

4 NATURAL HAZARDS

ISSUE 1

River Flooding

A large part of the plains within the Timaru District is subject to some degree of flooding risk. At least part of all of the main settlements in the District and some of the holiday hut settlements are subject to this risk.

Explanation

The Resource Management Act includes the following definition:

“Natural Hazard” means any atmospheric or earth or water related occurrence (including earthquake, tsunami, erosion, volcanic and geothermal activity, landslip, subsidence, sedimentation, wind, drought, fire or flooding) the action of which adversely affects or may adversely affect human life, property, or other aspects of the environment (s2 RMA).

In the Timaru District some natural hazard events can affect the whole district eg drought, earthquakes, and wind, but others such as those related to flooding are more localised. In these cases the area likely to be affected is predictable and the hazard can be avoided or mitigated. The Council considers that flooding from rivers and coastal flooding are the principal natural hazards that can be best addressed through the District Plan (see Issue 2 for coastal flooding). Other natural hazards including earthquakes, subsidence, and wind are addressed through the Building Act.

The Council's function is “The control of any actual or potential effects of the use, development, or protection of land, including for the purpose of the avoidance or mitigation of natural hazards...” (s31(b) RMA). The Council also has responsibilities for subdivision (s31(c) and s106 RMA), taking into account natural hazards.

There will always be some exposure to the risk of flooding within the District despite the extensive stopbank systems already in place, as they all have design limits and can be breached by erosional processes, overtopped or outflanked during a flood. Investigations carried out by the Canterbury Regional Council and community liaison all point to the conclusion that the affected communities cannot afford further significant protective measures and that avoidance of the more serious natural hazards is a more appropriate response.

The potential consequences of river flooding are major. Several lives have been lost in floods within the District in recent years. In the 1986 Opihi flood there could have been substantial loss of life if the flood had peaked at night. The property damage in South Canterbury in 1986 has been estimated by the Canterbury Regional Council to be \$102 million in 1993 values, of which

\$89 million was met by the Government. The same damages under current Government policies would lead to a \$65 million shortfall. As well as its statutory function, the Council has a duty on behalf of the community and all its members to take a responsible attitude to limiting the damage by natural hazards.

ISSUE 2

Coastal Erosion and Flooding

Coastal erosion and flooding is a particular concern from Timaru north.

Explanation

At Washdyke the low beach ridge is retreating at 3.0 metre/year, which is the most rapid rate of coastal erosion in Canterbury. Erosion at a much lesser rate is occurring at Waimataitai Beach which is immediately adjacent to residential properties. The Canterbury Regional Council has identified areas which will be subject to coastal erosion within 100 years in the Regional Coastal Environment Plan. The 100 year coastal erosion line is also identified on the District Plan maps.

Areas subject to coastal flooding or inundation from sea water have also been identified principally from Washdyke to north of Milford. Areas currently subject to coastal flooding are also at risk from tsunami and from the possibility of rising sea levels associated with global warming (see “Explanation” accompanying Issue 1 for other related information).

ISSUE 3

Filled Sites

There is a risk of subsidence and differential settlement of buildings where structures are erected on land which has been previously filled, or where cutting or filling is proposed which can affect other land.

Explanation

Subsidence can cause serious damage to structures.

OBJECTIVE

- (1) Avoid further non essential development or redevelopment in the most hazard prone locations in the District.

Principal Reason

In a number of locations in the District, especially adjacent to rivers and the sea, the likelihood of events which pose a serious risk to personal safety and property is such that minimising further development in these areas is the most prudent response. The costs of development in hazard prone areas are borne by the whole community through insurance, relief efforts and public works and services which are at risk. The community as a whole is better served by avoiding all but essential development in the most vulnerable areas.

This approach is consistent with the Regional Policy Statement, the Regional Coastal Environment Plan and the New Zealand Coastal Policy Statement.

POLICY

- (1) To prevent new residential and other intensive development including commercial and industrial development in the most hazard prone locations, while making some provision for the reconstruction of existing household units and holiday huts, and the modification of existing dwellings to decrease the level of flood risk or damage that may arise.

