



**Addressing earthquake hazards – a review of
council policies and plans within the
Wellington region**

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ABSTRACT

This report investigates how various council plans and policies within the Wellington region recognise earthquake hazards. Annual plans, long term plans, district plans, spatial plans and earthquake prone building policies of the following councils were reviewed:

- Hutt City Council
- Kapiti Coast District Council
- Porirua City Council
- Upper Hutt City Council
- Wellington City Council.

A content analysis was undertaken of these plans and policies. The results were analysed to determine the various levels of recognition of the earthquake hazard within these plans. This included identifying whether any of the plans or policies had a greater recognition of the earthquake hazard when compared to others. The implications of the results on addressing earthquake hazards were then discussed.

The results showed that there was a strong divide between non-rule and rule based policies and plans. Generally, the non-rule based policies and plans (annual plans and long term plans) had the lowest recognition of earthquake hazards. Corresponding with this low recognition of earthquake hazards, these plans and policies also had very few objectives, policies or assessment criteria to address earthquake hazards.

The rule based plans and policies (district plans and the earthquake prone building policies) had the greatest recognition of surface fault rupture hazard, with almost all of these documents recognising this hazard. These plans and policies also had objectives, policies and assessment criteria designed to address earthquake hazards.

Reliance by the councils on district plans and earthquake prone building policies means that the full range of policy tools are not being used to address and mitigate earthquake hazards. The potential implications of this include:

- Earthquake prone building policies have a limited scope and only address the risks associated with buildings considered to be earthquake prone. As such, they only reduce the risk to a small percentage of the total building stock of the various councils.
- The district plan rules are good at addressing the prospective (future) risk from development but have limited ability to undertake corrective measures to reduce risk associated with existing development.
- District plan objectives, policies and rules have potential gaps that could result in developments that increase potential risk. A district plan may require resource consent to be obtained for an addition to a dwelling within an identified fault zone. However, a change in use for an existing commercial building from a low intensity use (e.g. warehouse) to a high intensity use (e.g. childcare centre) within the same fault zone may not require resource consent.

- The low reliance on annual plans and long term plans for reducing the risk from earthquakes could limit holistic planning for earthquake hazards. These plans can be used to create incentives to reduce risk from existing development (e.g. through special funds), as well as allowing for long term consideration of infrastructure renewal, which could take into account various earthquake hazards.
- Spatial plans are high level documents that identify future urban expansion areas. Potential earthquake hazard risks should be recognised within these documents, so that at the detailed design and planning stage these risks have been identified and can be addressed through appropriate land-use measures.

This report identifies that there is still progress to be made in policy and plan formation to reduce the risks from earthquake hazards. We recommend additional investigations to explore and understand the barriers and challenges to councils regarding planning for natural hazard risk across all of their policies and plans. There is also the opportunity to explore what the challenges and barriers are for different councils to work together and form common plans and policies to address the risks from earthquakes and other natural hazards.

Until councils use all the policy tools they have available to them, there are limitations on the level of risk reduction that can be achieved around earthquake hazards. A more holistic consideration of earthquake risk within the various council policies and plans is needed to allow for the development of sustainable and resilient cities. Sustainability and resilience are key factors to successful community recovery following a large earthquake event.

KEYWORDS

Policy, planning, Wellington, earthquake, annual plans, long term plans, spatial plans, district plans, earthquake prone building policies, CDEM Group Plan

1.0 INTRODUCTION

No single approach to bringing sustainable hazards mitigation into existence shows more promise at this time than the increased use of sound and equitable land-use management. By planning for and managing land use to accomplish sustainable hazards mitigation, disasters – though not wholly eliminated – can be reduced to a scale which can be borne by the government, communities, businesses and individuals exposed to them (Mileti, 1999). Several studies have documented successful examples of how individual communities integrate vulnerability data and hazard mitigation policies into local planning (Berke, Kartez et al., 1993; Berke and Godschalk, 2009). However, the general pattern of findings from the few studies that have evaluated cross-sectional samples of local planning programs report that communities generally do not have integrated, specific, well developed mitigation provisions in their local land-use plans (Berke and Smith, 2009). This is a common problem internationally, and arises for a number of political and economic reasons (Mileti, 1999).

Five key pieces of legislation contribute to natural hazard management in New Zealand: the Resource Management Act 1991 (RMA), Building Act 2004, Civil Defence Emergency Management Act 2002 (CDEM Act), Local Government Act 2002 (LGA), and the Local Government Official Information and Meetings Act 1987 (Saunders et al, 2007). The CDEM Act requires the sustainable management of natural hazards via risk reduction, readiness, response and recovery (collectively known as the 4R's) (MCDEM, 2002).

Using the Wellington region as a case study, this report investigates how the annual plans, long term plans, district plans, spatial plans and earthquake prone building policies of the following councils recognise earthquake hazards:

- Hutt City Council;
- Kapiti Coast District Council;
- Porirua City Council;
- Upper Hutt City Council; and
- Wellington City Council.

This report begins by introducing the Wellington region and its associated earthquake risk. Then, with a focus on earthquake hazards, the report outlines the New Zealand legislation, national guidelines and the Wellington region-wide policies and plans which cover natural hazards. The methodology for the study is explored and the results are presented. Conclusions are then drawn on the methods used by differing councils to address earthquake hazards within their respective jurisdiction, and opportunities are identified for improving planning for the earthquake hazards.

1.1 RESEARCH CONTEXT

This research is part of the “It’s Our Fault” program (IOF) which is the most comprehensive study to date of Wellington’s earthquake risk. The objective of the IOF program is to position Wellington as a more resilient region by providing a greater understanding of the likelihood, nature and possible impacts of Wellington earthquakes (Van Dissen, Berryman, et al. 2009; 2010; www.gns.cri.nz/ItsOurFault). The program consists of three main phases:

1. Likelihood of earthquake activity;
2. Effects of earthquake activity on different ground conditions; and
3. Impacts of earthquake activity on humans and the built environment.

The research undertaken to date as part of IOF has largely focused on the first two phases. The latest results from this research indicate that the chance of having a large (magnitude ~7.5) Wellington Fault earthquake is significantly lower than previously thought. Prior to IOF, the 100 year conditional probability of rupture of the Wellington-Hutt Valley segment of the Wellington Fault was estimated to be about 30% (Rhoades, Stirling et al., 2004). The current estimate, incorporating new IOF results, is about 11% (Rhoades, Van Dissen et al., 2011).

The social science findings so far have highlighted that Wellington residents have a high awareness of earthquake risk but are less aware of tsunami risk (MCDEM, 2009b; Johnston, McClure et al., in press). Levels of preparedness are less than those desired by emergency management agencies with only a small group of people describing themselves as fully prepared (~18% of the Wellington survey respondents). These and other future findings from the impacts phase will likely have significant implications for the development of better regional and civil defence and emergency planning.

In 2011 a longitudinal study was undertaken of the five district plans within the Wellington region to see whether earthquake hazards had greater recognition than they had in 2001 when an earlier study was undertaken. In general, it was found that the current district plans had more objectives, policies and rules to reduce risk from the Wellington Fault than they did in 2001. However, it was recognised that there were areas where land-use planning for earthquakes could improve, including strengthening relationships between central government legislation, and in addressing the other hazards associated with earthquakes (other than surface fault rupture, for example, liquefaction and tsunami). Continued evaluation of policies is required to ensure the risk from earthquakes is recognised and updated to reflect current hazard understanding of the Wellington Fault (Becker et al., in review).

The research reported here expands on the 2011 longitudinal study and investigates how earthquake hazards are recognised within the main council policies and plans for five councils within the Wellington region (namely Hutt City Council, Kapiti Coast District Council, Porirua City Council, Upper Hutt City Council and Wellington City Council). This will give a greater understanding of whether the councils use all of the tools within their respective legislative toolbox to address their respective earthquake risk, or whether they rely on a limited number of plans and policies. This research will also identify where improvements can be made to the integration of council plans and policies to assist with mitigating the risks associated with earthquake hazards.

1.2 OVERVIEW OF THE STUDY AREA

The Wellington region is located at the south-west tip of the North Island of New Zealand (Figure 1.1) and has a population of 483,500 as at 2010 (Statistics New Zealand, 2012a). This population is disbursed throughout four cities (Wellington City, Lower Hutt City, Upper Hutt City and Porirua City) and one district (Kapiti District). The largest city is Wellington City with a population of approximately 197,700; whereas, the smallest is Upper Hutt City with a population of 41,100 (Statistics New Zealand, 2012a).



Figure 1.1 Location of Wellington within New Zealand (from <http://www.wellington.nz.com>).

The Wellington region contains nine territorial authorities, namely Wellington Regional Council, Wellington City Council, Hutt City Council, Upper Hutt City Council, Porirua City Council, Kapiti Coast District Council, South Wairarapa District Council, Carterton District Council and Masterton District Council (Figure 1.2). These councils are responsible for the governance of the region.



Figure 1.2 Council boundaries within the Wellington region (from Statistics New Zealand 2012b).

The Greater Wellington Regional Council (GWRC) is the overarching territorial authority and is responsible for providing a broad direction and framework for managing the region's resources, including natural hazards. As part of that management the RMA requires regional councils to produce a Regional Policy Statement detailing the environmental direction for the region. It is then the responsibility of each city and district council to prepare a District Plan which contains objectives, policies and rules (if any) that give effect to the Regional Policy Statement (Wellington Regional Council, 1995).

Within the wider Wellington region there are six district plans (South Wairarapa, Carterton and Masterton have a combined District Plan) which address earthquake hazards within the region. Each council is also legislatively required to prepare an annual plan, long term plan and an earthquake prone building policy. In addition to these, each territorial authority may also have a spatial plan, which identifies future urban growth strategies and the environmental, economic and social issues associated with this growth.

As an issue of reference, this study focuses on a Wellington Fault rupture which extends through Wellington City, and on the effects on Wellington City and the immediate surrounding area. This study does not include South Wairarapa District Council, Carterton District Council and Masterton District Council, as the Wellington Fault does not pass through their jurisdictions.

1.3 THE EARTHQUAKE HAZARD IN THE WELLINGTON REGION

The Wellington region lies within the deforming boundary zone between the Pacific and Australian plates (Figure 1.3), within one of the most seismically active areas of the country. The region is crossed by both onshore and offshore earthquake producing active faults. The region is underlain by the subduction interface between the Australian and Pacific plates, and has been violently shaken by earthquakes in 1848, 1855 and 1942 (Downes, 1995; Robinson, et al 2011; Stirling et al., 2012).

Wellington City is bisected by the active Wellington Fault, and many utility lifelines (e.g. water, electricity, roads and telecommunications) cross this fault. Surface fault rupture and a large earthquake (magnitude ~7.5) is regarded as New Zealand's probable maximum earthquake loss event. The likelihood of such an event occurring within the next 100 years is approximately 11% (Rhoades, Van Dissen et al., 2011). Parts of the region are vulnerable to different earthquake hazards including:

- Strong ground shaking;
- Surface fault rupture;
- Liquefaction;
- Landslides,
- Tectonic land level changes; and
- Tsunami

Characterising these hazards, and attempting to mitigate their effects, has been the focus of government and private investigation and policy over many years, and continues to this day (Grant-Taylor et al.; 1974, Greater Wellington Regional Council, 1996; Wellington City Council, 2009; Van Dissen and Barnes, 2010).

