

Auckland Regional Policy Statement

Proposed Change 10

Notified 26 September 2005

AUCKLAND REGIONAL POLICY STATEMENT

PROPOSED CHANGE NO 10

CHAPTER 11 - NATURAL HAZARDS

Change under Part I of the First Schedule to the
Resource Management Act 1991

EXPLANATION [NOT PART OF CHANGE]

This explanatory note provides a brief summary of the proposed amendments to the Auckland Regional Policy Statement and does not form part of the change.

All new text is shown underlined and deleted text is shown with ~~strikethrough~~.

Proposed Change 10 amends the Auckland Regional Policy Statement to:

- **Provide clarity surrounding roles and responsibilities with respect to natural hazards management.**

The Resource Management Act 1991 (RMA) does not clearly separate the roles of TAs and Regional Councils with respect to natural hazard management and in places gives overlapping responsibilities. In some cases the responsibilities stated in the Operative ARPS do not reflect actual practice.

Proposed Change 10 amends Chapter 11 to clearly state who is responsible for all aspects of natural hazards management in the Auckland Region.

In addition, Proposed Change 10 amends the roles and responsibilities to reflect the co-operative approach to Civil Defence and Emergency Management (CDEM) following the introduction of the CDEM Act 2002. This is reflected in joint planning and implementation of public education as well as Civil Defence Planning.

- **Address a more comprehensive range of natural hazards and hazard management responses.**

The Operative ARPS does not include reference to tsunami in the Policies, Methods or Reasons, this has been rectified in the changes proposed.

Also the Operative ARPS only requires flooding hazard plans to be prepared prior to new areas being developed. Amendments in Proposed Change 10 better addresses flooding hazard issues to ensure that erosion, instability and flooding hazards are all considered and planned for. The scope of hazards being proposed in Change 10 will bring the ARPS in line with the Building Act 2004.

- **Update the legislative framework.**

A number of new pieces of legislation have been introduced since the ARPS was written. It is important to reflect these changes, the most notable of these being the Civil Defence Emergency Management Act 2002, the Building Act 2004 and the Resource Management (Energy and Climate Change) Amendment Act 2004.

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11.1 Introduction

The Auckland Region, like much of New Zealand, is at risk from a range of natural hazards. The irregular occurrences of natural hazard events means they are often poorly understood. Many of the land use management decisions made in the past have tended to exacerbate the risk¹. With the continual growth of the Auckland Region, it is important that public authorities recognise the risk from natural hazards and undertake co-ordinated responses to ensure the long-term reduction in risk posed to the Region.

Natural hazards are defined within the RM Act as:-

"Natural hazard means any atmospheric or earth or water related occurrence (including earthquake, 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."

Throughout the Auckland Region natural hazards occur in varying severity, in location, and in time. Each natural hazard poses a different risk to human safety and wellbeing, infrastructure, and the environment. To deal with the risks posed by natural hazards the RM Act (sections 30, 31 and 35) gives functions to the ARC and TAs aimed at the avoidance or mitigation of the resulting impacts. These functions include developing and placing controls, such as policies and rules, within planning documents or resource consents to ensure adequate measures are taken to protect human life, property and the environment from the impacts of natural hazards. ~~In addition to the function of regional councils and TAs towards the avoidance or mitigation of natural hazards, it may be possible in some cases to remedy the effects of some natural hazards (e.g., beach nourishment to remedy the effects of coastal erosion).~~

In developing policies and rules aimed at dealing with the risks and impacts of natural hazards, it is recognised that a 'partnership' between development and nature must be established. This partnership must aim at keeping people away from natural hazards, rather than natural hazards from people.

The most commonly occurring natural hazards in the Auckland Region are flooding, both in rural and urban areas, and erosion/land instability. Impacts of erosion/land instability are generally limited to smaller areas and are not Regionally

significant. TAs have a number of existing controls for these natural hazards, which are referenced in district plans, and exercised mainly under the Building Act ~~2004~~ 1994. The ARC has traditionally worked with these councils towards compatible policy.