Explanation and Principal Reason

Those wishing to establish new dwellings will have to find alternative sites in less hazard prone areas. In some of these situations modification of existing dwellings can help reduce the risk of damage from minor events. Some other structures such as road and rail bridges have to be located in hazard prone areas to link networks and therefore will not be affected by this Policy.

Those wishing to establish new dwellings or replace existing dwellings will have to find alternative sites in less hazard prone situations. Existing dwellings can be retained under existing use rights (see s10 of the Resource Management Act).

It is better to avoid building in the more severely floodable areas where practical. Part of Blandswood is subject to periodic flash flooding. The Rangitata Huts settlement is built on part of the riverbed and the Rangitata River could change its course in a major flood. Further physical works such as stopbanks are sometimes not effective solutions because they are expensive and are only designed to limited standards. Erosion or a flood of greater magnitude than has been designed for, can cause stopbanks to fail. Milford, Butlers Road, Waipopo, and Stratheona hut settlements are

also vulnerable to a substantial flood risk, which is worsened because of the proximity to stopbanks, should the stopbanks fail.

Areas subject to coastal inundation have been identified by the Canterbury Regional Council. The possibility of rising sea levels, and the risk of tsunami make further development in these areas undesirable. This policy is consistent with the Regional Policy Statement, the New Zealand Coastal Policy Statement and the Regional Coastal Environment Plan.

- (2) To encourage relocation of household units from the most hazard prone locations to alternative sites in relatively flood free areas where adverse environmental effects can be avoided.

Explanation and Principal Reason

To help people with properties in the most hazard prone locations the Council will assist in investigating the options for relocation of dwellings or finding safer alternative sites. Where appropriate alternative sites can be found which are safer, the Council shall promote District Plan changes to facilitate obtaining of consent for that land. The Council does not propose making direct financial contributions for such relocations.

Assisting with locating new sites is a means of reducing the level of risk.

- (3) To limit further zoning for residential development in most hazard prone locations.

Explanation and Principal Reason

This will direct much future building of dwellings away from flood plains by controlling expansion of urban zonings further into flood plains.

This is consistent with the Regional Policy Statement and s106 of the Resource Management Act.

- (4) (a) To ensure that all household units are constructed so that there is no more than a 0.5% chance in any one year of a flood reaching the floor level.

Explanation and Principal Reason

It is desirable to minimise possible flood damage that may be done to buildings, especially dwellings, in order to reduce the cost of damage, safeguard the inhabitants and protect other property from damage.

Dwellings close to stopbanks are in more danger than others should stopbanks fail. The most appropriate response to this danger will depend on the potential flood conditions on a site, topography, the value of the building and its contents and what other means can be taken to mitigate the effects.

The largest flood event that has been recorded (Pleasant Point, March 1986) in this District, had a 0.5% chance of occurrence (ie where flood waters reach a height and velocity equivalent to that anticipated in a 200 year flood event) in any one year. Economic analysis by the Canterbury Regional Council suggests it is more cost effective to build dwellings above most flood heights than to endure the cost of repairing damage.

This is consistent with the Regional Policy Statement and helps meet the Council's obligation under s106 of only permitting subdivision where there is a means (which can include rules) of mitigating the effects of a natural hazard. By mitigating the economic effects of flooding this measure reduces the distress caused to people at the time of natural hazard events.

- (4) (b) To make new residential and other intensive development (including industrial or commercial development) within 100 metres of the landward side of the centreline of a stopbank, or on sites subject to a 2.0% chance in any one year of flooding, a discretionary activity. When considering applications for discretionary activities, regard shall be had to the Performance Standards for the zone; options for reducing risk on the property; General Rule 6.16, and a report shall be required from the Canterbury Regional Council.