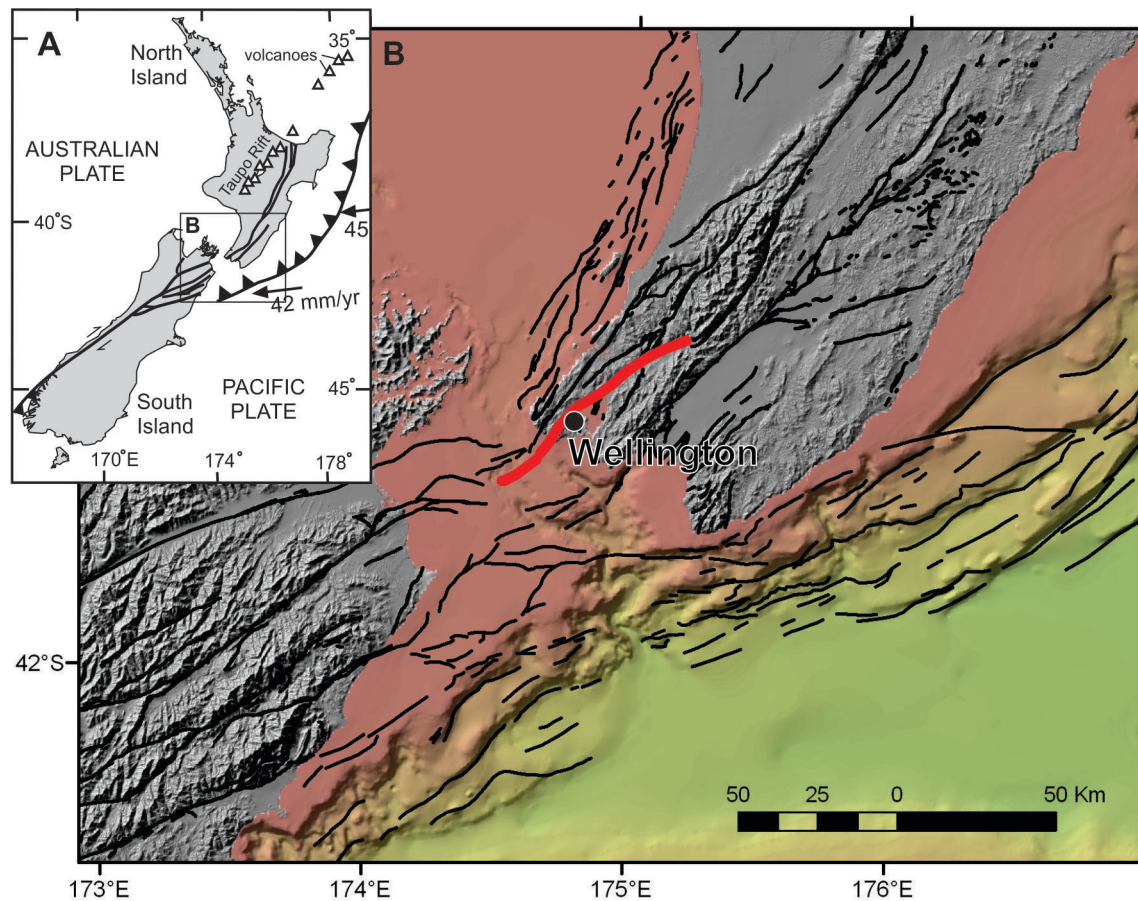


Figure 1.3 A) Tectonic setting of New Zealand. B) Active faults of central New Zealand, with the Wellington-Hutt Valley segment of the Wellington Fault (Berryman, 1990), which bisects Wellington city, highlighted in bold red. Onshore faults from GNS Science's Active Faults Database (<http://data.gns.cri.nz/af/>) and offshore faults closest to Wellington from Pondard & Barnes (2010).

2.0 LEGISLATION COVERING NATURAL HAZARDS

This section reviews the following:

- Legislation in New Zealand which addresses natural hazards. While this legislation covers all natural hazards, for the purposes of this report it will be summarised in the context of earthquake hazards;
- National guidance available to assist councils with addressing the risks associated with earthquake hazards. While this guidance is not mandatory to follow, it does provide councils with a consistent approach for addressing earthquake hazards; and
- Policies relating to natural hazards which apply specifically to the Wellington region. These regional policies have statutory weight and therefore council plans and policies should be ensuring that the outcomes described within these policies are being achieved.

2.1 NATIONAL LEGISLATION AND PLANNING RESPONSIBILITIES

In New Zealand, no single agency is responsible for natural hazard management. The responsibility for natural hazard management extends across a number of organisations including the Ministry of Civil Defence and Emergency Management (MCDEM), regional councils, territorial authorities, Civil Defence and Emergency Management (CDEM) Groups, and Engineering Lifelines Groups (MfE, 2008). While co-operation between these agencies is essential to ensure a streamlined national approach to planning around natural hazards, there is no one agency which is responsible for managing this co-operation. This issue has been highlighted in a recent Technical Advisory Group (TAG) report which investigated, amongst other matters, how the risk from natural hazards can be more comprehensively addressed under the RMA. Further analysis regarding the implications of the findings of this report can be found in Saunders and Beban (2012).

Five key pieces of legislation contribute to natural hazard management in New Zealand: the Resource Management Act 1991 (RMA), Building Act 2004, Civil Defence Emergency Management Act 2002 (CDEM Act), Local Government Act 2002 (LGA), and the Local Government Official Information and Meetings Act 1987 (Saunders, Forsyth et al., 2007).

Figure 2.1 presents a summary of the tools under these statutes that govern natural hazard planning at different levels of government, namely central (orange), regional (green) and district/city (blue) levels. The hierarchy of plans established under each piece of legislation provide statutory and non-statutory tools for natural hazard planning. Saunders and Forsyth (2007) explore the relationships between the different pieces of legislation and these relationships are demonstrated in Figure 2.1. The solid arrows show established relationships in the hierarchy of provisions, whereas the dashed arrows highlight relationships between existing provisions that can be improved to achieve better natural hazard risk reduction. These relationships may be one-way or two-way. These legislative provisions and the array of tools they provide constitute a robust 'toolkit' for natural hazard planning. However, many of these tools are not well known or used to their full potential to reduce hazard risk and build community resilience (Glavovic, Saunders et al., 2010; Saunders, Forsyth et al., 2007).

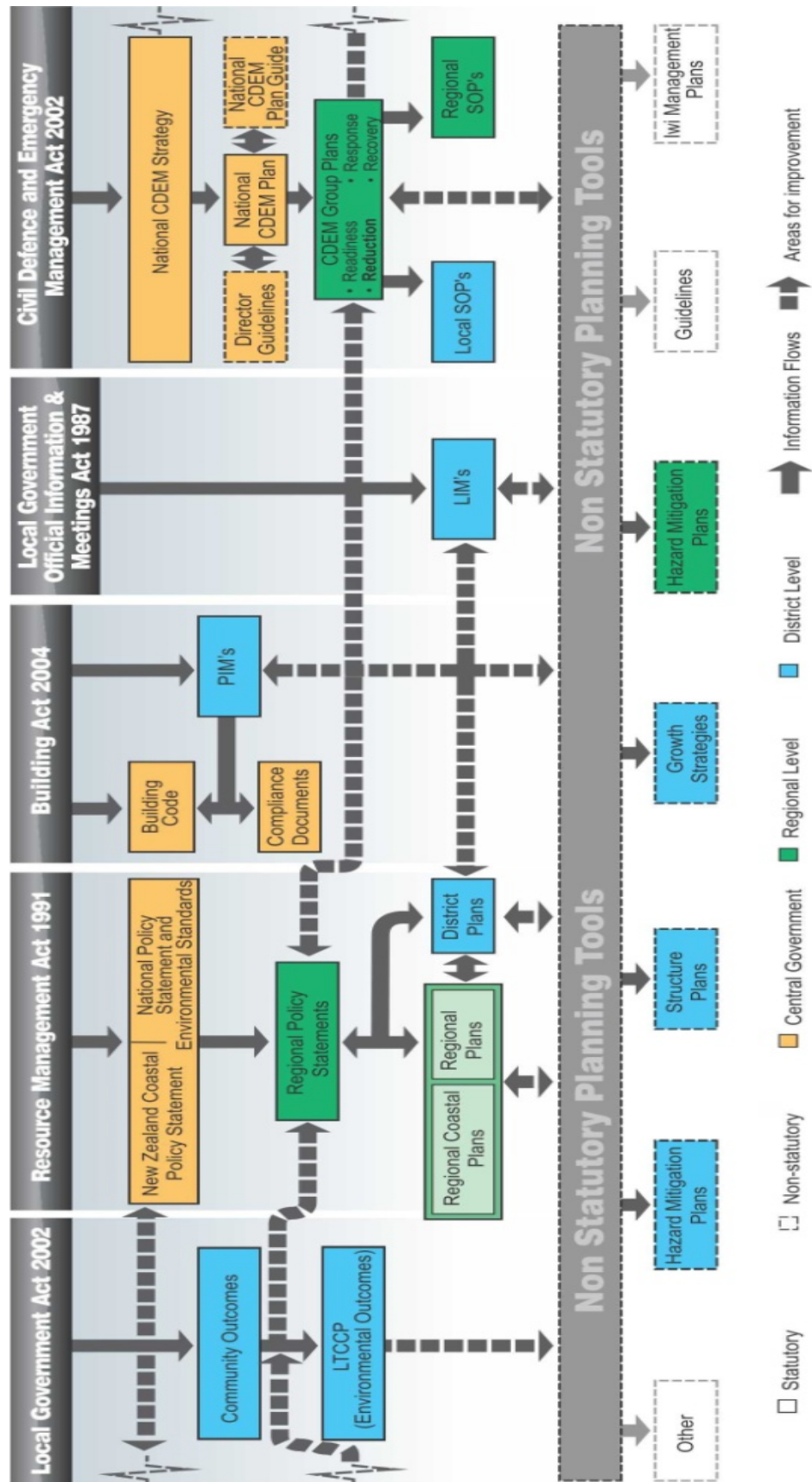


Figure 2.1 Legislative contexts for hazard management in New Zealand (Saunders and Beban, 2012).

Saunders and Forsyth (2007) consider that the legislation framework depicted in Figure 2.1 has been designed to integrate the legislation, as reflected in the commonalities of their purpose (sustainable management or sustainable development). They also share the common purpose of social, economic, environmental and cultural well-being, and health and safety.

Table 2.1 provides a summary of how these statutes manage the earthquake risk in New Zealand. The reduction of risk primarily lies with the RMA, whereas emergency management (readiness, response, recovery) lies with the CDEM Act (Saunders et al, 2007).

Table 2.1 Summary of how statutes contribute to the management of earthquake risk (Saunders and Beban, 2012).

Statute	Implication for Natural Hazard Management
Resource Management Act 1991	<ul style="list-style-type: none"> Health and safety issue must be addressed. Local authorities are required to avoid or mitigate the effects of natural hazards, not their occurrence (<i>Canterbury RC v Banks Peninsula DC, 1995</i>). S.06 allows for Councils to consider the potential erosion, inundation, falling debris and flooding effects which could affect a subdivision (not land-use development). It should be noted that s.106 does not allow for the consideration of all natural hazards as defined under the RMA (in particular surface fault rupture and tsunami which can be associated with an earthquake). The ability to develop National Policy Statements of National Environmental Standards to address natural hazards (none currently exist).
Building Act 2004	<ul style="list-style-type: none"> Requires all buildings are 'safe from all reasonably foreseeable actions during the life of the building'. Reference is made to the joint Australian/New Zealand loading standard AS/NZS1170. Within Table 3.1 of Part 0 the acceptable annual probability of exceedance for wind and earthquake loads are identified. These relate to the return period for an event (being 1/500, 1/1000 and 1/2500) and the building importance categories of II (ordinary) III (Important) and IV (Critical). The more important the building, the longer the return period of an event the structure is required to be designed for. These annual probabilities of exceedance correspond to a 10%, 5% and 2% probability within the nominal 50 year life of the building. The ability to resist actions from other hazards is specified in the Building Code (a regulation that accompanies the Building Act) but no acceptable intensity of action or recurrence interval is prescribed either in the Code or in the Loading Standard (except for snow which has a nominal annual probability of exceedance of 1/150 years). Sections 72 – 74 of the Building Act identify the process that Councils must follow when considering a building consent on a site subject to one or more natural hazards. The Building Act allows for Council to decline a building consent if, by granting the consent, the development would worsen or accelerate the effects from a natural hazard. Alternatively, building consent can be granted if: <ul style="list-style-type: none"> <i>i. adequate provision has been or will be made to protect the land, building work, or other property from the natural hazard or hazards; or</i> <i>ii. restore any damage to that land or other property as a result of the building work.</i> The definition of natural hazards under the Building Act is limited and does not include tsunami or surface fault rupture
CDEM Act 2002	<ul style="list-style-type: none"> 4R's (readiness, risk reduction, response and recovery) philosophy – risk reduction is assumed to be managed under the RMA (Saunders et al 2007). Encourage and enable communities to achieve acceptable levels of risk. Readiness and response driven e.g. guidance for tsunami evacuation planning, mapping, and signage (MCDEM, 2008a; MCDEM, 2008b)
Local Government Act 2002	<ul style="list-style-type: none"> Financial planning for risk reduction activities. Take into account the foreseeable needs of future generations. Section 11A – “a local authority must have particular regard to the contribution that the following core services make to its communities...the avoidance or mitigation of natural hazards.”

Statute	Implication for Natural Hazard Management
Local Government Official Information & Meetings Act 1987	<ul style="list-style-type: none"> Provides for natural hazard information to be included in LIMs. If the natural hazard is identified within the District Plan, this information is not required to be provided within a LIM (S44A(2)(a)(ii)).

The key themes in the five statutes are: sustainable management and sustainable development; social, economic, cultural and economic well-being; and health and safety. However, interpretation of sustainable management and development in these statutes is inconsistent and balancing of the four well-beings could mean that economic considerations can take priority over social, environmental and cultural well-being. Key to the success of these statutes in effectively dealing with natural hazards is an integrated approach to policy and planning (MfE, 2008).

2.2 NATIONAL GUIDANCE FOR EARTHQUAKE HAZARDS

2.2.1 Active Fault Guidelines

In 2001, the Parliamentary Commissioner for the Environment (PCE) directed that guidance was needed on how to address the hazards associated with surface fault rupture. In 2003, the Ministry for the Environment (MfE) commissioned planning guidelines to assist with addressing the hazard associated with surface fault rupture. These guidelines were entitled *Planning for the Development of Land on or Close to Active Faults* (Kerr, Nathan et al., 2003).

