Manaaki Whenua
Landcare Research

Natural hazard planning by New Zealand's local government: a review of regional policy statements and district plans

Prepared for: Manaaki Whenua – Landcare Research and
National Science Challenge "Resilience to Nature's Challenges"

August 2024

Natural hazard planning by New Zealand's local government: a review of regional policy statements and district plans

Contract Report: LC4510

Nick Kirk, Suzanne Vallance

Manaaki Whenua – Landcare Research

Reviewed by:

Dean Stronge
Researcher – Environmental Social Science
Manaaki Whenua –Landcare Research

Approved for release by:

Suzie Greenhalgh
Portfolio Leader – Society, Culture & Policy
Manaaki Whenua – Landcare Research

Contents

Summary

In 2017, New Zealand's Resource Management Act 1991 (RMA) was amended, in part to promote better management of natural hazards. The amendment elevated natural hazards to matters of national importance and consenting authorities were given the ability to refuse subdivision consents on the basis of increased risk from natural hazards. In addition to the right to refuse subdivision consent applications, the Amendment promoted a shift towards a 'risk-based' approach to natural hazards. 'Risk' here is regarded as a product of the **likelihood of an event** occurring (i.e. probability) times the **impact** if it does (i.e. consequence). Assessments of likelihood and impact require very different methodologies; thus a risk-based *planning* approach must make a clear distinction between these two elements and, in addition, contain **provisions for subdivision/land-use**.

This report evaluates the extent to which the 2017 RMA amendments have or have not aligned Regional Policy Statements (RPSs) and selected District Plans (DPs) in New Zealand in adopting a 'risk-based planning approach' (comprising likelihood + impact + land use) to natural hazards. Adopting a risk-based planning approach would mark a departure from 'traditional' approaches that relied on infrastructure (e.g. sea walls, stop banks) and neglect of low probability but high impact threats.

Methods and results

We used qualitative content analysis methods, to analyse 16 RPSs and 10 DPs from the Canterbury region to identify alignment with the RMA 2017 amendments. We found that 8 of the 16 currently operative RPSs in New Zealand have adopted a risk-based planning approach to natural hazards. However, these RPSs typically differ between one another in the wordings they use, and very few adopt the exact language of the 2017 RMA amendments.

We then analysed DPs developed in the Canterbury region. Canterbury's RPS was updated in 2017 and clearly adopted the risk-based planning approach. This and other drivers – such as the National Planning Standards, the Greater Christchurch Partnership and a devastating earthquake sequence (2010-2012) – led us to anticipate that the various Canterbury Territorial Authorities' (TAs) natural hazards planning in their District/City Plans would be fairly consistent in giving effect to the updated RPS. We found only 4 of Canterbury's 10 DPs clearly articulated a risk-based planning approach to natural hazard. Three of these – Christchurch, Selwyn and Waimakariri – fell within the Greater Christchurch area, which has a strategic spatial plan (facilitated by the Greater Christchurch Partnership). The ability to share resources may have promoted quicker adoption of the Amendment/RPS.

To gauge broader trends among TAs, we analysed all 67 operative DPs in New Zealand to see which had dedicated natural hazards chapters. We found that 35 DPs had a dedicated chapter, 29 had a sub-chapter/sub-section, and 3 TAs – Waipā, Waimate, and Ashburton – had no specific section in any of their DPs related to natural hazards.

Conclusions

We note that despite 7 years having elapsed since the 1991 RMA was amended by the Resource Legislation Amendment Act 2017 there is significant inconsistency in the ways risk-based planning is reflected in regional and district planning. Only half the RPSs explicitly addressed all three elements of the risk-based planning approach (likelihood, impact and subdivision/land use). Our analysis of DPs across New Zealand found 35 had a dedicated natural hazards chapter (as per the requirements of the National Planning Standards), 29 had a dedicated sub-section/sub-chapter, and three did not appear to have a sub-section or chapter. This indicates there will be considerable variation in the adoption and practice of risk-based planning in New Zealand.

Hazard management is just one of many matters councils must address and it may then take an actual disaster to make it a priority. Councils that had recently experienced a disaster tended to have DPs that adopted a risk-based planning approach, perhaps reflecting a greater appetite for this approach, as well as additional resourcing (including expertise) to support it. Risk-based planning requires technically complex – but quite different – methodologies for both hazard likelihood and hazard impact assessments. Improved mechanisms to share 'good practices', expertise, and defensible methodologies need exploration, as does embedding 'impact' considerations in DPs. Consistent cross-party support for hazard management approaches at central government level would help create space for councils to take a more proactive approach.

Our research shows a rather patchy appearance of impact assessments and subdivision/land use as mechanisms for managing risk. Reports show almost 2000 new dwellings have been consented in known hazard zones in Auckland since Cyclone Gabrielle. Further research is needed to establish why councils are not using these RMA-enabled statutory tools they already have in order to mitigate risk.

Overall, our research also highlights an uneasy relationship between statutory and non-statutory planning to promote effective and equitable risk mitigation. How the risk-based approach aligns (or not) with non-statutory planning methods such as infrastructure and information provision, the distribution of risk and who should pay the costs, remains unresolved.

1 Introduction

1.1 Disaster risk reduction and the Resource Management Act 1991

The Resource Management Act 1991 (RMA) promotes the sustainable management of natural and physical resources and is a major component of New Zealand's planning legislation. Section 5 of 1991 Act (Purpose) states:

1 The purpose of this Act is to promote the sustainable management of natural and physical resources.

2 In this Act, **sustainable management** means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while—

   a sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and

   b safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and

   c avoiding, remedying, or mitigating any adverse effects of activities on the environment.

In so doing, the Act devolved responsibility for resource management (of which hazard management is arguably part) to local government. While this supported appropriate responses to local conditions, Memon 2002 (and see also McDermott 1998; Gunder & Mouat 2016) argued that neoliberal interests have forced a 'narrow interpretation' of the Act's purpose by focusing Environment Court action on *avoiding*, *remedying*, or *mitigating* any adverse effects of activities on the environment. As a result, implementation of the Act – *particularly regarding the environment's effects on people, their livelihoods and communities* – has been inconsistent (Vallance 2007; Glavovic et al. 2010).

1.1.1 Hazard management through land use planning: The Resource Management Act 1991

Under the RMA 1991 section 30 (1)(c)(iv)[1] regional councils have the authority to 'control the use of land for the purpose of– … avoidance or mitigation of natural hazards'. Under section 30 (1)(d)(v), regional councils have the ability to control, in coastal marine areas, 'any actual or potential effects of the use, development, or protection of land, including the avoidance or mitigation of natural hazards'.