Principal Reason

In the event of possible erosion, overtopping or other failure of a stopbank, dwellings in this area are at particular risk. A consent process gives the opportunity for assessing whether design measures can mitigate the risk, what opportunity for evacuation exists in the event of a hazard, whether alternative locations would be more appropriate, and whether access to the stopbank for maintenance can still be achieved. For other buildings with a risk of flooding exceeding 2.0% in any year, (for example where flood waters reach a height and velocity equivalent to a 50 year flood event) ways of reducing the risk and the suitability of the site have to be given consideration.

The Council will consult with the Regional Council in making a decision on such an application.

METHODS

- (1) Using rules to make provision for the reconstruction of existing household units (and holiday huts) where such reconstruction is not allowed under s10 of the Resource Management Act, while otherwise prohibiting new household units in the most flood prone locations, and limiting alterations to existing household units to modifications intended to reduce flood damage.

Principal Reason

Because of the severe risk in these localities and the inability of physical works to give complete security, the use of rules is considered necessary. The District Council will, and is required to, maintain a Civil Defence capability to warn and assist in evacuating people from these areas, but there is often limited warning. Also, Civil Defence measures provide no protection for property. It is better that people are not located in "at risk" situations in the first instance. Minor alterations, which help mitigate the risk or are for repairs or maintenance, will not add to the overall problems.

- (2) Co-operating with investigations of alternative locations and promoting District Plan changes on appropriate sites where these will assist people to move to sites less prone to natural hazards.

Principal Reason

The Council can help to identify more appropriate locations and the different aspects of site development which have to be investigated. Changes to the District Plan may be required to enable alternative locations to be obtained.

- (3) Limiting the zoning of additional land in flood plains for urban purposes to those areas where no practical alternative exists for the expansion of major settlements. Where this is the case, avoiding those most hazard prone locations where flood depths and velocities will be greatest (see General Rule 6.16).

Principal Reason

It is better that the expansion of settlements especially of residential areas avoids most hazard prone locations.

In Temuka the whole settlement is subject to some risk of flooding in a probable maximum flood, but the risk to future development is reduced where land at a lesser risk of flooding is used for future expansion. Those areas of Pleasant Point on the plains are also subject to a high flood risk, as are low lying areas of Geraldine and Timaru.

- (4) (a) Providing a rule to apply to residential activities across the District so that floors are constructed above a flood with a 0.5% chance of occurrence in any one year. Some provision is made for minor extensions of existing household units which are already below that floor height (see General Rule 6.16).

Principal Reason

Mitigating the risk of damage from flooding is better than cleaning up afterwards. For minor extensions raising floor heights of additions to rooms can be very disruptive to the use of a dwelling.

- (b) Provide a rule (see General Rule 6.16) to achieve Policy (4)(b).

Principal Reason

To ensure assessment of the risk of proposed residential development in more flood prone areas can be carried out prior to their establishment.

OBJECTIVE

- (2) The mitigation of the effects of flooding in floodable areas other than the most hazard prone locations.

Principal Reason

A large area of the District is located within areas that are floodable but to a lesser degree than in the most hazard prone locations. This area includes most of the Levels Plains, Temuka, parts of Timaru, Pleasant Point, Geraldine and several smaller settlements. Most of the areas have some protection from minor floods by stopbanks.

POLICY

- (5) To promote ways of mitigating the risks of flood hazard to those wishing to build in flood plains.

Explanation and Principal Reason

Those wishing to build in flood plains should be encouraged to consider designing and locating their buildings so as to minimise the risk.

This is consistent with the Regional Policy Statement.

METHOD

- (5) The Building Act requires Councils to provide information on natural hazards at the time of issuing Land Information Memoranda and Project Information Memoranda. Where a risk of flooding is identified, the Council will provide further advice on building options which mitigate the risks.

Principal Reason

The purpose of this is to ensure those affected by the flood risk gain a clear understanding of the risk and how to minimise it.

The Council is required to provide information on natural hazards under the Building Act and to gather information, monitor and keep records under s35 of the Resource Management Act.

The mitigation of the effects of flooding in floodable areas can occur by raising floor levels, and strengthening buildings, or on larger rural properties by finding the highest ground on which to build. If these measures are taken, risk to life and damage to property in major floods will be reduced.