The 'active fault guidelines' provide a risk-based approach for dealing with surface fault rupture hazard within the context of the RMA. These guidelines recommend that information on the nature of surface fault rupture hazard (e.g. location, recurrence interval) and on development type (e.g. landuse and construction type) is obtained before decisions are made about if and how the risk associated with surface fault rupture will be treated. Key recommendations of the 'active fault guidelines' are to:

- gather accurate active fault hazard information;
- determine how to avoid surface fault rupture areas before development takes place and subdivisions are created;
- consider, and as appropriate account for, surface fault rupture hazard in areas already developed or subdivided; and
- communicate risk in built-up areas subject to surface fault rupture.

These guidelines contain suggested examples of consent categories to assist practitioners with addressing differing types/styles of surface fault rupture. Generally speaking, these guidelines recommend a more restrictive consent activity status as the risk associated with a development increases.

In 2005 a follow-up study to the active fault guidelines was undertaken to assess if, and how, local authorities used the guidelines, and whether they had found them useful (Becker, Saunders et al., 2005). The research methodology consisted of a survey of planners from local authorities across all of New Zealand (a total of 88 regional and territorial authorities) followed by detailed interviews with eleven individuals. The survey revealed that there was reasonable awareness of the active fault guidelines (60% awareness). However, actual use

of the guidelines was less, with only a third of respondents reporting that they had used it on a day-to-day basis. Even fewer respondents stated that long term changes had been made to processes, such as amending district plans or Regional Policy Statements (Becker, Saunders et al., 2005).

Most respondents felt that the information contained in the guidelines was easy to understand and apply. One of the more difficult sections of the guidelines was application of the consent category tables to participants' local fault situations and planning environments. Planners found it difficult to use the available fault information and apply it to the consent tables by themselves. The local authorities that had made the best use of the guidelines had worked closely with physical scientists or geotechnical specialists to define fault avoidance zones, and to devise planning methods that fitted the local situation (making use of the consent tables). The follow-up study found that to achieve good planning outcomes with respect to surface fault rupture hazard, it is essential to form strong partnerships between scientists/specialists and planners in order to accurately identify the risk posed by surface fault rupture and to formulate a local solution (Becker, Saunders et al., 2005).

2.2.2 Civil Defence Emergency Management Groups Guidelines

In 2006, the Ministry of Civil Defence and Emergency Management (MCDEM) prepared the Guide to the National Civil Defence Emergency Management Plan. This guide was revised in 2009. The purpose of the guide is to assist and support New Zealand agencies to achieve the purposes of the National Plan (MCDEM, 2009a). This plan details the relationships between the National CDEM Strategy, the National CDEM Plan, CDEM Group Plans, the emergency plans of other agencies, and other reduction mechanisms for natural hazards at the national and local level (Figure 2.2).



Figure 2.2 Schematic representation of the links between the CEDEM policies and documents and the policy and documents created under other pieces of legislation (MCDEM 2009a).

This guideline informs the appropriate agencies on how the 4R's are required to be addressed within a CDEM Group Plan. In terms of risk reduction, this guide identifies that strategic risk management in New Zealand is set by a number of statutory and non-statutory instruments, including:

- The RMA, and its integrated hierarchy of instruments such as policy statements and district plans;
- the LGA;
- the Building Act 2004;
- the CDEM; and
- non-statutory instruments that support the above legislative framework, such as spatial plans and strategies. (MCDEM, 2009a)

As demonstrated above, there is a strong reliance on a variety of other legislation to ensure that risk reduction is achieved. This shift in responsibility to the various tools available in other pieces of legislation removes the control for risk reduction from CDEM staff to other departments of councils and agencies. If this is not carefully managed, there is opportunity for the underutilisation of these various policy tools, thereby reducing the potential for effective risk reduction to occur.

2.2.3 Tsunami Guidelines

A tsunami is a product of a large earthquake, either from a distant or a local source. In 2011, GNS Science released land-use guidelines pertaining to the incorporation of tsunami inundation modelling into land-use planning (Saunders, Prasetya et al., 2011). These guidelines are based around a decision tree which provides guidance as to the levels of modelling required to be undertaken for emergency management and land-use planning. These guidelines also identify potential measures to reduce the effects from a tsunami and which could be incorporated into policy documents in a land-use planning framework. This includes identifying regulatory and non-regulatory approaches which can be used to reduce the effects of a tsunami (Saunders, Prasetya et al., 2011).

2.3 REGION WIDE POLICIES AND PLANS PERTAINING TO EARTHQUAKE HAZARDS

2.3.1 Wellington Civil Defence and CDEM Group Plan

The CDEM Act requires CDEM groups to coordinate plans, programmes and activities related to civil defence and emergency management across the 4R's, and encourages cooperation and joint action with regional groups (MCDEM, 2005). The Wellington CDEM Group comprises:

- Carterton District Council;
- Greater Wellington Regional Council;
- Hutt City Council;
- Kapiti Coast District Council;
- Masterton District Council;
- Porirua City Council;
- South Wairarapa District Council;
- Upper Hutt City Council; and
- Wellington City Council.

The Wellington CDEM Group Plan ranks the various risks which the region faces in order of importance, with the greatest risk receiving a number 1 ranking. For the Wellington Region, a large surface fault rupture earthquake on the Wellington Fault is considered to be the greatest risk (Wellington Region Emergency Management Group, 2005). Within the Wellington CDEM Group Plan, there are detailed sections pertaining to readiness, response and recovery. There is however, very little discussion around reduction, other than recognising the strategic issues which exist to reduce the risks associated with natural hazards and the methods used to address these issues. The reduction chapter of the Wellington CDEM Group Plan does recognise that some of the tools available under the various pieces of legislation are used to avoid liability (for example, Land Information Memorandums or Project Information Memorandums, and consent notices under Section 221 of the RMA), and do not reduce the risks from natural hazards (Wellington Region Emergency Management Group, 2005). The reduction section of the Wellington CDEM Group Plan does not recognise that the risks from various hazards can be reduced using the tools available in district plans, annual plans and long term plans. However, these policies are recognised in other Sections of the Wellington CDEM Group Plan.

2.3.2 Wellington Regional Policy Statement

Section 59 of the RMA outlines the purpose of Regional Policy Statements:

The purpose of a regional policy statement is to achieve the purpose of the Act by providing an overview of the resource management issues of the region and policies and methods to achieve integrated management of the natural and physical resources of the whole region.

Any regional plans or district plans which are in development, or any subsequent plan changes, must have regard to the regional policy statement.

The Wellington Regional Policy Statement (RPS) became operative in 1995. The policy statement has a chapter dedicated to natural hazards, which includes earthquakes. The RPS recognises that risks from natural hazards need to be reduced to an “acceptable level” and promotes risk reduction measures. This policy statement recognises that “*Territorial authorities have primary responsibility for writing rules for the control of the use of land (other than in the coastal marine area and the beds of lakes and rivers) for the avoidance or mitigation of natural hazards, but these rules must not be inconsistent with either the Regional Policy Statement or the relevant objectives and policies in a regional plan*” (Wellington Regional Council 1995, p. 204). As such, the RPS considers that district plans within the Wellington region are appropriate tools for achieving the following policy outcomes:

Policy 1 To ensure that there is sufficient information available on natural hazards to guide decision making.

Policy 2 To consider all of the following matters when planning for, and making decisions on, new subdivision, use, and development in areas which are known to be susceptible to natural hazards:

- (1) The probability of occurrence and magnitude of the natural hazards, and the location of the effects, including any possible changes which might arise from climate change;*
- (2) The potential consequences of a natural hazard event occurring, both on-site and off-site. Potential loss of life, injury, social and economic disruption, civil defence implications, costs to the community, and any other adverse effects on the environment should be considered;*

- (3) *The measures proposed to mitigate the effects of natural hazard events, the degree of mitigation they will provide, and any effects on the environment from adopting such measures;*
- (4) *Alternative measures that might be incorporated into the subdivision, use and development to mitigate the effects of natural hazard events, the degree of mitigation they will provide, and any effects on the environment from adopting such measures. Both structural and non-structural measures should be considered;*
- (5) *The benefits and costs of alternative mitigation measures;*
- (6) *The availability of alternative sites for the activity or use; and*
- (7) *Any statutory obligations to protect people and communities from natural hazards.*

(Wellington Regional Council, 1995)

While the RPS encourages a risk-based approach for addressing risks from natural hazards, there is no definition or guidance provided as to what is considered to be an 'acceptable risk'. This creates the potential for councils to make differing determinations on what is an 'acceptable risk' within their respective jurisdiction. This could create inconsistencies in the way which natural hazards (including earthquake hazards) are considered and addressed across the region.

2.3.3 Proposed Wellington Regional Policy Statement

Greater Wellington Regional Council has developed a proposed Regional Policy Statement (PRPS), which, in time will replace the existing Regional Policy Statement. The submissions for the PRPS closed on 25 May 2009, with the decision on the submissions being approved on the 18 May 2010 and publicly notified on 22 May 2010 (Greater Wellington Regional Council 2012). The PRPS was appealed to the Environment Court on a variety of matters. The appeals on the PRPS that relate to policies 28 and 50 (which address natural hazards) have been resolved subject to the Consent Order being signed by the Environment Court. For the purposes of this report, the revised wording and explanations for policies 28 and 50 which are awaiting the consent order of the Environment Court have been used, as this wording is likely to represent the final wording for these policies.

The PRPS has a dedicated natural hazards chapter. In this chapter, it recognises an earthquake on a local fault (including the Wellington Fault) as being one of the three most potentially damaging and costly natural hazards that can occur in the region (Greater Wellington Regional Council 2010). The PRPS recognises that peoples action and on-going development in high risk areas can increase the risk from natural hazards. The PRPS requires that the consequences and risk from natural hazards are considered and that inappropriate subdivision and development in high risk areas is avoided. The PRPS sets out several key objectives and policies to reduce the risk from natural hazards. These include:

Objective 18: The risks and consequences to people, communities, their businesses, property and infrastructure from natural hazards and climate change effects are reduced.

Objective 20: Communities are more resilient to natural hazards, including the impacts of climate change, and people are better prepared for the consequences of natural hazard events

Policy 28: Avoiding inappropriate subdivision and development in areas at high risk from natural hazards – district and regional plans.

Policy 50: Minimising the risks and consequences of natural hazards – consideration.

Policy 62: Allocation of responsibilities for land use controls for natural hazards

The PRPS recognise districts plans as being one of the key methods which can be used to achieve the outcomes sought under these objectives and policies. The explanation of Policy 28 provides guidance on the process which can be used to identify area at high risk and how policies and rules in regional and district plans could be developed to give effect to Policy 28. Policy 28 promotes a precautionary, risk-based approach which requires the consideration of the characteristics of the natural, hazard, its magnitude and frequency, potential impacts and the vulnerability of development.

Policy 50 aims to minimise the risk and consequences associated with natural hazard events. This policy defines high risk areas as being *‘those areas potentially affected by natural hazard events that are likely to cause moderate to high levels of damage to the subdivision or development, including the land on which it is situated. It applies to areas that face credible probability or experiencing significant adverse impacts in a hazard event such as fault rupture zones, beaches, that experience cyclical or long term erosion, failure prone hillslopes, or areas subject to repeated flooding (Greater Wellington Regional Council 2010).’* This definition provides guidance of what constitutes a high risk area and combined with the need to minimise risk and consequences associated with natural hazard events, sets a clear policy framework for the councils in the region to follow when undertaking plan changes or developing their second generation plans. However, it is noted that the PRPS does not quantify moderate and high levels of damage and therefore there is still the ability for councils to interpret the levels of damage resulting from natural hazards differently.

Policy 62 of the PRPS allocates the responsibilities for land use control for natural hazards to the Wellington Regional Council and the various city and district councils in the region. This allocation of responsibility places a stronger emphasis on the need for city and district councils to use the policy tools available in district plans (in addition to other policy tools), to reduce the consequences and risks from natural hazards.

The PRPS builds on the risk based approach promoted in the existing operative RPS and sets a clear policy framework for councils to follow. When the PRPS becomes operative, any future changes to the various district and city plans in the region will need to give effect to the PRPS. Given the clear guidance provided in the PRPS regarding reducing risks and consequences associated with natural hazards, it could be expected that overtime, natural hazards are more comprehensively addressed in district and city plans than the existing situation.

3.0 COUNCIL PLANS AND POLICIES - A NEW ZEALAND SETTING

In New Zealand, local government plans set forth objectives and strategies for managing development, for funding council projects, and/or they specify rules for development. They have evolved as important tools that policymakers use in guiding the development of regions, cities or districts. The nature of such plans is shaped by the requirements of the higher level policies that either authorise or mandate local or regional planning (May, 1996). In New Zealand there are provisions for public consultation when preparing plans, (May, 1996). This consultation helps shape, identify and address the issues which local communities see as being important. Non-statutory plans developed by councils may legislatively not require consultation. However, councils often consult with the local community so that these plans reflect the views of their residents.

In this study, five different types of council plans and policies were reviewed. Four of these plans and policies (annual plan, long term plan, earthquake prone building policies and district plan) are required by central government legislation to be produced by councils. These plans and policies must contain certain information, be produced within a certain time period, and involve public consultation as detailed by their respective legislation. The fifth plan type analysed, spatial plans, are non-statutory documents, but many councils produce them to help shape future urban expansion. As these documents have no statutory basis, there is no set formula or minimum information requirement for these documents.