[1] https://www.legislation.govt.nz/act/public/1991/0069/latest/whole.html#DLM232560

Section 31(1)[2] of the RMA 1991 outlines the functions of Territorial Authorities (TAs), such as:

a the establishment, implementation, and review of objectives, policies, and methods to achieve integrated management of the effects of the use, development, or protection of land and associated natural and physical resources of the district: …. [and]

b the control of any actual or potential effects of the use, development, or protection of land, including for the purpose of—

i the avoidance or mitigation of natural hazards;…

These provisions notwithstanding, given the ideological context of RMA implementation, Glavovic et al. (2010, p. 683) noted that:

> It is extremely difficult to counter new development proposals merely on the grounds of low probability hazard risks, even if public safety and community sustainability might be jeopardised, because economic growth, corporate interests and 'new development' are viewed as pre-eminent societal imperatives, and private property rights are held virtually sacrosanct … It is difficult to realise the full potential of land-use planning to reduce hazard risks, and there is still a tendency to rely on structural measures to control hazards…and to expect rescue and relief in the aftermath of an event.

The persistent inability to address the politics of hazard (and other resource) management was exposed by the Canterbury earthquake sequence which started in September 2010. Consented subdivisions in different parts of Canterbury had been constructed in areas susceptible to liquefaction, flooding and/or rockfall. In some areas of Christchurch and Waimakariri, the cost of repairing damaged properties exceeded that of rebuilding and these areas were 'Red Zoned' (Canterbury Maps 2024). Ultimately, the earthquakes had a negative impact on both the built and social environments of Canterbury (Potter et al. 2015), and planning decisions arguably contributed to these negative impacts.

1.1.2 Hazard management through land use planning: The 2017 amendments to the 1991 Resource Management Act

An attempt to address the legislative gaps in the RMA was made in 2017 through amendments to sections 6, 106, and 220 of the RMA 1991.

Section 6[3] was amended to add section 6(h) 'the management of significant risks from natural hazards as a new matter of national importance.

[2] https://www.legislation.govt.nz/act/public/1991/0069/latest/whole.html#DLM232574

[3] https://www.legislation.govt.nz/act/public/1991/0069/latest/whole.html#DLM231907

Section 106[4] was amended to provide consenting authorities with the ability to refuse subdivision consent if there is a significant risk from natural hazards.

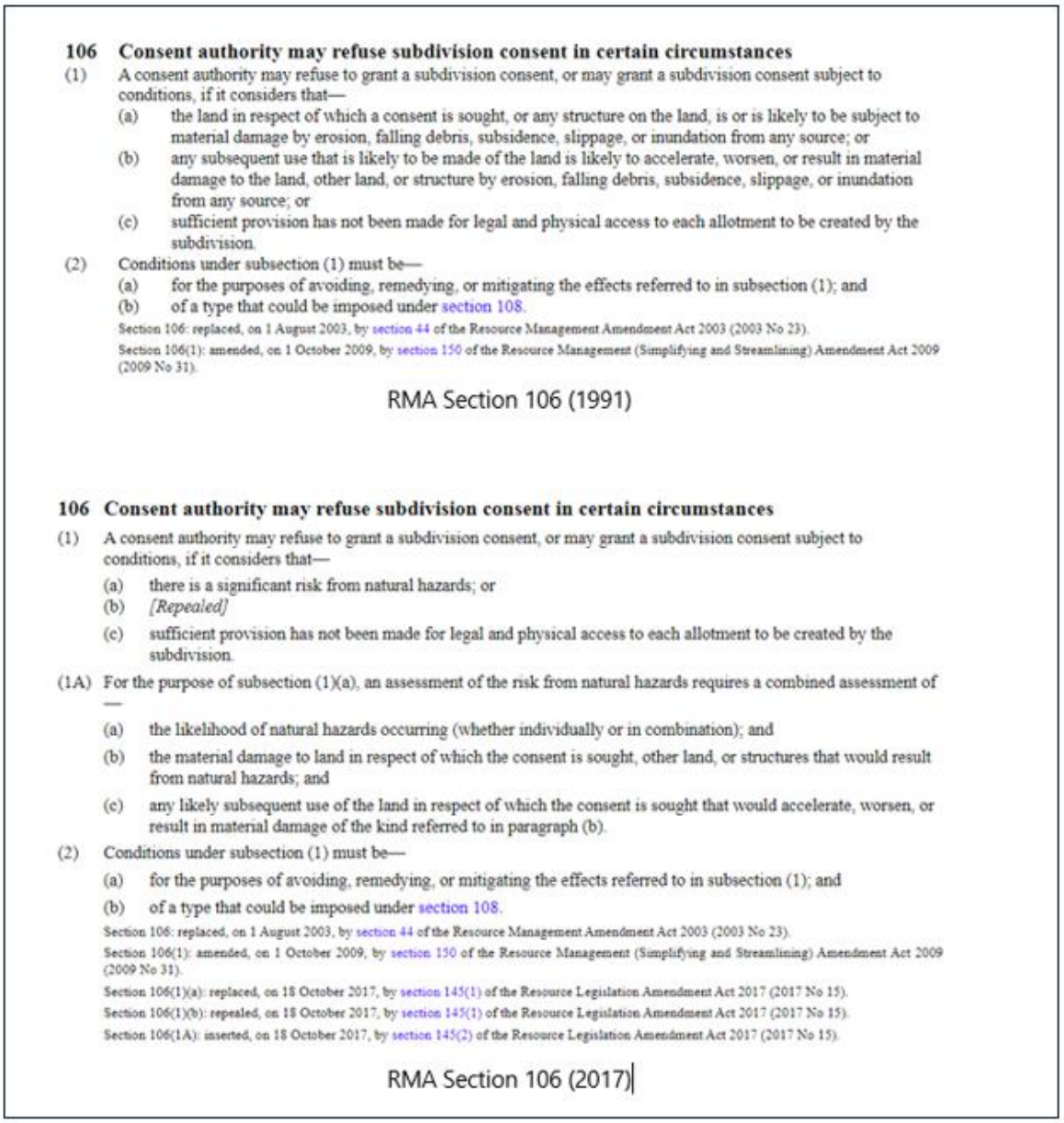
Sections 106 and 220[5] were also amended to permit local government to consider a wider range of natural hazards in subdivision consents. In addition to erosion, falling debris, subsidence, slippage, and inundation, the Act's definition of a 'natural hazard' now includes:

> …any atmospheric or earth or water related occurrence (including earthquake, tsunami, erosion, volcanic and geothermal activity, landslip, subsidence, sedimentation, wind, droughts, fire or flooding) the action of which adversely affects or may adversely affect human life, property, or other aspects of change (Resource Management Act 1991, section 2)

Figure 1 shows a comparison of section 106 of the RMA between 1991 and 2017. This comparison signals a shift in focus from 'risk reduction' to 'risk-based planning'. Risk-based planning considers not only the likelihood of an event, but also its impact (including on any likely subsequent use of the land). This departs from previous risk reduction approaches that tended to neglect low probability events (such as earthquakes) and rely primarily on structural mitigation (through, for example, stop-banks and seawalls) rather than land use planning.