The coastal environment is particularly susceptible to natural hazards. Within the Auckland Region the primary natural hazards arising from coastal processes include erosion, inundation of low lying areas, land instability, rising mean sea level and tsunamis. These natural hazards may occur individually, or combine to create a cumulatively more significant natural hazard.

The sustainable management of the coastal environment with respect to natural hazards should involve the consideration of the particular natural hazard in the wider context (both above and below MHWS, and over longer time periods), to ensure appropriate methods are used to avoid, remedy, or mitigate natural coastal hazards, while protecting the natural character and processes of the coastal environment.

The least frequently occurring natural hazards include earthquakes, volcanism, tsunamis, various meteorological effects (cyclones, tornadoes, drought) and fire. While of low frequency, they are potentially of major Regional significance and not easily dealt with through land use control strategies. The risks of these natural hazards are poorly understood. The Civil Defence Emergency Management Act 2002 sets out how the region will jointly manage natural (and technological) hazards. This Act requires Local Authorities to plan for hazards across the key areas of reduction, readiness, response or recovery. This ensures that these infrequently occurring natural hazards ~~Potential impacts are currently mainly~~ are dealt with by contingency controls such as civil defence and insurance systems.

11.2 Issue

11.2.1 **Natural hazards pose a risk to people, property, infrastructure and the environment in the Auckland Region.**

Much of the Region is at risk from one or more natural hazards. In particular, flood damage has had significant impacts in catchments such as the Kaipara River, Hingaia stream, and Opanuku stream. There are innumerable smaller urban catchments in which the risks posed by flooding are serious. Often these risks are exacerbated by the inappropriate location of buildings and

¹ Risk = Consequences x Likelihood

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infrastructure in flood prone areas or by flood peaks heightened by an increase in impermeable surfaces in urban catchments. (Infrastructure includes essential lifelines such as transport, water, wastewater, telecommunications, and power. The adverse impact of natural hazards on infrastructure can exacerbate the original hazard and result in much wider disruption than caused by the event itself.)

Serious coastal erosion is occurring around the Region, creating a risk to property and infrastructure. Destruction of property at Omaha in the late 1970s provided a graphic demonstration of the Region's vulnerability to coastal erosion hazards. Almost the entire length of the Auckland coastline is subject to a landwards regression. The area that is likely to be susceptible to the coastal erosion hazard along the Auckland coastline is highly variable due to a number of factors, such as the variability in wave climate and the competency of the underlying material. A broad scale assessment of areas susceptible to coastal erosion has indicated a range of 6 - 16m/100years at sheltered, stable beaches to 55 - 124m/100years at more exposed beaches. The area susceptible to the coastal erosion hazard along Auckland's cliffed coastline varies from approximately 5m/100years in low, competent volcanic cliffs to 235m/100years in high, weakly consolidated cliffs. Site specific analysis is required to determine the actual area susceptible to coastal erosion at any particular site. With continual pressure for development along the coastal margins and with predicted sea level rises associated with global climate changes, the risk is likely to increase in the future. The setting aside of esplanade reserves or strips is one means of addressing this issue (See Chapter 18).

Land instability occurs as a result of steepness, and because of the existence of a number of inherently unstable geological units, which are widely distributed in the Region.

Cyclones also affect the Auckland Region, bringing high wind speeds and heavy rainfall. These events can cause flooding, coastal erosion and instability all at the same time. In addition, they often cause damage to essential lifeline utilities such as power and telecommunications. Severe cyclones affect the Auckland Region on average once every 100 years.

Although the frequency of occurrence is much less than the above natural hazards, the impacts of major natural hazard events, such as volcanic activity or earthquakes, would be extremely catastrophic for the Region. Historic volcanic eruptions in Auckland have occurred at different locations about once every 1000 years and

tsunami waves of 1-3m may occur about once every 75 years.

Many natural hazards are not well understood in terms of location, frequency, magnitude and consequences. As a result risk avoidance or reduction mechanisms may be difficult to justify because of gaps in knowledge and understanding, giving rise to increased risk.