A more detailed description of each council policy or plan type analysed as part of this study is detailed below.

3.1 ANNUAL PLAN

An annual plan is produced under Section 95 of the Local Government Act 2002. The purpose of an annual plan is to:

- (a) *contain the proposed annual budget and funding impact statement for the year to which the annual plan relates; and*
- (b) *identify any variation from the financial statements and funding impact statement included in the local authority's long-term plan in respect of the year; and*
- (c) *support the long-term plan in providing integrated decision-making and co-ordination of the resources of the local authority; and*
- (d) *contribute to the accountability of the local authority to the community; and*
- (e) *extend opportunities for participation by the public in decision-making processes relating to the costs and funding of activities to be undertaken by the local authority.*

3.2 DISTRICT PLAN

The purpose of a district plan is to ensure that a territorial authority is able to undertake its functions as detailed within the RMA. Included within these functions are requirements for the territorial authority to control any actual or potential effects of the use, development or protection of land, including the avoidance or mitigation of natural hazards. A district plan must give effect to the outcomes sought within the relevant regional policy statement.

Given these requirements under the RMA, district plans are often the most common tool which Councils use to reduce the risks from natural hazards. These documents often identify areas at high risk of natural hazards and have corresponding objectives, policies and rules to assist with mitigating the risks associated with a particular natural hazard.

3.3 EARTHQUAKE PRONE BUILDING POLICIES

Section 131 of the Building Act 2004 requires territorial authorities to adopt a policy on dangerous, insanitary and earthquake-prone buildings. An earthquake-prone building is defined in section 122 of the Building Act 2004 as:

- “(1) A building is earthquake-prone for the purposes of this Act if, having regard to its condition and to the ground on which it is built, and because of its construction, the building—
 - will have its ultimate capacity exceeded in a moderate earthquake (as defined in the regulations); and
 - would be likely to collapse causing—
 - injury or death to persons in the building or to persons on any other property; or
 - damage to any other property.
- (2) Subsection (1) does not apply to a building that is used wholly or mainly for residential purposes unless the building—
 - comprises 2 or more storeys; and
 - contains 3 or more household units.”

Earthquake prone building policies only relate to buildings which are deemed to be earthquake prone. As such, these policies tend to only apply to a small percentage of the building stock within any given city. Many of these policies only require buildings to be strengthened to 33% of the current Building Code, though some do require strengthening to 67% of the Building Code.

3.4 LONG TERM PLAN

A long term plan is produced under Section 93 of the Local Government Act 1991. The purpose of a long term plan is to:

- (a) *describe the activities of the local authority; and*
- (b) *describe the community outcomes of the local authority's district or region; and*
- (c) *provide integrated decision-making and co-ordination of the resources of the local authority; and*

- (d) *provide a long-term focus for the decisions and activities of the local authority; and*
- (e) *provide a basis for accountability of the local authority to the community; and*
- (f) *provide an opportunity for participation by the public in decision-making processes on activities to be undertaken by the local authority.*

A long term plan must cover a period of no less than 10 consecutive years and must describe the community outcomes for the local authority's district or region.

3.5 SPATIAL PLANS

These plans are not required legislation. These plans present a high-level strategy for developing a region by relating to its geography, and they seek to achieve desired broad outcomes. Developed and implemented via collaboration between multiple parties, spatial plans provide a mechanism for agreeing joint priorities, actions and investment.

Spatial planning is:

- multi-party – a tool for collaboration between the key decision-makers;
- focused on the long-term development of cities and regions and on improving investment certainty;
- a guide to the location and timing of future infrastructure, services and investment that can be used to provide for the co-location of infrastructure where this is appropriate;
- evidence based;
- integrated across sectors – e.g., transport, land-use, housing, education, funding policy and regulatory policy – to achieve broad outcomes (economic, social, environmental, cultural); and
- strategic – provides direction to regional funding policy, regulation and other implementation plans (e.g., transport, economic development) (Ministry for the Environment, 2012).

3.6 CONCLUSION

While all of the above plans and policies have their own specific considerations and jurisdictional requirements, when collectively applied they have the ability to effectively address and reduce the risks from a variety of natural hazards. If one or more of the above policy tools are not used to address the risks from natural hazards, there is the potential for there to be lost opportunities to reduce any potential existing or future risk associated with these natural hazards.

The following section will outline the methodology which was undertaken to analysis the plans and policies of the various councils.

4.0 METHOD

This study involved a content analysis of the long term plans, spatial plans, annual plans, earthquake prone building policies, and district plans of the following councils:

- Hutt City Council;
- Kapiti Coast District Council;
- Porirua City Council;
- Upper Hutt City Council; and
- Wellington City Council.

This analysis was undertaken to see whether earthquake hazards were being acknowledged and addressed within these plans and policies. This analysis did not focus on any one specific earthquake hazard (for example surface fault rupture), but rather focussed on seeing how “earthquake hazards’ were addressed in general. Earthquake hazards were considered to consist of the following:

- Strong ground shaking;
- Surface fault rupture;
- Liquefaction;
- Landslides;
- Tectonic land level changes; and
- Tsunami.

In total, 24 documents were reviewed (see Table A.1.1 in Appendix 1 for a full list of the plans and policies that were analysed).

Using plans and policy statements available as of April 2012, a content analysis was undertaken. This involved:

- Using the categories in Table 4.1 to identify aspects of earthquake hazards present in plans and policies.
- Reading each plan or policy and coding categories as present or not, where 1 = Yes and 2 = No.
- Statistical analysis of the coding to determine the frequency of elements and the relationship between plans and policies.
- Comparison with the Greater Wellington CDEM Group Plan

Table 4.1 Categories that were used in the content analysis

<i>Categories identified in plans and policy statements</i>
Structure of the Plan/Policy Statement Has a specific section on natural hazards (in contrast to hazards being mentioned throughout the document)
Hazard and Earthquake Definitions Does the plan/policy statement: <ul style="list-style-type: none"> • Have the definition of a hazard? • List earthquakes as hazards? • Mentions earthquakes as a hazard that could affect the city, district or region? • Locate the fault lines in the district or region (in the text or on a map)? • Describe earthquake hazards and their effects?
Objectives Does the plan/policy statement have: <ul style="list-style-type: none"> • Any objectives that are 'all hazard' based? • Any specific Objectives for earthquakes? • Any specific Objectives for other natural hazards?
Policies Does the plan/policy statement have: <ul style="list-style-type: none"> • Any policies that are 'all hazard based'? • Any specific policy(ies) for earthquakes? • Any specific policies for other natural hazards?
Assessment Criteria Does the plan/policy statement have: <ul style="list-style-type: none"> • Specific criteria which buildings/activities/land-use patterns need to meet for earthquakes • Specific criteria which buildings/activities/land-use patterns need to meet for other natural hazards
The Building Act 1991 or 2004 Does the plan/policy statement refer to: <ul style="list-style-type: none"> • The Building Act 1991 or 2004 as a way to reduce the risks from earthquakes? • The Building Act 1991 or 2004 as a way to reduce the risks from other natural hazards?
Practicalities of Planning for Earthquakes Does the plan/policy statement: <ul style="list-style-type: none"> • Note the limitations/practicalities of reducing the risks from earthquakes? • Suggest that due to the nature of earthquakes, control is not possible through the policy?
Earthquake Hazard Information Does the plan/policy statement: <ul style="list-style-type: none"> • Recognise there is a need for the council to update the local seismic hazard information, or acknowledge there is a lack of information available to the district or region? • Account for new hazard information come to light?
Link to other documents regarding natural hazards Link to other documents and their role in mitigating natural hazards Of those policies which reference document which documents are referred to <ul style="list-style-type: none"> • Annual Plan • Long Term Plan • District Plan • Growth Plan • Earthquake Building Prone Policy • CDEM/Civil Defence Plan

Monitoring

Does the plan/policy statement undertake monitoring which is:

- All hazard based?
- Specifically for earthquakes?
- Specifically for hazards which not earthquakes?
- Other matters but not natural hazards?

CDEM Act 2002

- Do they refer to the CDEM Act, the Group Plan or Civil Defence
- Does the policy rely on the CDEM Act, Group Plan or Civil Defence to address earthquakes
- Does the policy recognise readiness
- Does the policy recognise response
- Does the policy recognise recovery
- Does the policy recognise reduction

5.0 RESULTS

This section presents the results of the plan analysis.

5.1 CATEGORY RESULTS OF THE PLAN ANALYSIS

Table A.2.1 in Appendix 2, contains the detailed category results of the plan and policy statement analysis for Wellington City, Lower Hutt City, Porirua City, Upper Hutt City, and Kapiti Coast District Councils. The results for each set of category questions are summarised below.

5.1.1 Recognising the Earthquake hazard

The plans and policies generally have a low level of acknowledgement of earthquake hazards. The majority of the plans/policies (75%, 18 of 24 documents) do not have a section on natural hazards and 71% (17 of 24 documents) do not recognise earthquakes as a hazard that can affect their city or the wider Wellington region. The majority of the plans and policies (66%, 16 of 24 documents) do not identify the location of fault lines in their respective city or within the Wellington region, and 42% (10 of 24 documents) do not describe earthquake hazards.

5.1.2 Objectives and Policies

One third of the plans and policies (34%, 8 of 24 documents) had specific objectives for earthquake hazards. While this number is relatively low, it is greater than the number of objectives associated with other natural hazards being 13% (3 of 24 documents).

One third of the plans and policies (38%, 9 of 24 documents) had specific policies relating to earthquake hazards. While this number is also relatively low, it is greater than the number of policies addressing other natural hazards, being 25% (6 of 24 documents).

The higher number of objectives and policies relating to earthquake hazards arises as the Earthquake prone building policies (which account for 21% of the documents analysed) only have objectives and policies for earthquakes and not for any other hazards. If earthquake prone building policies are removed from the analysis, then the number of plans and policies that have specific objectives and policies for earthquake hazards is low, at 15% (3 of 19 documents) and 21% (4 of 19 documents) respectively.

5.1.3 Assessment Criteria

There are more plans and policies with assessment criteria for earthquakes (50%, 12 of 24 documents) than for other natural hazards (38%, 9 of 24 documents). This can again be contributed to the earthquake prone buildings policies which only have assessment criteria for earthquakes.

If the earthquake prone building policies are removed from the analysis, 36% (7 of 19 documents) have assessment criteria for earthquakes, which is similar to the number of plans and policies which have assessment criteria for other natural hazards.

5.1.4 Reference to the Building Act 1991 or 2004

There is generally a greater reliance on the Building Act to reduce the risk from an earthquake (41%, 10 of 24 documents), than for other natural hazards (21%, 5 of 24 documents). However, the earthquake prone building policies rely entirely on the Building Act to reduce risk from an earthquake. If these policies are removed from the analysis, then the same number of the remaining plans and policies rely on the Building Act to reduce the risks from an earthquake (21%, 5 of 24 documents) as with reducing the risk from any other natural hazard.

5.1.5 Practicalities for Planning for Earthquakes

One plan/policy (Porirua City District Plan) recognised the limitations for planning to reduce the risks from an earthquake. No plans or policies state that it was not possible to reduce the risks of an earthquake through that specific plan or policy.

5.1.6 Earthquake Hazard Information

One policy/plan (Upper Hutt City Long Term Plan) recognised the need for councils to recognise and update local seismic hazard information, or to acknowledge that there is a lack of information available in the district or region. However, 21% (5 of 24 documents) stated that they needed to account for new hazard information as it becomes apparent.

5.1.7 Linkages with other Plans and Policies

Generally, there was some cross referencing between plans and policies, with 54% (13 of 24 documents) of the plans and policies analysed being cross referenced to other council plans and policies as a way to reduce the risk from natural hazards. Of the 13 documents which had cross referencing, nine referenced the CDEM Plan as a way to assist with reducing the risk. Two of the documents referenced the district plan and earthquake prone building policies and one referenced the annual plan as documents which assist with reducing risk. None of the documents cross referenced spatial plans or long term plans as a way to reduce the risk from natural hazards.

5.1.8 Monitoring Programs

The majority of the council plans have a monitoring program (79%, 19 of 24 documents). However, very few have any form of monitoring of all natural hazards (8%, 2 of 24 documents), with 12% (3 of 24 documents) of the plans and policies having earthquake related monitoring. This is higher than for other specific natural hazards, where 8% (2 of 24 documents) of the plans and policies had a monitoring program identified.

5.1.9 Referencing to Civil Defence, Group Plans and the 4R's

Just over half of the plans and policies (58%, 14 of 24 documents) refer to the CDEM Act (2002), to the Wellington CDEM Group Plan or to civil defence actions. A total of 12% (3 of 24 documents) of the policies rely on the group plan or on civil defence actions to help address the risk associated with earthquakes.

When recognition of the 4R's is analysed, it is apparent that response has the greatest recognition with 46% (11 of 24 documents) of the policies identifying this action. Reduction had the lowest recognition of the 4R's with only 21% (5 of 24 documents) of the plans

identifying the action. Recognition of readiness and recovery was consistent across the various policies with 38% (9 of 24 documents) of the policies recognising these actions.