[4] https://www.legislation.govt.nz/act/public/1991/0069/latest/whole.html#DLM234389

[5] https://www.legislation.govt.nz/act/public/1991/0069/latest/whole.html#DLM237201



106 Consent authority may refuse subdivision consent in certain circumstances

(1) A consent authority may refuse to grant a subdivision consent, or may grant a subdivision consent subject to conditions, if it considers that—

(a) the land in respect of which a consent is sought, or any structure on the land, is or is likely to be subject to material damage by erosion, falling debris, subsidence, slippage, or inundation from any source; or

(b) any subsequent use that is likely to be made of the land is likely to accelerate, worsen, or result in material damage to the land, other land, or structure by erosion, falling debris, subsidence, slippage, or inundation from any source; or

(c) sufficient provision has not been made for legal and physical access to each allotment to be created by the subdivision.

(2) Conditions under subsection (1) must be—

(a) for the purposes of avoiding, remedying, or mitigating the effects referred to in subsection (1); and

(b) of a type that could be imposed under section 108.

Section 106: replaced, on 1 August 2003, by section 44 of the Resource Management Amendment Act 2003 (2003 No 23).

Section 106(1): amended, on 1 October 2009, by section 150 of the Resource Management (Simplifying and Streamlining) Amendment Act 2009 (2009 No 31).

RMA Section 106 (1991)

106 Consent authority may refuse subdivision consent in certain circumstances

(1) A consent authority may refuse to grant a subdivision consent, or may grant a subdivision consent subject to conditions, if it considers that—

(a) there is a significant risk from natural hazards; or

(b) *[Repealed]*

(c) sufficient provision has not been made for legal and physical access to each allotment to be created by the subdivision.

(1A) For the purpose of subsection (1)(a), an assessment of the risk from natural hazards requires a combined assessment of —

(a) the likelihood of natural hazards occurring (whether individually or in combination); and

(b) the material damage to land in respect of which the consent is sought, other land, or structures that would result from natural hazards; and

(c) any likely subsequent use of the land in respect of which the consent is sought that would accelerate, worsen, or result in material damage of the kind referred to in paragraph (b).

(2) Conditions under subsection (1) must be—

(a) for the purposes of avoiding, remedying, or mitigating the effects referred to in subsection (1); and

(b) of a type that could be imposed under section 108.

Section 106: replaced, on 1 August 2003, by section 44 of the Resource Management Amendment Act 2003 (2003 No 23).

Section 106(1): amended, on 1 October 2009, by section 150 of the Resource Management (Simplifying and Streamlining) Amendment Act 2009 (2009 No 31).

Section 106(1)(a): replaced, on 18 October 2017, by section 145(1) of the Resource Legislation Amendment Act 2017 (2017 No 15).

Section 106(1)(b): repealed, on 18 October 2017, by section 145(1) of the Resource Legislation Amendment Act 2017 (2017 No 15).

Section 106(1A): inserted, on 18 October 2017, by section 145(2) of the Resource Legislation Amendment Act 2017 (2017 No 15).

RMA Section 106 (2017)

Figure 1. Comparison of section 106 in the RMA 1991 and the amended version of 18 October 2017.

The success of the RMA in managing natural hazards 'effectively' (and equitably) is difficult to evaluate. The Canterbury Regional Council failed to prevent the Pegasus Development in Waimakariri[6] on the basis of increased susceptibility to liquefaction; however, mitigation measures were imposed that appear to have been successful during the Canterbury Earthquake sequence (St Clair & McMahon 2011). On the other hand, the Auckland floods which occurred during January and February 2023 (since the 2017 amendments) led to

[6] Pegasus township is a new township in the Waimakariri District. It was first proposed in 1997 and has been sold to different developers over the last 25 years. It was granted subdivision consent in 2006, and as of May 2016, 90% of Pegasus sections have been titled and sold. St Clair and McMahon (2011) note it was the first residential development in greater Christchurch to reflect risks associated with lateral spreading and liquefaction from earthquakes, but despite recognition of these risks, subdivision consent was still granted.

four fatalities and will likely be New Zealand's costliest weather event (cost estimated as NZ$1,957,600,000 [Insurance Council of New Zealand [ICNZ] 2024]). This has led the incumbent Auckland Mayor, Wayne Brown, to question why 1,873 new builds have been approved in areas susceptible to natural hazards (Truebridge 2024).

It appears that the current RMA is either not adequately addressing natural hazards or there are reasons why the RMA is not being implemented as intended. There have been several attempts to improve the Act and its implementation. As one example, the 2019 National Planning Standards (NPS 2019) were developed to improve RMA planning. These Standards require both regional councils (in their Regional Policy Statements [RPSs]) and territorial authorities (in their District Plans [DPs]) to include 'Natural Hazards and Risks' as a topic chapter. In 2023 it was also proposed by the Ministry for the Environment that a National Policy Statement on natural hazard decision making should be developed. These interventions provide evidence for our investigation of the RMA as a mechanism for addressing natural hazards (MfE 2023).

Although the RMA has to be seen as part of a broader and rapidly changing planning suite – including the Local Government Act (2002), Local Government Amendment Act 2019, Building Act 2004, and Civil Defence and Emergency Management Act 2002; plus Fast-track approvals and so on – this report provides a snapshot of Regional Policy Statements and District Plan Provisions with regard to natural hazards.

1.2 Taking a snapshot of hazard management through land use planning

First, we assess the extent to which Regional Policy Statements (RPSs) have responded to the 2017 RMA amendments and/or National Planning Standards (NPS). We focus on evidence that RPSs have adopted the 'risk-based planning approach' to natural hazards. 'Risk' here is regarded as a product of the likelihood of an event occurring (i.e. probability) times the impact if it does (i.e. consequence). A volcanic eruption in Auckland is low probability but high impact, whereas localised flooding is high probability but generally low impact. Assessments of likelihood and impact require very different methodologies, thus a 'risk-based approach' must make a clear distinction between these two elements, Further, risk-based *planning* connects such assessments to regulatory measures, such as declining applications for subdivision and certain land uses in hazard-prone areas. For the purposes of this report, evidence of a risk-based planning approach required policies, plans or programmes for these three elements. This would mark a departure from 'traditional' approaches that relied on infrastructure (e.g. sea walls, stop banks) and neglect of low probability but high impact threats.

Second, we evaluate how TAs have responded to the RMA amendments and/or amended RPSs. In particular, we examine changes to DPs developed in those regions where RPSs have adopted the risk-based planning approach. Areas of alignment and inconsistency are noted between the RMA (with its 2017 amendments), NPSs, RPSs and DPs.

2 Methods

This report presents the results of two different content analyses. First, we conducted a content analysis of all Regional Policy Statements in New Zealand. We downloaded all RPSs developed by regional councils and unitary authorities. These were all downloaded between May and July 2024. The first step in our analysis was to note when these RPSs had been made operative or last updated and if this had been since the publication of the 2017 RMA amendments.