In addition, many people have two common misconceptions of risk: many people do not understand that events occur randomly so that (for example) a recent major event is taken to indicate that the next one won't occur for some years; and many people do not appreciate that an extreme event (e.g. 1% AEP) has a significant chance of occurring in their lifetime. These misconceptions can also result in behaviours and decisions that increase risk.

Traditional approaches to natural hazard management have involved the protection of people and the environment from natural hazards. Some of these measures, such as flood protection schemes and seawalls, may themselves have an adverse impact on the environment.

11.3 OBJECTIVE

*To avoid, remedy, or mitigate the adverse effects of natural hazards on human life, property, **infrastructure** and the environment, while minimising the adverse effects of measures implemented to reduce the risks of natural hazards.*

11.4 POLICIES, METHODS AND REASONS

11.4.1 Policies

[Some Policies have been combined. See notes below.]

The following policies and methods give effect to Objective 11.3.

1. The responsibilities of the ARC and the TAs shall be as per the Methods in 11.4.2.

1.2. Natural hazard management shall be integrated and co-ordinated between the ARC and TAs within the Auckland Region, and with adjoining regional councils.

2.3. Before provision is made enabling significant development or redevelopment of land, including which will result in intensification of land use, any natural hazard hazards, particularly flooding, land instability and coastal hazards, and

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measures to avoid or mitigate their adverse effects shall be identified.

3.4. Development shall not be discouraged permitted in the 1% AEP flood plain flood hazard zones unless it can be demonstrated that:

a. All habitable floor levels are protected from the 1% AEP flood level,

b. Access to buildings is maintained, and that

c. Structures within the 1% AEP flood plain level do not divert overland flows onto neighbouring properties, worsen or accelerate the hazard.
(See Appendix D for the definition of AEP)

4.5. Development shall not be permitted if changes in stormwater runoff quantities in events with AEPs of 1% or more are likely to accelerate, worsen or result in flooding inundation of other property, unless it can be demonstrated that the adverse effects can be avoided or mitigated.

~~6. Where changes in the use of land allows for the construction of habitable buildings, such buildings shall not be permitted to be constructed in the 1% AEP flood hazard zone, unless the hazard can be avoided and access maintained.~~
[see Policy 11.4.1.4]

5.7. Where development or use exists within areas susceptible to natural hazards, construction of mitigation works shall be encouraged permitted only where people, property infrastructure and the environment are subject to unacceptable risk from flood hazards, the works are the best practicable option, and any adverse effects on the environment are avoided, remedied or mitigated. The abandonment or relocation of existing structures and the use of non-structural solutions shall also be considered among the options.

(See also Chapter 7 Coastal Environment)

~~8. When carrying out flood mitigation works, existing vegetation shall be retained, where appropriate, to aid stability and maintain environmental quality. However, the planting of vegetation, which may, because of growth habit etc., restrict water flow and exacerbate the flooding hazard, shall be avoided.~~ [see Policy 11.4.1.6]

See also Chapter 12 – Soil Conservation, Policy 12.4.4.1.

6. Any works within a watercourse shall be carried out in a way that in events with AEPs of 1% or more does not create or exacerbate a flooding hazard, either at the site or at any location upstream or downstream of the works. Works within a watercourse include (but are not limited to) riparian planting, piping of streams, and the construction of culverts, bridges, retaining walls and other structures.

7.9. Development shall not be permitted in areas subject to erosion/land instability unless it can be demonstrated that the adverse effects can be avoided or mitigated.

8.10. In the coastal environment, new subdivision, use or development should be located and designed, so that the need for hazard protection measures is avoided.

~~11. Where existing subdivision, use or development is adversely affected by a coastal hazard, coastal protection works should be permitted only where they are the best practicable option for the future. The abandonment or relocation of existing structures and the use of non-structural solutions should be considered among the options. Where coastal protection works are the best practicable option, they should be located and designed in a manner consistent with Chapter 7 – Coastal Environment.~~ [see Policy 11.4.1.5]

9.12. A precautionary approach shall be used in avoiding, remedying, or mitigating the adverse effects on people, property, infrastructure and the environment development, of earthquake, volcanic activity, sea level rise, tsunami and global climate change.

