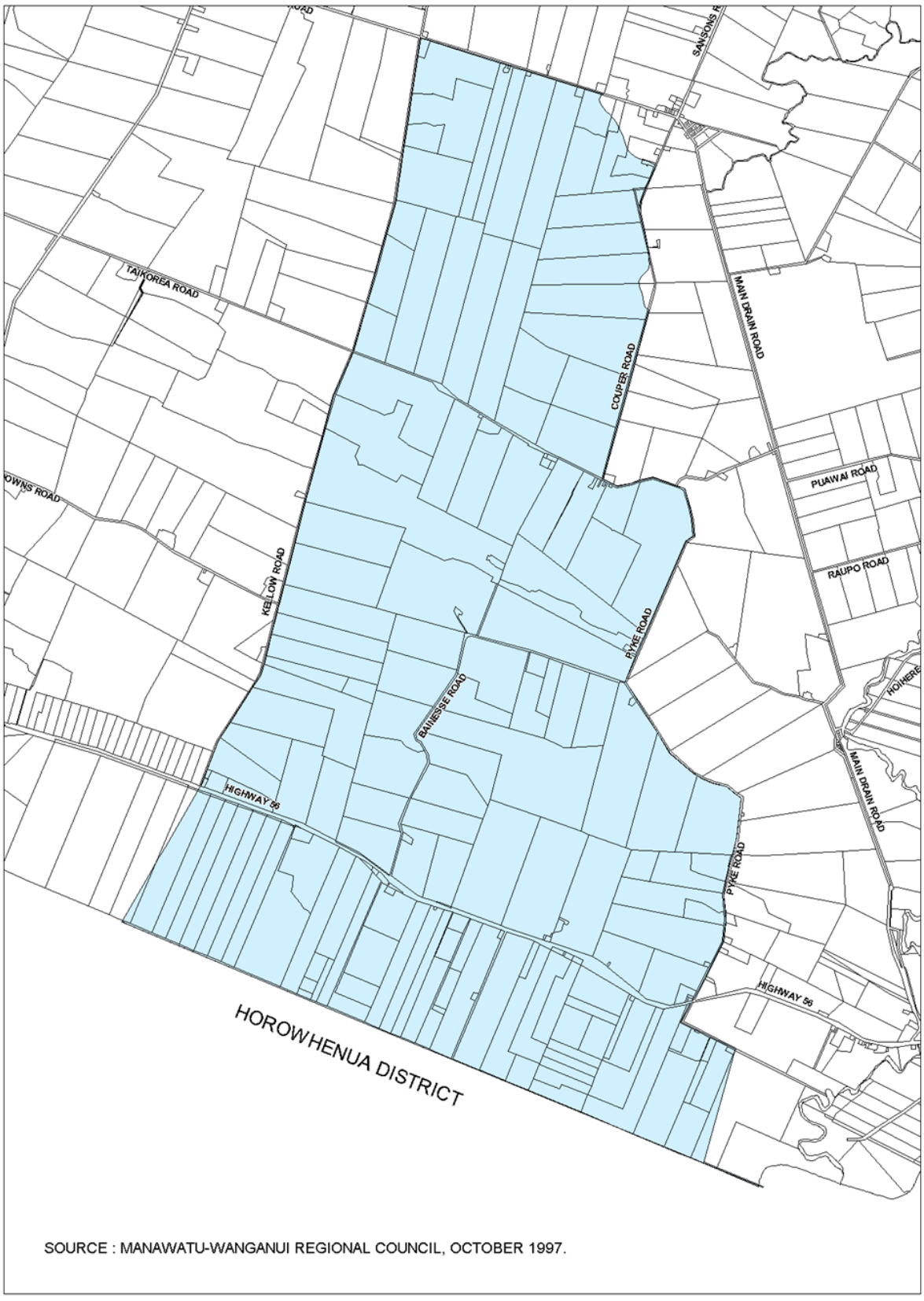
- District Rules B7 and C2.4.1 h.

Other Methods

- Appropriate information-gathering exercises on natural hazards.
- Providing hazard information to landowners and interested agencies via the LIM system and other avenues.
- Information and education initiatives aimed at achieving more compatible use of potentially unstable hill country and sand country. **Council** will support **Regional Council** and landowner initiatives.
- Building Act requirements, (including possible geotechnical reports and Section 36 registration).
- Effective Civil Defence and other responses to hazard events.
- Taking natural hazards into account when designing and constructing **Council** works.

- Stormwater control features for new subdivision and **building**s in areas where stormwater runoff causes or aggravates flooding problems.
- **Council** involvement in soil stabilisation measures, particularly to protect public assets such as **road**s.
- Local Government Act requirements which protect the structural integrity of the District's **road**s by requiring consent for excavations within 20 metres of a **road**.
- Policy on assistance toward hazard protection for listed heritage **building**s, (e.g. earthquake strengthening, fire-proofing).
- In exceptional cases assistance toward removing or stopbanking **dwelling**s in flood prone localities.

FIG 5- Location of Localised Ponding Area



SOURCE : MANAWATU-WANGANUI REGIONAL COUNCIL, OCTOBER 1997.

8.3 Environmental Results Anticipated

1) People living in new houses do not place unnecessary demands upon response agencies, including Civil Defence, during and after a hazard event.

2) The potential **effect**s of tsunamis, coastal erosion or deposition processes, and the possibility of sea level rise, are minimised by limiting the growth of Himatangi Beach and Tangimoana.

3) No new **dwelling**s are built in areas known to be subject to deep and/or fast-flowing floodwaters.

4) Any new **building**s which are potentially affected by 100 year flood events are designed so that they would not significantly impede or divert the flow of flood waters.

5) All new **dwelling**s are designed so that floodwaters from floods smaller than a 100 year event do not enter them.

6) No new **dwelling**s are damaged or destroyed by land instability (except those which are subject to Section 36 of the Building Act 1991).

8.4 Monitoring and Review Procedures – Natural Hazards

The procedures to be used will include:

a) Working with the **Regional Council** to gather information about natural hazards and to maintain a hazards database.

b) Reporting on growth of the beach settlements and on levels of damage to new **dwelling**s and **building**s from flood events and land instability.

c) Reviewing all **building** consents granted for structures in the Flood Channel 1 and 2 **zone**s for **Regional Council** input and conditions such as minimum floor levels.

d) Debriefs after Civil Defence Emergencies include details of assistance sought from people in new **dwelling**s in hazard-prone areas.

e) Monitoring how effective rules and other methods have been in controlling development in areas at risk from natural hazards, and changing these methods if necessary.