For those RPSs updated since 2017, we examined the specific natural hazard objectives and policies to see if these RPSs have adopted a 'risk-based planning approach' to natural hazards. To do this, we analysed the RPSs to find evidence of considering both the likelihood and damage of natural hazards, and whether consents may accelerate damage. This analysis is conducted to help answer our first research question. We have directly quoted these RPSs and have given page numbers for these quotes where possible. We also provide current (as of August 2024) links for each RPS webpage.

To answer the second research question, we conducted a similar content analysis on District Plans. We focused our analysis on Canterbury TAs because the Canterbury RPS had most clearly been updated to adopt a risk-based planning approach in step one. We also looked across all DPs currently operative in New Zealand to ascertain whether or not they had specific natural hazards chapter as per the National Planning Standards requirements.

3 Results

3.1 Regional Policy Statement (RPS) analysis

We first analysed RPSs published by different regional councils and unitary authorities in New Zealand. Table 1 shows when relevant RPSs were made operative and last updated.

Nearly all RPSs have either been made operative or updated since the Resource Legislation Amendment Act was assented on the 18 April and given effect from October 2017 (with the exception of Marlborough and Taranaki RPSs). Given this, we have examined all RPSs to assess evidence of the 'risk-based planning approach' which, as per the 2017 RMA amendments, has three features:

1 An assessment of natural hazard likelihood (or probability).

2 An assessment of natural hazard damage (or impact/consequence).

3 An assessment of subdivision/land use.

We considered a RPS had a risk-based planning approach only if, in meeting its hazard management objective(s), it had policies that specifically include these three elements.

Table 1. Dates RPSs were made operative and last updated.

Regional Council / Unitary Authority	Date RPS/Plan* made operative	Last date RPS/Plan was updated
Auckland	15 November 2019	10 May 2024
Bay of Plenty	10 June 2016	2 March 2022
Canterbury	15 January 2013	16 September 2022
Gisborne Tairawhiti	30 August 2023	30 August 2023
Wellington	14 April 2013	15 December 2023
Hawke's Bay	28 August 2006	18 December 2021
Horizons	19 December 2014	27 February 2024
Marlborough	28 August 1995	November 2014
Nelson	1 September 2004	23 February 2024
Northland	9 May 2016	14 June 2018
Otago	4 March 2024	4 March 2024
Southland	9 October 2017	9 October 2017
Taranaki	1 January 2010	1 January 2010
Tasman	1 July 2001	11 September 2021
Waikato	20 May 2016	19 December 2018
West Coast	24 July 2020	24 July 2020

*Some RPSs are contained within 'Unitary Plans', for example, Auckland, Hawke's Bay, Horizons

3.1.1 RPSs with a risk-based planning approach

Our analysis identified the following seven RPSs as adopting a risk-based planning approach to natural hazards: Auckland, Bay of Plenty, Waikato, Canterbury, Nelson, Otago, and Southland. Below, we present the evidence for each specific RPS, and detail some objectives and policies that relate specifically to the consideration of natural hazards in making subdivision consent decisions. We note that although we suggest these regional councils have taken a risk-based planning approach, the language is not necessarily well aligned with the 2017 RMA amendments.

Auckland (operative 2019, updated 2024)

Auckland's Unitary Plan is an example of a district plan and regional policy statement contained within one document, written by an organisation with responsibility for both territorial authority and regional council functions. We consider that the Auckland Unitary Plan adopts a risk-based planning approach to natural hazard events based on the following evidence. First, it asks decision makers to identify risks and assess the likelihood of these events occurring (Section B10, p.2). In the objectives, it highlights the risk of new 'subdivision, use and development' to 'people, property and infrastructure'. Policy B1.2.2. (5) sets out that subdivision need to be managed given the type and severity of potential events, the vulnerability of the activity to adverse effects, and the cumulative effects of

locating activities on land subject to natural hazards. Thus, the three elements of the risk-based planning approach are present in the Auckland RPS.

The RPS contains six separate objectives relating to natural hazards. Thirteen different policies are listed under this objective, including specific policies for identification and risk assessment, management approaches, the role of natural systems, infrastructure, and coastal hazards. As noted above, there are specific objectives and policies related to subdivisions and hazard risk. Of note, the Auckland RPS instructs consenting authorities to consider the potential severity of natural hazard events happening in combination (Policy B.1.2.2. (5)(a)).

See Appendix 1 for a list different natural hazard objectives related to subdivisions, and their relevant policies, as taken from the Auckland RPS.

Bay of Plenty (operative 2016, updated 2022)

The Bay of Plenty RPS natural hazards chapter was made operative on 5 July 2016, so, before the 2017 RMA amendments. This 2016 RPS contains Objective 31: the 'avoidance or mitigation of natural hazards by managing risk for people's safety and the protection of property and lifeline utilities' (see p. 110e of the RPS).

The RPS (p. 110e) explicitly states in Policy NH 1B that they are 'Taking a risk management approach'. This approach is defined on p. 168a as:

> …assessing the risk (i.e. the likelihoods and potential consequences) of hazards and managing that risk according to accepted thresholds…
>
> The approach focuses on the *presence and level of the risk* rather than the presence and likelihood of the hazard.

Policy NH 9B (p.110f) specifically cites the 'Assessment of natural hazard risk at the time of subdivision, or change or intensification of land use…' We consider this RPS contains the features of a risk-based planning approach given the focus on both the likelihood and potential damage of hazards, as well as consideration of subdivisions and these hazards.

See Appendix 2 for a list of different natural hazard objectives related to subdivisions, and their relevant policies, as taken from the Bay of Plenty RPS.

Waikato (operative 2016 and updated 2018)

One of the natural hazards objectives (Objective 3.24) in the Waikato RPS states:

> The effects of **natural hazards** on people, property and the environment are managed by:
>
> a) increasing community resilience to hazard risks;
>
> b) reducing the risks from hazards to acceptable or tolerable levels;

> and c) enabling the effective and efficient response and recovery from natural hazard events.

To meet this objective, Waikato have written a policy (Policy 13.1) – Natural hazard risk management approach – which states Natural hazard risks are managed using an 'integrated and holistic' approach. This policy then has several clauses. The first of these is to ensure that the risk from natural hazards does not exceed an acceptable level. This then paves the way for clauses like c) which is 'avoids the creation of new intolerable risk;' and d) 'reduces intolerable risk to tolerable or acceptable levels;'. Clause i) 'seeks to use the best available information/best practice' promoting a natural hazard risk management approach. The Risk management framework section of the policy (13.1.1) then states that 'Regional and district plans shall incorporate a risk-based approach into the management of subdivision, use and development in relation to natural hazards.'

In their explanation (p. 13-3), the Council note:

> The central concept of the management of natural hazards is the identification and management of activities based on the level of risk to which they are exposed. Avoidance or mitigation of natural hazards is based on risk (the likelihood and consequences of a hazard). Rare events with potentially catastrophic outcomes may have the same level of risk as frequent but low-impact events. Ideally, the risk of both extremes should be managed so as not to exceed an acceptable level.