11.4.2 Methods

[The following Methods have been re-ordered from the Operative 1999 version and some Methods have been combined.]

1. 15. The ARC will gather information and undertake or commission research at a regional scale on natural hazards and their risks and impacts. of natural hazards, particularly those that are Regionally significant, and make this information This information shall be made available to TAs and the general public through a natural hazards database. This will include volcanic, tsunami, earthquake, cyclone, and coastal

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hazards including the effects of sea level rise and climate change.

2. TAs will gather information and undertake or commission research on natural hazards, their risks and impacts at a district/city scale, and make this information available to all persons through a natural hazard database. This will include flooding, land instability, coastal hazards and active faults.

3.46. The ARC, in consultation with relevant parties, will establish monitoring programmes for natural hazards of Regional significance, and make this information available to TAs and the general public.

4.47. The ARC will investigate undertake research on methods to avoid, or mitigate or respond to natural hazards and make this information available to TAs and the general public.

5.3. The ARC and TAs will jointly advocate through the Auckland Civil Defence and Emergency Management Group methods to avoid, remedy, or mitigate the adverse effects of natural hazards on the environment.

6.4. The ARC will co-ordinate the management of natural hazards throughout the Region by setting standards developing guidelines and strategies, and ensuring consistency among TAs, by co-ordination of action in respect of natural hazards which extend across local boundaries, and by co-ordination of action with the appropriate regional council in respect of natural hazards which extend across regional boundaries.

7.6. TAs will give effect to these policies by including objectives, policies and methods of implementation within district plans to control any actual or potential effects of the use, development or protection of land for the avoidance or mitigation of natural hazards.

8.40. The ARC will implement objectives, policies, and rules and other methods with respect to any actual or potential coastal hazards arising from the use, development or protection of land in the coastal marine area environment, through the provisions in the Regional Plan - Coastal, which will encourage subdivision, use and development in the coastal environment to locate in appropriate areas.

See also Chapter 7 - Coastal Environment.

9.42. TAs will implement objectives, policies and rules with respect to coastal hazards through provisions in district plans, including the use of esplanade reserves and strips for the purpose of avoiding, or mitigating natural hazards.

See also Chapter 18 - Esplanade Reserves and Strips.

10.7. TAs will ensure that flooding instability and coastal hazards are assessed management plans are prepared before any new areas are rezoned in ways which that enable intensification of use, or where development is likely to cause adverse effects. This may should be done as part of a wider planning process or structure planning process (as described in Appendix A).

11.4. The ARC will e.g. by advocacy and through Regional Plan provisions) promote a comprehensive catchment-wide approach to flood management.

12.2. The ARC will regulate diversions and discharges of stormwater in order to avoid or mitigate adverse effects of flooding and erosion, through the Regional Plan provisions and resource consent process.

13.5. The ARC will, where appropriate, transfer TAs will undertake day to day flood management functions. These functions may include (but need not necessarily be limited to): monitoring of flows and water levels, issuing warnings to the public and alerting civil defence, operation of floodgates, and infrastructure maintenance such as clearing of debris from culvert inlets and other hydraulic structures, powers and duties to TAs.

14.9. Within the 1% AEP flood plain hazard zone TAs will control infilling and storage of materials likely to be moved by flood events, and ensure that development within the area zone is located in such a manner as to limit the restriction of flood flows.

15.8. The ARC and TAs, through the resource consent process, will ensure that any required lawfully established hazard mitigation works are undertaken, and that they are is adequately constructed and maintained.

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16.14. The ARC and TAs will develop and carry out consistent educational strategies aimed at providing the general public with a greater understanding of natural hazards, their associated risks, associated with natural hazards, and how these risks are being addressed and how to be prepared for an emergency throughout the Region.

17.18. The ARC and TAs will co-ordinate activities and provide for planning related to support for Civil Defence emergency management across the areas of reduction, readiness, response and recovery to avoid or mitigate in planning and implementing measures to guard against, prevent, reduce or overcome the effects of natural hazards.