5.2 RECOGNISING EARTHQUAKE HAZARDS BASED ON PLAN AND POLICY TYPE

Table A.3.1 in Appendix 3 contains the detailed results of the content analysis based on plan and policy types for Wellington City, Lower Hutt City, Porirua City, Upper Hutt City, and Kapiti Coast District Councils. These results are summarised below.

5.2.1 Annual and Long Term Plans

When recognition of earthquake hazards is considered on a policy type basis, annual plans and long term plans have the lowest recognition of earthquake hazards. One of the five annual plans identified earthquakes as a hazard. Similarly, one annual plan had an all hazard objective and policy but nothing specific to earthquakes. While four of the five long term plans recognise earthquakes as a hazard that could affect their city or the Wellington region, only two of the five plans had further recognition of either natural hazards or earthquakes specifically.

Four of the five annual plans and three of the five long term plans had linkages with other council plans/policies as a way to reduce the effects from natural hazards. Three of the four annual plans and two of the three long term plans which has cross referencing to other plans, recognised the role of the Wellington CDEM Group Plan. Furthermore, all of the annual plans and long term plans had a monitoring regime; however, none of the criteria which are monitored relate to earthquakes.

5.2.2 District Plans and Earthquake Prone Building Policies

District plans and earthquake prone building policies are more likely to recognise earthquake hazards, than are annual or long term plans. Due to the nature of the earthquake prone building policies, they all recognised earthquakes as a hazard, have objectives and policies relating to this hazard, and have assessment criteria relating to earthquakes. This type of policy also entirely relies on the Building Act to reduce the risk from an earthquake, and four of the five district plans had a monitoring regime for earthquakes. Earthquake prone building policies, however, had no cross referencing to any other form of natural hazard and only one policy referred to another document as a way to reduce earthquake hazards.

All five of the district plans recognised earthquake hazards, located the faults, and described the potential effects. One of the five district plans (Porirua City District Plan) had an earthquake specific objective, and three of the five plans had an earthquake specific policy. It appears that district plans generally prefer an all-hazard approach as all of the plans had all-hazards objectives and policies.

All of the district plans had assessment criteria relating to earthquakes, as opposed to four of the five documents having assessment criteria for other natural hazards. District plans also have relied heavily on the Building Act, with all of the plans reviewed identifying the Building Act as having some role in reducing the risk from earthquakes. District plans also had one of the highest levels of cross referencing with other council plans and policies, with four of the five documents having some form of cross referencing. All of the district plans identified the CDEM Act (2002), the Wellington CDEM Group Plan or civil defence actions. One of the five district plans relied on the CDEM Act or on the CDEM Group Plan to reduce the risk from natural hazards.

One of the key roles of a district plan is to limit development in areas at high risk from natural hazards. However, only two of the five district plans recognised their role in the reduction component of the 4R's under the CDEM Act.

While all of the district plans have a monitoring program, only two of five documents had a monitoring regime for natural hazards and only one district plan (Hutt City District Plan) monitored earthquakes specifically.

5.2.3 Spatial Plans

Four of the five councils had spatial plans for their respective jurisdiction. Two of the plans had a section on natural hazards, with three of the four plans recognising earthquakes as a hazard for their area. One plan (Kapiti Coast Urban Development Plan) had an earthquake specific objective or policy. No plans had earthquake specific assessment criterion, although two had assessment criteria for other natural hazards.

None of the spatial plans recognised the need to update local seismic knowledge. These plans also had no linkages to annual plans, long term plans, earthquake prone building policies or district plans. Similarly, while all of the spatial plans had a monitoring regime, none of them monitored natural hazards.

None of the spatial plans recognised the 4R's or cross referenced the CDEM Act or the Wellington CDEM Group Plan.

5.3 WELLINGTON CDEM GROUP PLAN

Table A.4.1 in Appendix 4 contains the detailed results of the content analysis of the Wellington CDEM Group Plan. As would be expected with this plan, there was a definition of a natural hazard, earthquakes were identified, and their effects were described. In the Wellington CDEM Group Plan there were only all hazard objectives and policies; there were none specific to earthquakes.

The Wellington CDEM Group Plan had no reliance on the Building Act to reduce the risk from natural hazards. Similarly, there was no referencing of spatial plans or the earthquake prone building policies. The Wellington CDEM Group Plan however, did recognise district plans, annual plans and long term plans as being documents that could reduce the risk from natural hazards.

The Wellington CDEM Group Plan had an all hazard monitoring program, but nothing specific to earthquakes. It also recognised the need to account for new hazard information as it arose, and identified all of the 4R's.

It should be noted that the Wellington CDEM Group Plan is currently in the process of being reviewed and a new group plan is being developed. The content analysis undertaken in this report focussed on the existing group plan. However, it is recognised that this will eventually be superseded by the new group plan. A content analysis of the new group plan would give rise to differing results than what has been reported in this study.

5.3.1 Summary

These results show that there is a strong divide between non-rule and rule based policies and plans. Generally, the non-rule based policies and plans (annual plans and long term plans) have the lowest recognition of earthquake hazards. Corresponding with this low recognition of earthquake hazards, these plans and policies also have very few objectives, policies, or assessment criteria to address earthquake hazards.

The rule based plans and policies (district plans and the earthquake prone building policies) have the greatest recognition of surface fault rupture hazard, with almost all of these documents recognising this hazard. These plans and policies also have objectives, policies and assessment criteria designed to address additional earthquake hazards.

Spatial plans had a moderate recognition of earthquake hazards. However, these plans had no linkages to annual plans, long term plans, earthquake prone building policies or district plans.

The Wellington CDEM Group Plan has a high recognition of earthquake hazards but has no specific objectives and policies pertaining to earthquakes. Interestingly, this plan does specifically rely on the annual plans, long term plans and district plans of the various councils to help reduce the risks from natural hazards. However, as previously discussed, annual and long term plans have very low recognition of earthquake hazards. This shows that not all of the policy tools which the group plan relies on for reducing the risks from natural hazards are necessarily being implemented to their full potential.

The implications of these results are discussed in section 6 of this report.

6.0 ANNUAL PLANS, LONG TERM PLANS, EARTHQUAKE PRONE BUILDING POLICIES AND DISTRICT PLANS - DISCUSSION OF THE RESULTS

The Directors Guidelines for the CDEM Act identifies that it is important that the variety of tools within the following legislation and documents are used to ensure that effective risk reduction is achieved:

- The RMA, and its integrated hierarchy of instruments such as policy statements and district plans;
- the LGA;
- the Building Act 2004,
- the CDEM Act; and
- non-statutory instruments that support the above legislative framework, such as spatial plans and strategies. (MCDEM, 2009a).

If all of the policy tools detailed above are not used, then there is potential lost opportunities in achieving effective risk reduction. As the results detailed in section 5 have demonstrated, there is mixed recognition of earthquake hazards within the various council plans and policies. This section of the report will explore the implications of these results on achieving effective risk reduction for earthquake hazards.

6.1 IMPLICATIONS OF THE LOW RECOGNITION IN ANNUAL LONG TERM PLANS

The results show that annual plans and long term plans have low recognition of earthquake hazards. The risk to the Wellington region from an earthquake is well understood (Rhoades, Van Dissen et al., 2011). The low recognition of earthquake hazards in some of the plans and policies shows that not all of the tools which the councils have available to them are being utilised to ensure that effective risk reduction is being achieved.

By having a low recognition of earthquake hazards in annual plans and long term plans, it is difficult to undertake holistic planning for an earthquake event. Annual plans and long term plans identify council spending priorities for the next financial year, and for the following 10 years respectively. This includes the spending priorities for a variety of council programs including infrastructure renewal, strengthening of council owned earthquake prone buildings, new roading, and infrastructure which needs to be installed in the city or district. As the results demonstrate, councils rely heavily on the district plan to reduce the risk from earthquakes. However, district plans generally provide exemptions to a large proportion of the works which are planned and budgeted for with annual and long term plans (for example, infrastructure renewal) and so these works often bypass the planning system. By not having earthquake hazards identified in annual and long term plans, the opportunity to budget to undertake future earthquake resilient upgrading/replacement works may be lost.

6.2 IMPLICATIONS OF THE RESULTS FOR THE BUILDING ACT AND EARTHQUAKE PRONE BUILDING POLICIES

Earthquake prone building policies had the highest recognition of earthquake hazard. This policy is very specific and is designed to manage the strengthening of earthquake prone buildings to ensure that they reach the minimum design standard of 33% of the current code. As such, this policy is only targeted at a small number of buildings within any given region, and while it helps with reducing the risks from an earthquake, it is not a holistic policy and does not consider all aspects of earthquake hazard. These policies need to be part of a wider policy approach to assist with reducing the risk from earthquakes in the Wellington region.

The heavy reliance on the Building Act may not achieve the risk reduction that is sought. This reliance on the Building Act to address the risk associated with an earthquake needs to be recognised in the context of the outcomes this Act is seeking to achieve. The Building Act, Building Code and associated loading standards seek to achieve life safety in the event of an earthquake.

As demonstrated by the recent Christchurch earthquakes, many buildings achieved effective life safety. However, the damage they experienced meant that many buildings had to be demolished as their ongoing functionality and ability to withstand further earthquakes had been compromised. This has meant that the economic and social consequences from this earthquake series have been significant, and demonstrates the need for a variety of policy tools to be used to effectively reduce the risk from earthquakes. Specifically with regards to buildings and infrastructure, post-earthquake functionality, sustainability, damage control, and reparability need to be given greater priority – not just the attainment of life safety. These more encompassing objectives will only be achieved through a thorough integration of policy and legislation governing building performance, infrastructure performance, and land-use planning.

6.3 IMPLICATIONS OF THE HIGH RELIANCE ON DISTRICT PLANS FOR RISK REDUCTION

District plans are one of the main tools used by councils to address the risk associated with earthquakes. However, the way in which risk is addressed is not consistent as one district plan (Porirua City District Plan) does not identify fault lines within their respective jurisdiction and does not have any rules which specifically address surface fault rupture. This shows that within these document types there is inconsistency across the different cities/districts in terms of how the risk from earthquakes is addressed.

The heavy reliance on district plans has some potential issues, namely:

- There may be gaps in the rules that allow developments to proceed which increase the earthquake risk to property and people;
- District plans largely address prospective (future) risk as opposed to correcting existing risk; and
- The reliance on one policy tool (i.e. district plans) can result in missed opportunities to reduce the risk from earthquake hazards.

To ensure district plans address the risk from natural hazards (including earthquakes), it is important that the objectives, policies and rules are clear as to the outcomes which they are seeing to achieve. Having clear and well defined district plan objectives, policies and rules can prevent high risk developments occurring in areas prone to, for example, surface fault

rupture and liquefaction. Conversely, if the objectives, policies and rules are poorly defined, or very permissive, they can allow for inappropriate developments to proceed. For example, a district plan may require resource consent to be obtained for an addition to a dwelling within an identified fault zone. However a change in use for an existing commercial building from a low intensity use (warehouse) to a high intensity use (childcare centre) within the same fault zone may not require resource consent.

District plans provide the best opportunity to address the prospective or future risks from anticipated development. Prospective risk is considered to be the additional risk resulting from undertaking further development in a hazard prone area. District plan provisions are however not often used to correct risks which may already exist. The towns and cities in the Wellington region have been progressively developed since the mid 1800's and most of the development that has occurred did not take into account, in a land-use context, the risks from natural hazards as this information was not available at the time of development (though it is recognised that the Building Code does address the ground shaking hazards associated with earthquakes). Consequently, many of the towns and cities have existing development on hazard prone land including utilities, buildings and key infrastructure. To correct this existing risk it is often more appropriate to use other council policies as opposed to the district plan. For example, annual plans and long term plans detail the expenditure priorities of a city. If these plans take into account earthquake risk, they can include expenditure to correct or reduce the risk to existing infrastructure and utilities. Annual plans and long term plans can also be used to incentivise corrective risk reduction measures. Under these plans councils have the ability to create funds which can be accessed by the public. These funds often incentivise economic development or protection of heritage features. However, these funds could also be used to encourage private property owners to undertake measures to reduce the risk to their property from an earthquake (for example, funds could be available to relocate buildings away from high hazard areas or could be used to retrofit existing structures to increase their resilience to earthquake hazards).

6.4 IMPLICATIONS OF THE SPATIAL PLANS RESULTS

Spatial plans are high level documents which identify future urban expansion areas for their respective city/district. These plans identify the environmental, social, economic and cultural issues which will need to be addressed at the detailed design and planning stage for these expansion areas. These plans only had a moderate recognition of earthquake hazards. The implication being that there is the potential for earthquake hazards to be overlooked at the detailed design and planning stage. This could result in development occurring in the identified areas within the spatial plans which does not take account of appropriate measures to reduce the risk from earthquakes. Ideally, these plans would have a high recognition of natural hazards (including earthquakes) so that when detailed planning and design works are undertaken, natural hazards are taken into account. This would result in the development of more sustainable and resilient communities.