Given the RPS explicitly claims it is taking a risk-based planning approach in regard to the management of subdivision development and natural hazards, we consider the RPS exhibits the features of the 2017 RMA amendments.

See Appendix 3 for a list of different natural hazard objectives related to subdivisions, and their relevant policies, as taken from the Waikato RPS.

Canterbury (operative 2013, updated 2022)

The Canterbury RPS adopts what it calls a 'general risk management approach' (p. 175). Their RPS states (on p. 175):

> When determining whether risk is unacceptable, the following matters will be considered:
>
> 1. – The likelihood of the natural hazard event; and
>
> 2. – the potential consequence of the natural hazard event for: people and communities, property and infrastructure and the environment, and the emergency response organisations.

Thus, although not using the exact same language as the 2017 RMA amendments, it contains elements of the risk-based planning approach; assessment of likelihood of events and the impact of those events on people, property, and the natural environment. The Canterbury RPS and the natural hazards objectives and policies were developed after the Canterbury earthquake sequence.

See Appendix 4 for a list of different natural hazard objectives related to subdivisions, and their relevant policies, as taken from the Canterbury RPS.

Nelson (operative 2004 and updated 2024)

In Nelson's RPS, Policy 5.1. explicitly states that a 'risk based management approach will be adopted to control the use, development and protection of land' (p. 93). The RPS later confirms that 'risk is assessed by considering the probability of those hazards occurring and their potential effects on any proposed activity' (p. 93). On this basis, we argue Nelson's RPS presents a risk-based planning approach to natural hazards in the district.

See Appendix 5 for a list of different natural hazard objectives related to subdivisions, and their relevant policies, as taken from the Nelson RPS.

Otago (operative and updated 2024)

The Otago RPS (p. 47) states that 'natural hazard risk' will be managed giving particular regard to 'the risk posed, considering the likelihood and consequences of natural hazard events', as well as the sensitivity to risk, implications of residual risk, the community's tolerance of that risk, and the social costs of recovery. On p. 48 separate policy instructs consenting authorities to avoid activities that result in significant risk from natural hazard. Given this, two elements of a risk-based approach management approach are present, even if the RPS does not explicitly state it is using a risk-based approach.

See Appendix 6 for a list of different natural hazard objectives related to subdivisions, and their relevant policies, as taken from the Otago RPS.

Southland (operative and updated 2017)

The introduction to the Southland RPS Natural Hazards chapter, states (p. 104): 'Risk is assessed by considering the probability of those hazards occurring and their potential effects on any proposed activity.' Although they do not specifically refer to this as a risk-based planning approach, it reflects the elements of the 2017 RMA amendments.

See Appendix 7 for a list of different natural hazard objectives related to subdivisions, and their relevant policies, as taken from the Otago RPS.

3.1.2 RPSs without a risk-based planning approach

We make a distinction between RPSs that adopt a risk-based planning approach and those that do not. As previously described, risk can be regarded as the combination of the likelihood of an event occurring and the impact the event may have. In addition, the risk-based planning approach (as indicated in the 2017 RMA amendments) takes probability and impact and adds a third element whereby land use/subdivision is used to mitigate risk (in addition to 'traditional' means such as stop banks and sea walls).

Various RPSs we analysed did not adopt this approach. Alternative approaches may have objectives and policies that strongly signal risk reduction, management and/or mitigation

but the policies do not state that assessments of risk will be divided into both probability and impact. Also, policies may address either likelihood or impact of natural hazards, but not both, and 'risk' may be conflated with either of these terms.

This can be problematic because some low likelihood hazards – like volcanic eruptions and pyroclastic flows – could have a devastating impact on subdivisions, built infrastructure, and the natural environment if they occur. However, RPSs that fail to adopt a risk-based approach may ignore these low likelihood hazards and instead focus on reducing the risk to people and infrastructure from more common hazards, such as flooding.

In other cases, policies specifically addressing land use may be missing or unclear. A reliance on structural approaches (stop banks, sea walls) may be retained instead.

We are not claiming these alternative approaches may not be effective or even have distinct important advantages. Rather, we want to distinguish these approaches that do not align with the 2017 RMA amendments' language from those that do adopt the risk-based planning approach.

Gisborne (operative 2023 and updated 2023)

The Gisborne RPS acknowledges both low probability/high impact events and high probability/lesser impact events including landslip and slope erosion, flooding, coastal erosion and storms, tsunami, earthquakes, volcanic eruption, and fire.

The RPS has two objectives. The first is to promote:

> A pattern of human settlement that:
>
> *i Provides a high level of personal safety from natural hazards for its inhabitants.*
>
> *ii Avoids or mitigates the risk to property and infrastructure from natural hazards.*
>
> *iii Does not accelerate or worsen the effects of natural hazards upon the natural and physical environment (p. 39)*

The second objective is:

> Rehabilitation, where practicable, of aspects of the environment degraded by natural processes that were induced or accelerated by human activities (p. 39).

There are six policies associated with these objectives which can be read in Appendix 8. The first policy is to encourage and facilitate changes 'to patterns of human settlement…to areas that are not affected by hazards' (p. 39). The third policy requires the Council to 'maintain a strong commitment to researching, recording and publicising information about natural hazards' (p.40) which, implicitly, may involve assessing likelihood and probability of different types of events from occurring. Policy 5 explicitly recognises 'the possibility of sea level rise and the likelihood of changes to the frequency and impacts of some natural hazards due to climate change and sea-level rise' (p.40).

The Gisborne RPS was not judged to be adopting a risk-based planning approach as specified by the 2017 RMA amendments. Although this RPS acknowledges low probability and high impact natural hazard events, we argue it adopts an 'avoid and mitigate' strategy to natural hazards.

See Appendix 8 for a list of different natural hazard objectives related to subdivisions, and their relevant policies, as taken from the Gisborne RPS.

Wellington (operative 2013 and updated 2023)

The Wellington RPS clearly distinguishes between low probability/high impact events and high probability/lower impact events. The low probability/high impact events include earthquakes, flooding, and tsunami.

The RPS has 3 objectives and 3 Policies that reflect risk-based planning such as Policy 29: 'Avoiding inappropriate subdivision and development in areas at high risk from natural hazards – district and regional plans' (p.109), and Policy 51: 'Minimising the risks and consequences of natural hazards – consideration' (p.130). However, the policies do not state that assessments of risk will be divided into both probability versus impact (i.e. 'risk' and 'consequence' are somewhat conflated). Given this, we decided not to classify the Wellington RPS as adopting a risk-based planning approach.

See Appendix 9 for a list of different natural hazard objectives related to subdivisions, and their relevant policies, as taken from the Wellington RPS.

Hawke's Bay (operative 2006 and updated 2021)

The RPS confirms natural hazards are a regionally significant issue, given the 'susceptibility of the region to flooding, droughts, earthquakes, volcanic ash falls, and tsunami, and the potential impact of these on people's safety, property, and economic livelihood' (p. 71). They list hazards and compare their various probabilities of occurring and potential impacts.