11. In consultation with the TAs, the ARC will develop and maintain a Regional coastal hazards database, and provide information on appropriate methods of avoiding, remedying, or mitigating the adverse effects of coastal hazards, including sea level rise. [See Method 11.4.2.1]

13. TAs will ensure that current information about known hazards is available to all persons. [See Method 11.4.2.2]

11.4.3 Reasons

Sections 30 and 31 of the RM Act gives the ARC and TAs similar responsibilities functions in relation to the avoidance or mitigation of natural hazards. The RM Amendment Act 1993 enables the RPS to define the respective responsibilities of regional and territorial councils. It is important to clarify the respective roles of these agencies in order to avoid public confusion and to ensure that natural hazards management is undertaken at optimum efficiency and effectiveness.

While most natural processes which that cause coastal hazards originate in the CMA, their adverse effects are usually expressed on the land above Mean High Water Springs (MHWS) where regional councils and TAs both have respective responsibilities. In order to achieve integrated and co-ordinated management of coastal hazards in the Auckland Region, these responsibilities need to be clearly identified.

The ARC will ensure consistency of approach and maintenance of standards across the Region and the development of guidelines and strategies. By virtue of its responsibilities under sections 14 and 15 of the RM Act, the ARC regulates diversions and discharges of stormwater that which occur as a result of development. Because of the TAs'

involvement in land use planning and the control of building development, it is more appropriate that they control stormwater discharges, subject to attaining standards adopted across the Region. The ARC intends to establish such standards while also continuing to allocate direct control to TAs via the comprehensive resource catchment-wide network discharge consents process or via granted under the proposed Auckland Regional Plans: Air, Land and Water. Any such allocations shall be based on the production of catchment flood management plans produced on a catchment-by-catchment basis.

Due to the localised nature of flooding in the Region, responsibility for the construction and maintenance of flood protection works should fall at the local level where the community of interest lies.

Responsibility for the construction and maintenance of mitigation works should be borne by the person undertaking the works. The relevant consenting authority above MHWS (territorial local authorities) and below MHWS (regional council) should ensure this is undertaken to an adequate standard through resource consent conditions.

The RPS requires that TAs will take responsibility via their district plans for ensuring that redevelopment or intensification is discouraged in known hazard zones. For presently undeveloped areas (e.g., rural), where the land use may change (e.g., urbanised), no new development will be permitted in the 1% AEP flood plain hazard zone, unless the hazard can be avoided by, for example, setting floor levels above the flood hazard level. Access to and from buildings should be maintained during flooding for purposes of evacuation.

The community has accepted a level of flood protection equivalent to a 1% AEP for a number of years, and it is considered appropriate to maintain this standard.

Traditionally, the management of risk from natural hazards in New Zealand has revolved around mitigation works, or the physical protection of people, property and the environment from the effects of hazards. A typical response to flood risk, for example, is to attempt to prevent flood events from inflicting damage on the environment. The erection of stopbanks is a classic example. Whilst protection works are generally of immediate success, they only afford protection up to their design capacity. Yet this is frequently ignored by public authorities who at times permit development in areas 'protected' by structural works. The resulting damage when the design

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capacity of the works is exceeded is often catastrophic.

In the future the approach in the Auckland Region to natural hazard management will be one of emphasising avoidance, or prevention, as opposed to protection. This chapter recognises that hazard events are natural occurrences and that the risk is created by locating activities in inappropriate places. However, where there are existing areas at risk from natural hazards, reduction or mitigation of the risk must be undertaken.

Mitigation works can have significant environmental effects and should be considered as the least desirable option for hazard control, except where there is an unacceptable risk to people and their property, infrastructure, and the environment. In assessing any mitigation works, it is necessary to assess the benefits afforded versus any potential adverse effects on the environment.

~~Mitigation works may involve the unnecessary removal of existing vegetation, when this may provide, in the case of stream banks, some natural stability. The unnecessary removal of vegetation may exacerbate erosion. The planting of inappropriate types of vegetation needs to be controlled so as to avoid any unnecessary restrictions to water flow which may exacerbate, or create, a flood hazard.~~

Some structures, notably culverts and some bridges, occupy not only the 1% floodplain but parts of the stream channel proper. Depending on their design, they may obstruct flood flows, especially during larger events. The design of these structures needs to ensure that they do not exacerbate the flooding risk.