6.5 THE IMPLICATIONS OF THE WELLINGTON CDEM GROUP PLAN RESULTS

The Wellington CDEM Group Plan relies on district plan, annual plan and long term plan processes to assist with reducing the risk from natural hazards. Generally, the district plans have a high recognition of earthquake hazards and have objectives, policies and rules to reduce the prospective risk. District plans were also the policy type which had the greatest cross referencing of the Wellington CDEM Group Plan and CDEM processes. It therefore appears that the district plans are generally achieving some form of risk reduction in relation for future developments within the Wellington region.

Annual and long term plans had a low recognition of earthquake hazards, with very few having objectives, policies or assessment criteria to reduce the risk from earthquakes. This demonstrates that the risk reduction measures relied on under the Wellington CDEM Group Plan using the processes under the annual plan and long term plan are not being fully utilised, and that these different policy types are not working alongside one another to reduce the risk from natural hazards, including earthquakes. Future research is required to understand the existing barriers resulting in the low recognition of natural hazards in the annual plan and long term plan processes. Once these barriers are understood in more detail, opportunities to address these barriers and improve planning for natural hazards within these documents can be identified. This research would assist with ensuring that a more holistic approach is adopted across the various council plans and policies to address the risks associated with natural hazards, resulting in more resilient communities.

7.0 FUTURE RESEARCH

7.1 CONTINUED EVALUATION OF POLICY AND PLANNING

This study provides a baseline for consideration of earthquake hazards within various council policy documents within the Wellington region. This study has demonstrated that councils are not fully utilising the full set of policy tools which they have to address the risks associated with natural hazards. Further research is required to understand fully the challenges and barriers that councils are experiencing which prevents the full use of the policy tools available. Key questions and areas of research which are required are:

Key Questions

- What are the barriers and challenges to greater integration of planning for natural hazards (including earthquakes) between various council plans and policies?
- What challenges and barriers exist to achieving a more consistent approach to addressing earthquake hazards across different councils?
- Has the Wellington region improved its policy and planning for earthquakes? If so, how has it improved? If not, why not?
- Has spatial planning improved to take into account earthquake hazards?
- Does the CDEM plan account for reduction measures with respect to earthquakes?
- Are the plans and policies recognising and addressing the different effects associated with all aspects of an earthquake event including rockfall, landslides and liquefaction?
- What are the barriers to undertaking monitoring to ensure that the measures used to mitigate the effects from an earthquake event are effective and are achieving the desired outcome?

Current Research

- The development of a planning note on liquefaction is required to help guide councils as to whether they need to incorporate this natural hazard within their land use plans.
- A nationwide policy analysis of all the CDEM Group Plans and New Zealand RMA plans is required to see whether there is consistency between these different policies in terms of the risk reduction outcomes they are seeking to achieve and the natural hazards that they address.
- The development of an online tool box which details a risk based approach to land use planning for natural hazards.

This future research would assist with identifying the barriers and challenges councils face when planning for natural hazards, and would help define a pathway which councils can use to address and overcome these barriers and challenges. This will assist councils with the development of an integrated set of policies with a holistic approach to addressing the natural hazard risk within their respective jurisdiction. This in turn will reduce the economic, social, cultural and health and safety consequences from a natural hazard event, thereby resulting in resilient and safer communities.

8.0 CONCLUSIONS

This report reviewed the annual plans, long term plans, district plans, spatial plans and earthquake prone buildings policies of the following councils:

- Hutt City Council
- Kapiti Coast District Council
- Porirua City Council
- Upper Hutt City Council
- Wellington City Council

The results of the content analysis showed that there was a strong divide between non-rule and rule based policies and plans. Generally, the non-rule based policies and plans (annual plans and long term plans) had the lowest recognition of earthquake hazards. Corresponding with this low recognition of earthquake hazards, these plans and policies also had very few objectives, policies or assessment criteria to address earthquake hazards.

The rule based plans and policies (district plans and the earthquake prone building policies) had the greatest recognition of fault hazard, with almost all of these documents recognising this hazard. These plans and policies also have objectives, policies and assessment criteria which had been designed to address earthquake hazards.

The spatial plans tended to fall between the rule based and non-rule based plans and policies. Half of the spatial plans had a section on natural hazards, with three of the four plans recognising earthquakes as a hazard for their area. However, none of the spatial plans recognised the need to update local seismic knowledge. These plans also had no linkages to annual plans, long term plans, earthquake prone building policies or district plans. Similarly, while all of the spatial plans had a monitoring regime, none of them monitored natural hazards.

This reliance by the various councils on only one or two plan/policy types to address earthquake hazards has the potential to limit effectiveness in reducing the effects from a large earthquake. While district plans are good at addressing future risk from developments, they are limited in their ability to address existing risk. There is also the potential for there to be gaps in the rules which may allow for some developments to proceed which could increase the risk from an earthquake.

Similarly, earthquake prone building policies only tend to affect a small number of existing buildings within any given region. While these policies ensure that limited numbers of buildings are strengthened, the scope to reduce the risk from earthquake hazards is restricted to these buildings.

The low reliance on annual plans and long term plans for reducing the risk from earthquakes has the potential to limit holistic planning for earthquake hazards. These plans could be used to create incentives to reduce the risk from existing development (through special funds), as well as allowing for long term consideration of utility renewal, taking into account earthquake hazards.

These results show that there is still progress to be made in terms of policy and plan formation to reduce the risk from the earthquake hazards. There is little cross referencing between the various councils plans and policies, and several of the document types reviewed have low recognition of earthquake hazards. Until councils use all of the policy tools available to them, there are limitations on the level of risk reduction from earthquake hazards which can be achieved. A more holistic consideration of the earthquake risk within the various council policies and documents would allow for the development of sustainable and resilient communities better prepared for and able to recover from a large earthquake event.

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APPENDIX 1: THE COUNCIL POLICY AND PLANS WHICH WERE ANALYSED

Table A.1.1 The plans and policies which the content analysis was undertaken on for this study.

Plan Name	Type	Status	Date operative
Wellington City Council Annual Plan 2011/2012	Annual Plan	Operative	June 2011
Wellington City Council Long Term Plan 2009-19	Long-Term Plan	Operative	July 2009
Wellington Urban Development Strategy	Spatial Plan	Operative	July 2006
Wellington City District Plan	District Plan	Operative	July 2000
Wellington City Earthquake Prone Building Policy	Earthquake Prone Building Policy	Operative	July 2009
Hutt City District Plan	District Plan	Operative	March 2004
Hutt City Council Earthquake Prone Building Policy	Earthquake Prone Building Policy	Operative	November 2011
Hutt City Council Long Term Plan 2007-2012	Long-Term Plan	Operative	July 2007
Hutt City Council Annual Plan 2011/2012	Annual Plan	Operative	June 2011
Upper Hutt City Council Long Term Plan 2009-2019	Long-Term Plan	Operative	1 July 2009
Upper Hutt City District Plan	District Plan	Operative	August 2004
Upper Hutt City Council Earthquake Prone, Dangerous and Insanitary Buildings Strategy	Earthquake Prone Building Policy	Operative	March 2006
Upper Hutt City Council Annual Plan 2011/2012	Annual Plan	Operative	June 2011
Upper Hutt City Council Urban Growth Strategy	Spatial Plan	Operative	September 2007
Porirua City Council Long Term Plan 2009-2019	Long-Term Plan	Operative	June 2009
Porirua City Council Annual Plan 2011-2012	Annual Plan	Operative	June 2011
Porirua City Council District Plan	District Plan	Operative	November 1999
Porirua Development Framework	Spatial Plan	Operative	August 2009
Porirua City Council Earthquake Prone, Building Policy	Earthquake Prone Building Policy	Operative	May 2006
Kapiti Coast Long Term Plan 2009-2019	Long-Term Plan	Operative	July 2009
Kapiti Coast District Plan	District Plan	Operative	1999
Kapiti Coast Earthquake Prone, Dangerous and Insanitary Buildings Policy 2006	Earthquake Prone Building Policy	Operative	May 2006
Kapiti Coast Annual Plan 2011/2012	Annual Plan	Operative	June 2011
Kapiti Coast Development Management Strategy	Spatial Plan	Operative	September 2007

APPENDIX 2: RESULTS OF CATEGORY CONTENT ANALYSIS

Table A.2.1 details the results for the content analysis for each of the categories which were analysed as part of this study. These results are for all 24 plans and policies which were reviewed.

Table A.2.1 Results of the content analysis for each of the categories which were analysed as part of this study.

<i>Categories identified in plans and policy statements</i>	Yes (no. & %)	No (no. & %)
Structure of the Plan/Policy Statement Has a specific section on natural hazards (in contrast to hazards being mentioned throughout the document)	6 (25%)	18 (75%)
Hazard and Earthquake Definitions Does the plan/policy statement: <ul style="list-style-type: none"> Have the definition of a hazard? List earthquakes as hazards? Mentions earthquakes as a hazard that could affect the city, district or region? Locate the fault lines in the district or region (in the text or on a map)? Describe earthquake hazards and their effects? 	3 (13%) 6 (25%) 7 (29%) 8 (34%) 10 (42%)	21 (87%) 18 (75%) 17 (71%) 16 (66%) 14 (58%)
Objectives Does the plan/policy statement have: <ul style="list-style-type: none"> Any objectives that are 'all hazard' based? Any specific Objectives for earthquakes? Any specific Objectives for other natural hazards? 	7 (29%) 8 (34%) 3 (13%)	17 (71%) 16 (66%) 21 (87%)
Policies Does the plan/policy statement have: <ul style="list-style-type: none"> Any policies that are 'all hazard based'? Any specific policy(ies) for earthquakes? Any specific policies for other natural hazards? 	8 (34%) 9 (38%) 6 (25%)	16 (66%) 15 (62%) 18 (75%)
Assessment Criteria Does the plan/policy statement have: <ul style="list-style-type: none"> Specific criteria which buildings/activities/land-use patterns need to meet for earthquakes Specific criteria which buildings/activities/land-use patterns need to meet for other natural hazards 	12 (50%) 9 (38%)	12 (50%) 15 (62%)
The Building Act 1991 or 2004 Does the plan/policy statement refer to: <ul style="list-style-type: none"> The Building Act 1991 or 2004 as a way to reduce the risks from earthquakes? The Building Act 1991 or 2004 as a way to reduce the risks from other natural hazards? 	10 (42%) 5 (21%)	14 (58%) 19 (79%)
Practicalities of Planning for Earthquakes Does the plan/policy statement: <ul style="list-style-type: none"> Note the limitations/practicalities of reducing the risks from earthquakes? Suggest that due to the nature of earthquakes, control is not possible through the policy? 	1 (4%) 0 (0%)	23 (96%) 24 (100%)

Earthquake Hazard Information		
Does the plan/policy statement:		
<ul style="list-style-type: none"> Recognise there is a need for the council to update the local seismic hazard information, or acknowledge there is a lack of information available to the district or region? 	1 (4%)	23 (96%)
<ul style="list-style-type: none"> Account for new hazard information come to light? 	5 (21%)	19 (79%)
Link to other documents regarding natural hazards		
Link to other documents and their role in mitigating natural hazards	13(54%)	11 (46%)
Of those policies which documents are referred to		
<ul style="list-style-type: none"> Annual Plan 	1 (7%)	12 (93%)
<ul style="list-style-type: none"> Long Term Plan 	0 (0%)	12 (100%)
<ul style="list-style-type: none"> District Plan 	2 (15%)	11 (85%)
<ul style="list-style-type: none"> Spatial Plan 	0 (0%)	13 (100%)
<ul style="list-style-type: none"> Earthquake Building Prone Policy 	2 (15%)	11 (85%)
<ul style="list-style-type: none"> CDEM/Civil Defence Plan 	9 (69%)	4 (31%)
Monitoring		
Does the plan/policy statement undertake monitoring which is:		
<ul style="list-style-type: none"> All hazard based? 	2 (8%)	22 (92%)
<ul style="list-style-type: none"> Specifically for earthquakes? 	3 (12%)	(22) 88%
<ul style="list-style-type: none"> Specifically for hazards which not earthquakes? 	2 (8%)	(22) 92%
<ul style="list-style-type: none"> Other matters but not natural hazards? 	19 (79%)	5 (21%)
CDEM Act 2002		
<ul style="list-style-type: none"> Do they refer to the CDEM Act, the Group Plan or Civil Defence actions 	14 (58%)	10 (42%)
<ul style="list-style-type: none"> Does the policy rely on the CDEM Act, Group Plan or Civil Defence actions to address earthquakes 	3 (12%)	21 (88%)
<ul style="list-style-type: none"> Does the policy recognise readiness 	9 (38%)	15 (32%)
<ul style="list-style-type: none"> Does the policy recognise response 	11 (46%)	13 (54%)
<ul style="list-style-type: none"> Does the policy recognise recovery 	9 (38%)	15 (62%)
<ul style="list-style-type: none"> Does the policy recognise reduction 	5 (21%)	19 (79%)

APPENDIX 3: RESULTS OF PLAN TYPE CONTENT ANALYSIS

The results in Table A.2.1 were then analysed relative to the differing council plans and policies to see whether certain plans/policies had a greater recognition of the earthquake hazards when compared to other documents. Table A.3.1 identifies the various council documents relative to their recognition of earthquake hazards within the Wellington region.