An overarching objective is presented as '[t]he avoidance or mitigation of the adverse effects of natural hazards on people's safety, property, and economic livelihood' (p.71) and then a list of specific threats are noted. In section 3.12.11 the need to minimise both the 'risk and impact' of natural hazards is acknowledged (p.72). This conflates risk and impact and does not explicitly distinguish between likelihood and consequence assessments. It also states that HBRC 'prioritis[es] natural hazard responses as the principal means of addressing natural hazard avoidance and mitigation'.

Taranaki (operative 2010)

Taranaki's RPS identifies three issues related to natural hazards: 'Increasing public awareness of and planning for natural hazards' (HAZ ISS 1) (p. 97); 'Modifying natural hazard processes and taking into account potential changes in the frequency and intensity of natural hazards in the future' (HAZ ISS 2) (p. 97); and 'Reducing the costs of natural hazard events, emergencies or disaster' (HAZ ISS 3) (p. 97). Though hazards are not

configured explicitly in terms of probability and impact as per the risk-based planning framework, the RPS (p. 98) alludes to reducing impact from hazard risks by '…the adoption of appropriate building controls, including avoiding inappropriate development in hazard prone areas [to] reduce the susceptibility of the Taranaki community and valued aspects of the environment to natural hazards.

Six policies (see Appendix 11) were developed to achieve the stated HAZ Objective 1: 'To avoid or mitigate natural hazards within the Taranaki region by minimising the net costs or risks of natural hazards to people, property and the environment of the region. environment of the region' (p. 97). HAZ Policy 2 pertains to subdivision and development and asks that buildings are 'located and designed that the need for hazard protection works is avoided (p. 97).' However, no policy specifically addresses the need for assessments of both likelihood and impact.

West Coast (operative 2020)

The West Coast RPS acknowledges the 2017 RMA amendments and notes (p. 48) both low probability/high impact and high probability/low impact events:

> The potential impacts of natural hazard events range from general nuisance to creating significant damage and loss of property and, in extreme cases, loss of lives. These can lead to high economic and social costs on the West Coast with significant consequences for public health and safety, agriculture, housing and infrastructure.

The RPS also states (in Table 1, p. 8) 'Subdivision, use and development can contribute to natural hazard risk.'

Four policies (see Appendix 12) have been developed to achieve Objective 1 outlined on p. 49 in the Natural Hazards section: 'Risks and impacts of natural hazard events on people, communities, property, infrastructure and our regional economy are avoided or minimised. One of the policies (Policy 2, p. 49) explicitly states that 'New subdivision, use or development should be located and designed so that the need for hazard protection works is avoided or minimised.' However, no policy specifically addresses the need for assessments of both likelihood and impact.

Marlborough (operative 1995, updated 2014)

Marlborough's RPS is currently under review (operative 1995, updated 2014). It identifies rainfall, slope instability, flooding, and earthquakes as natural hazards that could affect the region. Risk is not explicitly framed as a probability by impact assessment but the Council's objective (stated on p. 75) is: 'Avoid or mitigate the actual or potential effects of loss or damage to life or property from natural hazards' (p.75). They have three policies to meet this objective, one of which is; 'Restrict land use activities in areas of known natural hazard' in the recognition that restrictions '…are sometimes necessary to provide for community safety (p.75).'

See Appendix 13 for relevant Marlborough RPS policies and objectives.

Horizon's One Plan (operative 2014, updated 2024)

The Horizons One Plan is an example of a combined Regional Policy Statement and Regional Plan. The Natural Hazards chapter states that the 'principal threat [to the region] is from flooding. Other natural hazards include earthquakes, tsunami, volcanic action and land subsidence' (p. 2-120). While these other threats are noted, the RPS also states:

> Most of the Regional Council's operational work on natural hazard management is carried out under the Soil Conservation and Rivers Control Act 1941, which provides for the establishment of river and drainage schemes (p. 2-120).

Low frequency/high impact events are acknowledged, with more research needed to better understand these threats. Climate change and patterns of land use are noted as exacerbating natural hazards, thus a risk-based approach is implicit.

One objective states: 'The adverse *effects* of *natural hazard* events on people, property, *infrastructure* and the wellbeing of communities are avoided or mitigated' (p. 2-121). This objective is enforced through five policies (see Appendix 14), with one policy dedicated to flooding. This flooding policy explicitly adopts a risk-based approach using probability, impact and land use controls; however, risk management for other hazards is not necessarily structured this way.

Northland (operative 2016, updated 2018)

Northland's RPS acknowledges on p. 29 that:

> Natural hazards, particularly flooding and coastal erosion and inundation, have the potential to create significant risk to human life, property, community and economic wellbeing in Northland. This risk is projected to increase as a result of a changing climate.

The RPS (further down p. 29) also notes impact as well as probability:

> The potential impacts of natural hazard events range from general nuisance to creating significant damage and loss of property and, in extreme cases, loss of lives.

Objective 3.13 states: 'The risks and impacts of natural hazard events (including the influence of climate change) on people, communities, property, natural systems, infrastructure and our regional economy are minimised …'. It then lists two policies (7.1. and 7.2.) which contain nine sub-policies associated with this objective (see Appendix 15). However, no policy specifically addresses the need for assessments of both likelihood and impact.

Tasman (operative 2001, updated 2021)

This RPS takes a different format to many other plans, with issues, objectives and policies distributed throughout the document. Among the issues listed is: '[a]voiding, remedying or mitigating the environmental effects of urban development, including: …(b) exposure to

natural hazards.' The RPS notes that Tasman is especially susceptible to flooding, land instability, coastal erosion, and earthquake shaking (see Appendix 16).

Objective 5.2 (p. 6) is shown below.

> Avoidance, remedying or mitigation of the adverse effects arising from urban development locating or expanding in:
>
> i hazard-prone areas; and
>
> ii coastal areas; and
>
> iii areas where the amenity standards of adjacent rural activities would not be accepted in an urban context; and
>
> iv areas of natural character, outstanding natural features and landscapes, significant indigenous vegetation or fauna, or other heritage values; and
>
> v Wetlands, lakes, rivers, and their margins.

Accordingly, Policy 5.2 (p. 6) states:

> the Council will avoid locating new urban development in areas subject to natural hazards, except that extensions in areas that are so subject may be allowed provided adequate mitigation measures are undertaken.

Objective 11.1 (one of the Environmental Hazards objectives) aims for: 'Reduced risks arising from flooding, erosion, inundation and instability and earthquake hazards' and Objective 11.3 i*:* Reduced risks of fire to natural and built resources, from the use or development of land. There are specific objectives and policies for flooding; coastal erosion; slope instability, ground shaking or failure from earthquake and erosion processes; coastal erosion and effects of sea level rise.

We could find no evidence that the Tasman RPS adopts a risk-based approach to natural hazard management. Rather, the focus was more on risk reduction.