Piping of streams removes any flooding hazard up to the capacity of the pipe system. The design of overland flow paths needs to ensure that the flooding risk is not exacerbated for flows in excess of the pipe system capacity.

Mitigation works such as riparian planting may also modify the stream channel. In particular, riparian planting of bare or grassed stream banks will increase the channel's flow resistance. Planning of such mitigation works needs to ensure that they do not exacerbate the flooding risk. This may affect the choice of plant species.

Coastal protection measures have the potential to worsen the adverse effects ~~of~~ of coastal hazards, and adversely affect many aspects of the coastal environment. Softer solutions (planting, beach nourishment, etc.) often prove to be more effective in mitigating or remedying the adverse

effects of hazards and better preserve the natural character, landscape and amenity values of the coastal environment. Coastal protection measures should be avoided unless they are the best practicable option. Refer also to the NZCPS and the Auckland Regional Plan - Coastal.

To implement controls ~~that which~~ avoid, reduce, or mitigate the risk and/or effects of natural hazards, an assessment of these hazards must be undertaken. Hazards of a regional scale should be assessed by the regional council and information made available to all. Local hazards that can be addressed through land use planning should be assessed by territorial authorities and information be available at a local or site-specific scale.

~~For coastal hazards, a regional coastal hazards database will be developed, which will define the extent of areas likely to be subject to coastal hazards in the Region, including the possible effects of sea level rise.~~

Generally, development of land, and the form in which it takes place, is allowed through the district plan and/or resource consents. The Building Act (2004) requires a building consent authority to refuse consent if land is subject to, or could worsen a natural hazard unless adequate provision has been made to protect the property or restore any damage. In order to effectively control the impact of natural hazards on the environment development, TAs must therefore ensure that risks, and likely effects of locally important natural hazards, are defined prior to development, and measures adopted to deal with these. A number of techniques have been developed for assessing and controlling these hazards including:

- Flood routing and flood plain delineation procedures. (Most consulting firms have standard or proprietary programmes for this.)
- Calculating runoff quantities and flow rates. (ARC has developed a methodology set out in Technical Publication 108: "Guidelines for Stormwater Runoff Modelling in the Auckland Region")
- Coastal erosion sensitivity indexes and hazard mapping techniques. (DoC has established methodologies and national databases in this area.)
- Geotechnical instability assessments including seismic response. (Standard, internationally used engineering and geological tests are available.)
- Sea level rise estimates. (Intergovernmental Panel on Climate Change (IPCC) provides

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estimates of the rise in global mean sea level. The ARC provides information on the best available local estimates.) (DoC has established methodologies and national databases in this area).

Many of these techniques have been developed by central government organisations for national use, and these are recommended as initial starting points for analysis. Other methodologies are easily obtained through universities or consulting firms. (The ARC has in the past provided a lead in the preparation of flood management plans and intends to continue this approach for coastal, seismic and atmospheric hazards.)

It is important for TAs to prioritise assessments and controls towards natural hazards that pose the greatest risk most common and best able to be addressed through planning and engineering techniques. TAs should utilise local Civil Defence and Emergency Management assessments to determine which hazards pose greatest risk within their city or district. Currently throughout the Auckland Region, flooding, erosion and instability (dominantly coastal) are the main hazards which directly affect or threaten the regional environment, and effort should be initially directed towards these.

Other hazards such as seismic events, volcanism, severe meteorological conditions, tsunami and sea level rise also pose threats to the Regional environment. The scale and locale of effects of these are comparatively difficult to determine. The ARC will provide guidance on assessment and avoidance or mitigation techniques to the Region on these hazards, develop a regional natural hazards database, and establish risk assessment models for this purpose.

TAs will also develop local databases for the purpose of maintaining property specific hazards information in an accessible format for both staff and the general public, including the production of Land Information Memorandums and Project Information Memorandums.