Table A.3.1 Results of the content analysis for each of the plans and policies which were analysed as part of this study.

<i>Categories identified in plans and policy statements</i>	Annual Plan (%)	Long Term Plan (%)	District Plan (%)	Earthquake Prone Building Policy (%)	Spatial Plans* (%)
Structure of the Plan/Policy Statement Has a specific section on natural hazards (in contrast to hazards being mentioned throughout the document)	0	0	60	0	50
Hazard and Earthquake Definitions Does the plan/policy statement: <ul style="list-style-type: none"> Have the definition of a hazard? List earthquakes as hazards? Mentions earthquakes as a hazard that could affect the city, district or region? Locate the fault lines in the district or region (in the text or on a map)? Describe earthquake hazards and their effects? 	0 20 0 0 0	0 80 80 20 0	60 100 100 100 100	0 100 100 40 80	0 75 75 25 25
Objectives Does the plan/policy statement have: <ul style="list-style-type: none"> Any objectives that are 'all hazard' based? Any specific Objectives for earthquakes? Any specific Objectives for other natural hazards? 	20 0 0	20 0 20	100 20 20	0 100 0	0 25 25
Policies Does the plan/policy statement have: <ul style="list-style-type: none"> Any policies that are 'all hazard based'? Any specific policy(ies) for earthquakes? Any specific policies for other natural hazards? 	20 0 0	20 0 0	100 60 80	0 100 0	0 25 25
Assessment Criteria Does the plan/policy statement have: <ul style="list-style-type: none"> Specific criteria which buildings/activities/land-use patterns need to meet for other natural hazards Specific criteria which buildings/activities/land-use patterns need to meet for earthquakes 	0 20	20 40	100 80	100 0	0 50
The Building Act 1991 or 2004 Does the plan/policy statement refer to: <ul style="list-style-type: none"> The Building Act 1991 or 2004 as a way to reduce the risks from earthquakes? The Building Act 1991 or 2004 as a way to reduce the risks from other natural hazards? 	0 0	20 0	100 80	100 0	0 0

Practicalities of Planning for Earthquakes					
Does the plan/policy statement:					
• Note the limitations/practicalities of reducing the risks from earthquakes?	0	0	20	0	0
• Suggest that due to the nature of earthquakes, control is not possible through the policy?	0	0	0	0	0
Earthquake Hazard Information					
Does the plan/policy statement:					
• Recognise there is a need for the council to update the local seismic hazard information, or acknowledge there is a lack of information available to the district or region?	0	20	0	0	0
• Account for new hazard information come to light?	0	20	60	20	0
Link to other documents regarding natural hazards					
Link to other documents and their role in mitigating natural hazards					
Of those policies which documents are referred to					
• Annual Plan	0	0	25	0	0
• Long Term Plan	0	0	0	0	0
• District Plan	0	0	0	0	0
• Spatial Plan	0	0	0	0	0
• Earthquake Building Prone Policy	25	33	0	0	0
• CDEM Group Plan	75	66	100	0	0
Monitoring					
Does the plan/policy statement undertake monitoring which is:					
• All hazard based?	20	0	40	0	0
• Specifically for earthquakes?	0	0	20	60	0
• Specifically for hazards which not earthquakes?	0	0	40	0	0
• Other matters but not natural hazards?	100	100	100	0	100
CDEM Act 2002					
• Do they refer to the CDEM Act, the Group Plan or Civil Defence actions	80	80	100	20	0
• Does the policy rely on the CDEM Act, Group Plan or Civil Defence actions to address earthquakes	0	60	20	0	0
• Does the policy recognise readiness	40	60	60	0	0
• Does the policy recognise response	60	60	60	20	0
• Does the policy recognise recovery	60	40	60	0	0
• Does the policy recognise reduction	40	20	40	0	0

APPENDIX 4: RESULTS OF WELLINGTON CDEM GROUP PLAN CONTENT ANALYSIS

The Wellington CDEM Group Plan was analysed to see how well this document recognised the natural hazard risk within the region. This analysis was also undertaken to see what (if any) cross referencing to other councils policies was occurring. This in turn allows for a comparison of the recognition of natural hazards between the council policy documents and the Wellington CDEM Group Plan. This allows for an understanding to be gained as to whether the council policies that the Group Plan is relying on to address the risk from natural hazards are being fully utilised by the councils for this purpose.

Table A.4.1 Results of the content analysis of the Wellington CDEM Group Plan.

Categories identified in plans and policy statements	Results
Structure of the Plan/Policy Statement Has a specific section on natural hazards (in contrast to hazards being mentioned throughout the document)	No
Hazard and Earthquake Definitions Does the plan/policy statement: <ul style="list-style-type: none"> Have the definition of a hazard? List earthquakes as hazards? Mentions earthquakes as a hazard that could affect the city, district or region? Locate the fault lines in the district or region (in the text or on a map)? Describe earthquake hazards and their effects? 	Yes Yes Yes Yes Yes
Objectives Does the plan/policy statement have: <ul style="list-style-type: none"> Any objectives that are 'all hazard' based? Any specific Objectives for earthquakes? Any specific Objectives for other natural hazards? 	Yes No No
Policies Does the plan/policy statement have: <ul style="list-style-type: none"> Any policies that are 'all hazard based'? Any specific policy(ies) for earthquakes? Any specific policies for other natural hazards? 	Yes No No
Assessment Criteria Does the plan/policy statement have: <ul style="list-style-type: none"> Specific criteria which buildings/activities/land-use patterns need to meet for earthquakes Specific criteria which buildings/activities/land-use patterns need to meet for other natural hazards 	Yes Yes
The Building Act 1991 or 2004 Does the plan/policy statement refer to: <ul style="list-style-type: none"> The Building Act 1991 or 2004 as a way to reduce the risks from earthquakes? The Building Act 1991 or 2004 as a way to reduce the risks from other natural hazards? 	No No
Practicalities of Planning for Earthquakes Does the plan/policy statement: <ul style="list-style-type: none"> Note the limitations/practicalities of reducing the risks from earthquakes? Suggest that due to the nature of earthquakes, control is not possible through the policy? 	No No

<p>Earthquake Hazard Information</p> <p>Does the plan/policy statement:</p> <ul style="list-style-type: none"> • Recognise there is a need for the council to update the local seismic hazard information, or acknowledge there is a lack of information available to the district or region? • Account for new hazard information come to light? 	<p>No</p> <p>Yes</p>
<p>Link to other documents regarding natural hazards</p> <p>Link to other documents and their role in mitigating natural hazards</p> <p>Of those policies which documents are referred to</p> <ul style="list-style-type: none"> • Annual Plan • Long Term Plan • District Plan • Spatial Plan • Earthquake Building Prone Policy • CDEM/Civil Defence Plan 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>No</p> <p>No</p> <p>Yes</p>
<p>Monitoring</p> <p>Does the plan/policy statement undertake monitoring which is:</p> <ul style="list-style-type: none"> • All hazard based? • Specifically for earthquakes? • Specifically for hazards which not earthquakes? • Other matters but not natural hazards? 	<p>Yes</p> <p>No</p> <p>No</p> <p>No</p>
<p>CDEM Act 2002</p> <ul style="list-style-type: none"> • Do they refer to the CDEM Act, the Group Plan or Civil Defence actions • Does the policy rely on the CDEM Act, Group Plan or Civil Defence actions to address earthquakes • Does the policy recognise readiness • Does the policy recognise response • Does the policy recognise recovery • Does the policy recognise reduction 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>

APPENDIX 5: RESULTS OF CONTENT ANALYSIS FOR EACH COUNCIL

This appendix presents the results of the content analysis for each council respective to each of the plan or policy type.

Table A.5.1 Results of the content analysis for Wellington City Council.

<i>Categories identified in plans and policy statements</i>	Annual Plan	Long Term Plan	District Plan	Earthquake Prone Building Policy	Spatial Plans
Structure of the Plan/Policy Statement Has a specific section on natural hazards (in contrast to hazards being mentioned throughout the document)	no	no	no	no	no
Hazard and Earthquake Definitions Does the plan/policy statement: <ul style="list-style-type: none"> Have the definition of a hazard? List earthquakes as hazards? Mentions earthquakes as a hazard that could affect the city, district or region? Locate the fault lines in the district or region (in the text or on a map)? Describe earthquake hazards and their effects? 	no no no no no	no yes yes no no	yes yes yes yes yes	no yes yes no yes	no yes yes no no
Objectives Does the plan/policy statement have: <ul style="list-style-type: none"> Any objectives that are 'all hazard' based? Any specific Objectives for earthquakes? Any specific Objectives for other natural hazards? 	no no no	no no no	yes no no	no yes no	no no no
Policies Does the plan/policy statement have: <ul style="list-style-type: none"> Any policies that are 'all hazard based'? Any specific policy(ies) for earthquakes? Any specific policies for other natural hazards? 	no no no	no no no	yes no yes	no yes no	no no no
Assessment Criteria Does the plan/policy statement have: <ul style="list-style-type: none"> Specific criteria which buildings/activities/land-use patterns need to meet for other natural hazards Specific criteria which buildings/activities/land-use patterns need to meet for earthquakes 	no no	no no	yes yes	no yes	no no
The Building Act 1991 or 2004 Does the plan/policy statement refer to: <ul style="list-style-type: none"> The Building Act 1991 or 2004 as a way to reduce the risks from earthquakes? The Building Act 1991 or 2004 as a way to reduce the risks from other natural hazards? 	no no	yes no	yes yes	yes no	no no

Practicalities of Planning for Earthquakes					
Does the plan/policy statement:					
• Note the limitations/practicalities of reducing the risks from earthquakes?	no	no	no	no	no
• Suggest that due to the nature of earthquakes, control is not possible through the policy?	no	no	no	no	no
Earthquake Hazard Information					
Does the plan/policy statement:					
• Recognise there is a need for the council to update the local seismic hazard information, or acknowledge there is a lack of information available to the district or region?	no	no	no	no	no
• Account for new hazard information come to light?	no	no	yes	yes	no
Link to other documents regarding natural hazards					
Link to other documents and their role in mitigating natural hazards					
Of those policies which documents are referred to					
• Annual Plan	-	no	no	no	no
• Long Term Plan	no	-	no	no	no
• District Plan	no	no	-	no	no
• Spatial Plan	no	no	no	no	-
• Earthquake Building Prone Policy	yes	yes	no	-	no
• CDEM/Civil Defence Plan	no	no	yes	no	no
Monitoring					
Does the plan/policy statement undertake monitoring which is:					
• All hazard based?	no	no	no	no	no
• Specifically for earthquakes?	no	no	no	yes	no
• Specifically for hazards which not earthquakes?	no	no	no	no	no
• Other matters but not natural hazards?	yes	yes	yes	no	yes
CDEM Act 2002					
• Do they refer to the CDEM Act, the Group Plan or Civil Defence actions	no	yes	yes	no	no
• Does the policy rely on the CDEM Act, Group Plan or Civil Defence actions to address earthquakes	no	yes	no	no	no
• Does the policy recognise readiness	no	yes	yes	no	no
• Does the policy recognise response	no	yes	yes	no	no
• Does the policy recognise recovery	no	yes	yes	no	no
• Does the policy recognise reduction	no	no	yes	no	no

Table A.5.2 Results of the content analysis for Porirua City Council.