3.1.3 Reflections on the RPS analyses

There is evidence that most RPSs have objectives and policies that align with the 2017 RMA amendments framing of risk-based planning; however, the exact language was rarely adopted. This could become problematic if wording is tested in a court of law. Table 2 shows a summary of RPSs and their risk management approach across the 16 regions.

Table 2. Summary of regions with operative RPSs updated after 2017, and whether or not these RPSs adopt a risk-based planning approach to natural hazards

Regional Council / Unitary Authority	Operative/ updated post 2017	Risk based (RB) / Other
Auckland	Yes 2024	RB
Bay of Plenty	Yes 2022	RB
Canterbury	Yes 2022	RB
Gisborne Tairawhiti	Yes 2023	Other
Wellington	Yes 2023	Other
Hawke's Bay	Yes 2021	RB
Horizons	Yes 2024	Other
Marlborough	No 2014	Other
Nelson	Yes 2024	RB
Northland	Yes 2018	Other
Otago	Yes 2024	RB
Southland	Yes 2017	RB
Taranaki	No 2010	Other
Tasman	Yes 2021	Other
Waikato	Yes 2018	RB
West Coast	Yes 2020	Other

Half the RPSs have explicitly and clearly adopted all three elements of the 'risk-based planning approach' to hazards promoted by the 2017 RMA amendments: these being an assessment of natural hazard likelihood combined with assessment of natural hazard impact, as well as policies addressing land use/settlement or subdivision. The other half often implied such an approach but, in many cases, conflated 'risk' with consequence or likelihood (but not as a function of *both*, to be assessed independently).

In few cases, subdivision and land use was used to mitigate risk to the environment and not necessarily as a means of reducing risk to people, assets, infrastructure or livelihoods. Several RPSs prioritised their most common hazards, rather than assessing low probability but high impact hazards.

Beyond that, we noted considerable variation in the types of policies and policy wording to meet risk management objectives, even among those addressing subdivision. Certain wording was very strong in 'avoiding' whereas others talked of avoiding 'where possible'– but, if not possible, 'mitigating'.

This should not be read as a criticism of the regions that have not adopted a risk-based planning approach to natural hazards. It is possible that 'other' approaches actually had their own strengths and advantages but did not meet the strict definition of risk-based planning indicated in the RMA. In summary, alignment with the risk-based planning approach promoted by the Resource Legislation Amendment Act 2017's changes to the

RMA 1991 is variable, with only half of New Zealand's RPSs addressing all three elements explicitly.

This is important given TAs must 'give effect' to RPSs: variation at the regional council level is likely to promote even more inconsistency at the city/district council level. An advantage of variation might be more targeted policies relevant to local conditions, policies developed following local consultation. A disadvantage is that risk-based planning is poorly implemented. In the next section, we analyse selected District Plans to see gauge the extent to which there is variation at this level and the factors that might contribute to a more or less consistent approach.

3.2 District Plan analysis

Territorial Authorities have the responsibility of 'giving effect' to national and regional policies. In addition, some RPSs delegated specific tasks to TAs to undertake. In this section, we examine specific District Plans developed in a region with an operative RPS that adopted the three criteria associated with the risk-based planning approach outlined in the RMA. The region we chose specifically for this analysis was Canterbury. We anticipated that Canterbury would have district plans with some alignment regarding natural hazard objectives and policies given the updated RPS, the region's experience with natural hazards, as well as the presence of different collaborative mechanisms designed to bring planning in the region into alignment. We then briefly analyse remaining DPs in New Zealand to establish: a) when they became operative; b) whether or not they have a Natural Hazards topic chapter as required by the 2019 National Planning Standards.

3.2.1 Greater Christchurch Partnership

The Greater Christchurch Partnership is a collaboration of the Canterbury Regional Council (aka Environment Canterbury), three Territorial Authorities (Christchurch City, Selwyn District, Waimakariri District) as well as mana whenua representation, health board representation, and a representative from the Waka Kotahi (NZ Transport Agency) (Greater Christchurch 2022). The partnership was established to support the development of collaborative plans, joint work programmes, and strategies, and as a platform for collaboration regarding local issues.

The Canterbury RPS was made operative in 2013 and has subsequently been updated. As noted earlier, the Canterbury RPS does contain the three elements of a risk-based planning approach to natural hazards. Given this, in the following section we analyse the three Territorial Authority District Plans that make up the 'Greater Christchurch Partnership', as well as the Greater Christchurch Spatial Plan – a non-statutory spatial plan endorsed by all Greater Christchurch Partners in March 2024. Given the updated RPS, as well as the Greater Christchurch Partnership itself, we anticipate consistency across natural hazards policies in these District and Spatial Plans.

Christchurch City District Plan

The Christchurch City District Plan[7] became operative on the 19 December 2017. The initial review of the District Plan was interrupted by the Canterbury earthquake sequence. Given this, the Plan was developed during unique circumstances related to natural hazards. This also affected the way the plan was developed, with the Council responding to the Canterbury Earthquake Recovery Act 2011 and the Canterbury Earthquake Recovery Authority (CERA) which developed a Land Use Recovery Plan for greater Christchurch. CERA also took responsibility for the Central City Recovery Plan and appointed an Independent Hearings Panel to hear submissions on the revised DP for Christchurch using a streamlined process for drafting, submitting, and making decisions on the final Plan (Christchurch City Council [CCC] 2024).

The Christchurch DP that was developed through this unique approach explicitly references a 'risk-based approach' in the natural hazards chapter (5.1(f)). This closely follows the approach adopted in the Canterbury RPS and the 2017 RMA amendments. The Christchurch DP, section 5.1(f) states:

> Such an approach considers various scales of a particular natural hazard event (for example, different magnitude earthquakes and different intensities and durations of rainfall events) together with the likelihood of that particular event occurring and the effects it would cause, particularly on people and property.

The DP further acknowledges (section 5.19(g)) that 'risk is expressed in a number of ways'. For example, slope instability and rockfall risk is expressed as an 'Annual Individual Fatality Risk', whereas the DP uses 'Annual Exceedance Probability' to describe the likelihood of a flooding event of a certain magnitude occurring. The DP also identifies areas that are at higher risk of certain natural hazard and where the risks of certain hazards cannot be reduced to acceptable levels. The DP states that 'new activities in those areas are generally to be avoided' (section 5.1(l)). One example is 'Cliff Collapse Management Areas' or 'Rockfall Management Areas' where risks from earthquakes are difficult to remedy or mitigate.

Also, in Policy 5.2.2.1.1, the DP strongly states that decision makers must 'avoid new subdivision, use and development …. where there is unacceptable risk', with a specific focus on avoiding new subdivisions when risk is high. By referencing the likelihood of hazard occurrence combined with likely effect, and an assessment of risk regarding subdivisions, the Christchurch DP contains the elements of the risk based natural hazard management approach.