OBJECTIVE

- (3) Improved knowledge of risks arising from natural hazards.

Principal Reason

By better understanding natural hazards the Council and the community is better able to avoid or mitigate risks.

POLICY

- (6) To identify those natural hazards the District needs to know more about and to undertake relevant investigations.

Explanation and Principal Reason

The Council and the community needs to be fully aware of the implications of natural hazards so that the level of risk and means of avoiding or mitigating the risks can be taken into account in making decisions on investment. Such investigations will need to be developed in consultation with the Canterbury Regional Council which is the lead agency for flooding and coastal hazards.

METHODS

- (6)
 - (a) Investigating the impact of natural hazards of greatest possible effect and the ways of avoiding or mitigating them.
 - (b) Maintaining and updating the Council's hazards register which identifies areas subject to a natural hazard that Council is aware of.
 - (c) Promoting natural hazard awareness and avoidance or mitigation measures.

Principal Reason

Much of this work will require specialist studies to further identify the level of risk and the most appropriate ways of responding to that risk. Section 35(5)(j) of the Resource Management Act requires the Council to keep a record of natural hazards. This is freely available to people making property enquiries and is used by the Council in completing Project and Land Information Memorandums as provided for in the Building Act.

OBJECTIVE

- (4) Minimised potential danger to life and damage to property associated with land subsidence.

Principal Reason

Seeks to address any human or naturally induced threat of subsidence.

POLICY

- (7) To protect the use or development of sites from any forms of site disturbance that threatens to reduce the safe and efficient use of the site.

Explanation and Principal Reason

Excavation of soil and/or infilling with other materials has the potential to undermine the stability of the site by increasing the risk of subsidence.

METHODS

- (7) (a) Requiring records to be kept of details of location and areas of fill, or details of compacted fill, and for those to be included on the Council's Hazards Register.

Principal Reason

To ensure land owners have this information and can avoid subsidence or damage to proposed developments.

- (b) Providing information on the filled sites to the public in Land Information Memorandums and Project Information Memorandums.

Principal Reason

See "Principal Reason" for Method (7)(a).

OBJECTIVE

- (5) Keep to a minimum the costs to the wider community arising from measures to reduce the exposure of individuals or particular communities to natural hazards.

Principal Reason

Costs arising from natural hazards should be limited.

POLICY

- (8) The Council will not offer direct financial assistance in the avoidance or mitigation of natural hazards, except where there would be a direct financial benefit to Council.

Explanation and Principal Reason

In some cases the risks from natural hazards can be mitigated by physical works such as stopbanks. In such cases the Council considers that those who would benefit from such works should pay for them. Where Council services or property are affected, the Council will assess whether there would be an overall financial benefit to the Council from contributing to the works. The extent of areas within the District affected by risks are such that the cost to Council of accepting financial responsibility for other people's property would be considerable. This policy is intended to act as an incentive for people to avoid locating in hazard prone areas.

METHOD

- (8) (a) Council will co-operate with any investigation and identification of the cost of avoiding or mitigating natural hazards. In identifying costs Council will be guided by Policy 8.

Principal Reason

It is important that everyone is aware of the full costs of avoidance or mitigation works before any decision is made to commence them. Council considers that those who benefit from the protection works should pay for them, rather than the wider community accept that cost.

- (b) Zoning and General Rules.

Principal Reason

Rules help avoid or mitigate damage from natural hazards.

MONITORING

- (1) To carry out monitoring programmes in conjunction with the Canterbury Regional Council and other agencies to ensure the Council's knowledge of natural hazards and hazard management is kept up to date.
- (2) Trends in development in flood and erosion prone areas.
- (3) Trends in occupation of hut settlements.

ANTICIPATED ENVIRONMENTAL OUTCOMES

- (1) There will be a gradual reduction in the amount of development in the most hazard prone locations of the District.
- (2) In those parts of the district where there is a lesser risk of flooding, the amount of development is likely to increase. The amount of additional damage in future events will be less than would have occurred without Council having exercised rules.