Categories identified in plans and policy statements	Annual Plan	Long Term Plan	District Plan	Earthquake Prone Building Policy	Spatial Plans
Structure of the Plan/Policy Statement Has a specific section on natural hazards (in contrast to hazards being mentioned throughout the document)	no	no	yes	no	no
Hazard and Earthquake Definitions Does the plan/policy statement: <ul style="list-style-type: none"> Have the definition of a hazard? List earthquakes as hazards? Mentions earthquakes as a hazard that could affect the city, district or region? Locate the fault lines in the district or region (in the text or on a map)? Describe earthquake hazards and their effects? 	no yes no no no	no yes yes no no	yes yes yes yes yes	no yes yes no yes	no no no no no
Objectives Does the plan/policy statement have: <ul style="list-style-type: none"> Any objectives that are 'all hazard' based? Any specific Objectives for earthquakes? Any specific Objectives for other natural hazards? 	yes no no	yes no yes	yes yes yes	no yes no	no no no
Policies Does the plan/policy statement have: <ul style="list-style-type: none"> Any policies that are 'all hazard based'? Any specific policy(ies) for earthquakes? Any specific policies for other natural hazards? 	yes no no	yes no no	yes yes yes	no yes no	no no no
Assessment Criteria Does the plan/policy statement have: <ul style="list-style-type: none"> Specific criteria which buildings/activities/land-use patterns need to meet for other natural hazards Specific criteria which buildings/activities/land-use patterns need to meet for earthquakes 	yes no	yes no	yes yes	no yes	no no
The Building Act 1991 or 2004 Does the plan/policy statement refer to: <ul style="list-style-type: none"> The Building Act 1991 or 2004 as a way to reduce the risks from earthquakes? The Building Act 1991 or 2004 as a way to reduce the risks from other natural hazards? 	no no	no no	yes yes	yes no	no no
Practicalities of Planning for Earthquakes Does the plan/policy statement: <ul style="list-style-type: none"> Note the limitations/practicalities of reducing the risks from earthquakes? Suggest that due to the nature of earthquakes, control is not possible through the policy? 	no no	no no	yes no	no no	no no

Earthquake Hazard Information					
Does the plan/policy statement:					
• Recognise there is a need for the council to update the local seismic hazard information, or acknowledge there is a lack of information available to the district or region?	no	no	no	no	no
• Account for new hazard information come to light?	no	no	no	no	no
Link to other documents regarding natural hazards					
Link to other documents and their role in mitigating natural hazards					
Of those policies which documents are referred to					
• Annual Plan	-	no	yes	no	no
• Long Term Plan	no	-	no	no	no
• District Plan	no	no	-	no	no
• Spatial Plan	no	no	no	no	no
• Earthquake Building Prone Policy	no	no	no	-	no
• CDEM/Civil Defence Plan	yes	yes	yes	no	no
Monitoring					
Does the plan/policy statement undertake monitoring which is:					
• All hazard based?	no	no	no	no	no
• Specifically for earthquakes?	no	no	no	yes	no
• Specifically for hazards which not earthquakes?	no	no	no	no	no
• Other matters but not natural hazards?	yes	yes	yes	no	no
CDEM Act 2002					
• Do they refer to the CDEM Act, the Group Plan or Civil Defence actions	yes	yes	yes	no	no
• Does the policy rely on the CDEM Act, Group Plan or Civil Defence actions to address earthquakes	no	yes	no	no	no
• Does the policy recognise readiness	Yes	yes	no	no	no
• Does the policy recognise response	Yes	yes	no	no	no
• Does the policy recognise recovery	yes	yes	no	no	no
• Does the policy recognise reduction	yes	yes	no	no	no

Table A.5.3 Results of the content analysis for Hutt City Council.

Categories identified in plans and policy statements	Annual Plan	Long Term Plan	District Plan	Earthquake Prone Building Policy	Spatial Plans
Structure of the Plan/Policy Statement Has a specific section on natural hazards (in contrast to hazards being mentioned throughout the document)	no	no	yes	no	N/a
Hazard and Earthquake Definitions Does the plan/policy statement: <ul style="list-style-type: none"> Have the definition of a hazard? List earthquakes as hazards? Mentions earthquakes as a hazard that could affect the city, district or region? Locate the fault lines in the district or region (in the text or on a map)? Describe earthquake hazards and their effects? 	no no no no no	no yes yes no no	no yes yes yes yes	no yes yes no yes	N/a N/a N/a N/a N/a
Objectives Does the plan/policy statement have: <ul style="list-style-type: none"> Any objectives that are 'all hazard' based? Any specific Objectives for earthquakes? Any specific Objectives for other natural hazards? 	no no no	no no no	yes no no	no yes no	N/a N/a N/a
Policies Does the plan/policy statement have: <ul style="list-style-type: none"> Any policies that are 'all hazard based'? Any specific policy(ies) for earthquakes? Any specific policies for other natural hazards? 	no no no	no no no	yes yes yes	no yes no	N/a N/a N/a
Assessment Criteria Does the plan/policy statement have: <ul style="list-style-type: none"> Specific criteria which buildings/activities/land-use patterns need to meet for other natural hazards Specific criteria which buildings/activities/land-use patterns need to meet for earthquakes 	no no	no yes	yes yes	no yes	N/a N/a
The Building Act 1991 or 2004 Does the plan/policy statement refer to: <ul style="list-style-type: none"> The Building Act 1991 or 2004 as a way to reduce the risks from earthquakes? The Building Act 1991 or 2004 as a way to reduce the risks from other natural hazards? 	no no	no no	yes yes	yes no	N/a N/a
Practicalities of Planning for Earthquakes Does the plan/policy statement: <ul style="list-style-type: none"> Note the limitations/practicalities of reducing the risks from earthquakes? Suggest that due to the nature of earthquakes, control is not possible through the policy? 	no no	no no	no no	no no	N/a N/a

Earthquake Hazard Information					
Does the plan/policy statement:					
• Recognise there is a need for the council to update the local seismic hazard information, or acknowledge there is a lack of information available to the district or region?	no	no	no	no	N/a
• Account for new hazard information come to light?	no	no	yes	no	N/a
Link to other documents regarding natural hazards					
Link to other documents and their role in mitigating natural hazards					
Of those policies which documents are referred to					
• Annual Plan	-	no	no	no	N/a
• Long Term Plan	no	-	no	no	N/a
• District Plan	no	no	-	no	N/a
• Spatial Plan	no	no	no	no	N/a
• Earthquake Building Prone Policy	no	no	no	-	N/a
• CDEM/Civil Defence Plan	no	yes	yes	no	N/a
Monitoring					
Does the plan/policy statement undertake monitoring which is:					
• All hazard based?	no	No	no	no	N/a
• Specifically for earthquakes?	no	No	yes	no	N/a
• Specifically for hazards which not earthquakes?	no	No	yes	no	N/a
• Other matters but not natural hazards?	yes	yes	yes	no	N/a
CDEM Act 2002					
• Do they refer to the CDEM Act, the Group Plan or Civil Defence actions	yes	yes	yes	yes	N/a
• Does the policy rely on the CDEM Act, Group Plan or Civil Defence actions to address earthquakes	no	no	no	No	N/a
• Does the policy recognise readiness	no	No	yes	no	N/a
• Does the policy recognise response	no	no	yes	yes	N/a
• Does the policy recognise recovery	no	no	yes	no	N/a
• Does the policy recognise reduction	no	no	no	no	N/a

Table A.5.4 Results of the content analysis for Kapiti Coast District Council.

Categories identified in plans and policy statements	Annual Plan	Long Term Plan	District Plan	Earthquake Prone Building Policy	Spatial Plans
Structure of the Plan/Policy Statement Has a specific section on natural hazards (in contrast to hazards being mentioned throughout the document)	no	no	yes	no	yes
Hazard and Earthquake Definitions Does the plan/policy statement: <ul style="list-style-type: none"> Have the definition of a hazard? List earthquakes as hazards? Mentions earthquakes as a hazard that could affect the city, district or region? Locate the fault lines in the district or region (in the text or on a map)? Describe earthquake hazards and their effects? 	no no no no no	no no no no no	yes yes yes yes yes	no yes yes yes yes	no yes yes no no
Objectives Does the plan/policy statement have: <ul style="list-style-type: none"> Any objectives that are 'all hazard' based? Any specific Objectives for earthquakes? Any specific Objectives for other natural hazards? 	no no no	no no no	yes no no	no yes no	no yes yes
Policies Does the plan/policy statement have: <ul style="list-style-type: none"> Any policies that are 'all hazard based'? Any specific policy(ies) for earthquakes? Any specific policies for other natural hazards? 	no no no	no no no	yes yes yes	no yes no	no yes yes
Assessment Criteria Does the plan/policy statement have: <ul style="list-style-type: none"> Specific criteria which buildings/activities/land-use patterns need to meet for other natural hazards Specific criteria which buildings/activities/land-use patterns need to meet for earthquakes 	no no	no no	yes yes	no yes	yes no
The Building Act 1991 or 2004 Does the plan/policy statement refer to: <ul style="list-style-type: none"> The Building Act 1991 or 2004 as a way to reduce the risks from earthquakes? The Building Act 1991 or 2004 as a way to reduce the risks from other natural hazards? 	no no	no no	yes yes	yes no	no no
Practicalities of Planning for Earthquakes Does the plan/policy statement: <ul style="list-style-type: none"> Note the limitations/practicalities of reducing the risks from earthquakes? Suggest that due to the nature of earthquakes, control is not possible through the policy? 	no no	no no	no no	no no	no no

Earthquake Hazard Information					
Does the plan/policy statement:					
• Recognise there is a need for the council to update the local seismic hazard information, or acknowledge there is a lack of information available to the district or region?	no	no	no	no	no
• Account for new hazard information come to light?	no	no	yes	no	no
Link to other documents regarding natural hazards					
Link to other documents and their role in mitigating natural hazards					
Of those policies which documents are referred to					
• Annual Plan	-	no	no	no	no
• Long Term Plan	no	-	no	no	no
• District Plan	no	no	-	no	yes
• Spatial Plan	no	no	no	no	-
• Earthquake Building Prone Policy	no	no	no	-	no
• CDEM/Civil Defence Plan	yes	no	yes	no	no
Monitoring					
Does the plan/policy statement undertake monitoring which is:					
• All hazard based?	no	no	no	no	no
• Specifically for earthquakes?	no	no	no	yes	no
• Specifically for hazards which not earthquakes?	no	no	no	no	no
• Other matters but not natural hazards?	yes	yes	yes	no	yes
CDEM Act 2002					
• Do they refer to the CDEM Act, the Group Plan or Civil Defence actions	yes	no	yes	no	no
• Does the policy rely on the CDEM Act, Group Plan or Civil Defence actions to address earthquakes	no	no	no	no	no
• Does the policy recognise readiness	yes	no	yes	no	no
• Does the policy recognise response	yes	no	yes	no	no
• Does the policy recognise recovery	yes	no	yes	no	no
• Does the policy recognise reduction	no	no	yes	no	no

Table A.5.5 Results of the content analysis for Upper Hutt City Council.

Categories identified in plans and policy statements	Annual Plan	Long Term Plan	District Plan	Earthquake Prone Building Policy	Spatial Plans
Structure of the Plan/Policy Statement Has a specific section on natural hazards (in contrast to hazards being mentioned throughout the document)	no	no	yes	no	yes
Hazard and Earthquake Definitions Does the plan/policy statement: <ul style="list-style-type: none"> Have the definition of a hazard? List earthquakes as hazards? Mentions earthquakes as a hazard that could affect the city, district or region? Locate the fault lines in the district or region (in the text or on a map)? Describe earthquake hazards and their effects? 	no no no no no	no yes yes yes no	no yes yes yes yes	no yes yes no no	no yes yes yes yes
Objectives Does the plan/policy statement have: <ul style="list-style-type: none"> Any objectives that are 'all hazard' based? Any specific Objectives for earthquakes? Any specific Objectives for other natural hazards? 	no no no	no no no	yes no no	no yes no	no no no
Policies Does the plan/policy statement have: <ul style="list-style-type: none"> Any policies that are 'all hazard based'? Any specific policy(ies) for earthquakes? Any specific policies for other natural hazards? 	no no no	yes no yes	yes no no	no yes no	no no no
Assessment Criteria Does the plan/policy statement have: <ul style="list-style-type: none"> Specific criteria which buildings/activities/land-use patterns need to meet for other natural hazards Specific criteria which buildings/activities/land-use patterns need to meet for earthquakes 	no no	yes yes	yes no	yes no	no yes
The Building Act 1991 or 2004 Does the plan/policy statement refer to: <ul style="list-style-type: none"> The Building Act 1991 or 2004 as a way to reduce the risks from earthquakes? The Building Act 1991 or 2004 as a way to reduce the risks from other natural hazards? 	no no	no no	yes yes	yes no	no no
Practicalities of Planning for Earthquakes Does the plan/policy statement: <ul style="list-style-type: none"> Note the limitations/practicalities of reducing the risks from earthquakes? Suggest that due to the nature of earthquakes, control is not possible through the policy? 	no no	no no	no no	no no	no no

Earthquake Hazard Information					
Does the plan/policy statement:					
• Recognise there is a need for the council to update the local seismic hazard information, or acknowledge there is a lack of information available to the district or region?	no	yes	no	no	no
• Account for new hazard information come to light?	no	yes	no	no	no
Link to other documents regarding natural hazards					
Link to other documents and their role in mitigating natural hazards					
Of those policies which documents are referred to					
• Annual Plan	no	no	no	no	no
• Long Term Plan	no	no	no	no	no
• District Plan	no	no	no	no	yes
• Spatial Plan	no	no	no	no	no
• Earthquake Building Prone Policy	no	no	no	no	no
• CDEM/Civil Defence Plan	yes	no	no	no	no
Monitoring					
Does the plan/policy statement undertake monitoring which is:					
• All hazard based?	yes	no	yes	no	no
• Specifically for earthquakes?	no	no	no	no	no
• Specifically for hazards which not earthquakes?	no	no	yes	no	no
• Other matters but not natural hazards?	yes	yes	yes	no	yes
CDEM Act 2002					
• Do they refer to the CDEM Act, the Group Plan or Civil Defence actions	yes	yes	yes	no	no
• Does the policy rely on the CDEM Act, Group Plan or Civil Defence actions to address earthquakes	no	yes	yes	no	no
• Does the policy recognise readiness	yes	yes	no	no	no
• Does the policy recognise response	yes	no	no	no	no
• Does the policy recognise recovery	yes	no	no	no	no
• Does the policy recognise reduction	yes	no	no	no	no



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