The issue of climate change and its predicted impacts, including sea level rise, intensification and increasing regularity of extreme weather events, has national as well as Regional significance. The ARC will actively encourage national research in this area.

Generally it is considered that planning and engineering controls can be exercised through district plans and resource consents to ensure:

- Restriction of development from zones which have active hazards (e.g., coastal cliff tops and cliff bases or stream banks).

- Development is not adversely affected by hazards (e.g., requiring engineering stability reports and designs).
- Development does not increase the risk and adverse effects of hazards (e.g., enforcing strict vegetation clearance controls, ensuring floor heights of buildings are above flood levels of concern, controlling development in areas which have potential problems such as land instability).
- Use of vegetative techniques wherever possible to reduce hazard risks and/or effects of hazards (maintaining appropriate vegetation in catchments, planting of coastal cliffs or sand dunes).

In dealing with natural hazards where little information is available, it is considered prudent to use a precautionary approach, e.g., the NZCPS policies. This is particularly important when dealing with the effects of global climate change and subsequent sea level rise trends. Further, in light of MfE documents discussing global climate issues, the most recent estimates from the Inter-governmental Panel on Climate Change, as well as national and regional estimates, will be used in determining the likely change in sea level.

Civil Defence Emergency Management plans and educational strategies are considered important components of dealing with the effects of natural hazards especially those that occur infrequently and in unpredictable or widespread locations. It is recommended that both the regional and district territorial authorities will co-operate in preparation of Civil Defence Emergency Management planning as stipulated in the CDEM Act (2002), across the 4Rs: Risk Reduction, Readiness, Response and Recovery plans and educational programmes and material.

11.5 Environmental Results Anticipated

- (a) The impacts of natural hazards on people, property, infrastructure and the environment development and the human population of the Auckland Region will be avoided or mitigated.
- (b) The costs to the community of dealing with the effects of natural hazards will be reduced.
- (c) improved public awareness of the potential risks posed by natural hazards.
- (d) The adverse effects of natural hazard mitigation measures on the environment will be avoided or mitigated.

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11.6 Monitoring

- (i) Regular monitoring of compliance with conditions on Regional resource consents, including comprehensive diversion and discharge consents, will be undertaken to ensure that flooding problems caused by new development are avoided.
- (ii) The establishment of monitoring procedures will provide warning of volcanism and a record of the Region's seismicity, so as to facilitate contingency procedures and minimise adverse effects.
- (iii) Coastal hazard assessment procedures will assist in the identification of coastal hazard zones and act as a base line for the avoidance of development in hazard areas.

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Appendix A

[Add the following bullet point in Appendix A Planning Process, Structure Planning]

Planning Process

Type of process	Responsibility	General scope and outputs
Structure planning	TAs	<p>.....</p> <p>Structure planning will consider:</p> <p>.....</p> <ul style="list-style-type: none"> • <u>The existence of or potential for natural hazards including flooding, erosion, land slips/instability, coastal hazards, subsidence, sea-level rise, and active faults.</u> <p>.....</p>

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Appendix C

LEGISLATION DEALING WITH RESOURCE MANAGEMENT

Building Act ~~2004~~ 1991

Administered by the Department of Internal Affairs. Establishes a regulatory framework for the control, construction and maintenance of buildings to safeguard public health, safety and amenity. The Building Regulations establish a Building Code. The Building Act provides for the receipt, consideration and approval or refusal by TAs of building consents, and the issuing of project memoranda, code compliance certificates and compliance schedules.

See Chapter 11 - Natural Hazards.

Civil Defence Emergency Management Act ~~2002~~ 1983

Administered by the Ministry of Civil Defence and Emergency Management. Establishes a framework for national, regional and local functions and responsibilities in relation to civil defence emergencies including planning and the preparation for emergencies and for response and recovery in the event of an emergency. The Civil Defence Emergency Management Act also requires local authorities to co-ordinate, through regional groups, planning, programmes, and activities related to civil defence emergency management across the areas of reduction, readiness, response and recovery. of regional and district civil defence plans and to provide for restoration and rehabilitation.

See Chapter 11 - Natural Hazards.

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