The plan rules that support these policies establish permitted and non-permitted activities in different hazard areas and there are specific rules for specific hazards, such as minimum floor levels for new buildings in flood management areas. Using the example of the CCC Christchurch DP, it is possible to trace the flow from RMA to specific rules. For example, Chapter 11 of the Canterbury RPS adopts a hierarchical approach to hazards whereby the

[7] https://districtplan.ccc.govt.nz/pages/plan/book.aspx?exhibit=DistrictPlan

first priority is to avoid hazards, the second is to manage or reduce the effects of hazards, and the third priority is response and recovery. These priorities are translated into a number of specific objectives, one of which is Objective 11.2.1:' Avoid new subdivision, use and development of land that increases risks associated with natural hazards'.

This RPS objective is 'given effect' in the CCC Christchurch DP, in 'Objective 3.3.6 – Natural hazards' which states:

a New subdivision, use and development (other than new critical infrastructure or strategic infrastructure…..):

i is to be avoided in areas where the risks from natural hazards to people, property and infrastructure are assessed as being unacceptable; and

ii in all other areas, is undertaken in a manner that ensures the risks of natural hazards to people, property and infrastructure are appropriately mitigated.

Policies also relate to the provision of critical infrastructure as a means of shaping land use and raising public awareness of hazards.

In following this example through, Objective 3.3.6 of the DP is to be achieved through various Policies, such as '5.2.2.1.1 Policy – Avoid new development where there is unacceptable risk' – including (5.2.2.1.1 (a)) any 'new urban zonings, where the risk from a natural hazard is assessed as being unacceptable'. Specific rules for particular areas and particular hazards are then provided.

Overall, this shows synergies between an RPS that clearly promotes risk-based planning and a DP that gives effect to it.

Waimakariri District Plan

The Waimakariri District Plan[8] was made operative on 23 June 2023. The Waimakariri DP contains the same definition of natural hazards as Section 2 of the RMA following the 2017 amendments. The DP then sets out a series of issues, objectives, and policies related to natural hazards. Objective 8.1.1. states: 'The community's understanding of natural hazards and its behaviour prior to, during, and after natural events avoids or mitigates natural hazards to an accepted level.' In trying to meet this objective, the DP sets Policy 8.1.1.1 which asks the Council to: 'Provide information to enable people to take appropriate precautions in relation to natural events.' Thus, in comparison with the Christchurch DP, the focus is primarily on building awareness of the risk of natural hazards rather than managing the potential impacts of hazards.

Two further objectives focused on flooding and earthquakes do take a risk-based approach. These hazards have policies specifically relating to subdivision; for example, Policy 8.2.1.2 states:

[8] https://waimakariri.isoplan.co.nz/eplan/

In areas identified in the District Plan as having a history of localised flooding, and are adjacent to water bodies, give specific consideration to the consequences and probabilities of flooding at the time of subdivision or land use consent, to avoid or mitigate a flood hazard.

However, other hazards do not receive the same level of attention as floods and earthquakes. This focus is justified by the Council in the DP given historical damages caused by these hazards in the region. Given some hazards provoke a risk-based approach, and others do not, we have categorised this as a partial risk-based planning approach to natural hazard management as promoted by the RMA amendment and the Canterbury RPS.

Selwyn District Plan

The current Selwyn District Plan[9] was made operative on the 3 May 2016. This was after the Canterbury RPS but prior to the 2017 RMA amendments. The objectives and policies in the operative plan follow an 'avoid and mitigate' strategy to hazards rather than a 'risk-based planning' strategy. Objective B3.1.2 is: 'Ensure potential loss of life or damage to property from natural hazards is mitigated', with the first natural hazard policy (Policy B3.1.1.) requiring the Council to: 'Promote awareness among residents in Selwyn District of the potential for a District-wide natural hazard, and how to minimise loss of life and damage to property.'

The operative DP separates hazards into potential 'district-wide' hazards and 'localised hazards'. District-wide hazards are defined as 'large-scale natural hazards which affect all or large parts of the District', such as an earthquake, whereas localised hazards 'affect a smaller area', such as flooding of one township or a landslip (Natural Hazards chapter, p.1).

The Selwyn District also has a partially operative replacement DP which is currently in the appeals process (as of 11 June 2024). The natural hazards chapter remains under appeal. A major difference between the operative and partially operative DPs is a shift from the 'avoid and mitigate' strategy towards explicitly adopting a risk-based planning approach. The partially operative Selwyn DP[10] references the Canterbury RPS and New Zealand Coastal Policy Statement before defining the risk-based approach as:

- managing risk when there is uncertain or insufficient natural hazard risk information
- managing risk based on the scale of a particular natural hazard event, together with the likelihood of that event occurring and the effects on people and property.

[9] https://eplan.selwyn.govt.nz/eplan/rules/0/13/0/2624/0/216

[10] https://www.selwyn.govt.nz/property-And-building/planning/strategies-and-plans/selwyn-district-plan/selwyn-district-plan-review

The proposed risk-based approach will enable the Selwyn District to focus their efforts on populated and developed areas. They justify this because in highly populated areas 'the consequences from natural hazards and therefore the risk could be considerably greater' (Selwyn Proposed DP, Natural Hazards Chapter). The DP then lists the type of natural hazards managed by the plan including coastal hazards, flood hazards, geotechnical hazards, and wildfire hazards. The partially operative DP also differs from the operative DP in that it contains specific policies and objectives regarding subdivisions. The first natural hazards objective (NH-01) states:

> New subdivision, use, and development…
>
> 1. is avoided in areas where the risks from natural hazards to people, property and infrastructure are assessed as being unacceptable;

The proposed DP represents a significant shift in natural hazard management from the 'avoid and mitigate' strategy focused on awareness building, towards a risk-based approach whereupon the risks and likelihood of different hazards are considered along with settlement patterns managed through subdivision.

Greater Christchurch Spatial Plan

In March 2024 all partners of the Greater Christchurch Partnership endorsed the Greater Christchurch Spatial Plan[11]. The aim of the non-statutory plan was to provide a blueprint for the Greater Christchurch region given anticipated population growth in the region. The plan received public submissions and was designed to align with other plans developed in the region. The aim was also to align the different aspirations of central government, local government, mana whenua, while ensuring the plan does not contravene different National Policy Statements.

One of the specific opportunities mentioned by the Spatial Plan (p. 24) is: 'Reduce and manage risks so that people and communities are resilient to the impact of natural hazards and climate change'. In reflecting on this opportunity, the Spatial Plan acknowledges that some areas are at significant risk 'from natural hazards and the effects of climate change', and an aim of the Plan is to direct future development away from these areas (see p. 49).

Despite this, the plan does not articulate specific actions or objectives for the partners to adopt. There is no reference to the language of a 'risk-based planning approach' to natural hazards. Also, subdivisions were only referenced in the document in regard to Māori reserve land, and there were no references regarding subdivisions and natural hazard risk.

[11] https://www.greaterchristchurch.org.nz/assets/Documents/Work-Programme/Greater-Christchurch-Spatial-Plan/Greater-Christchurch-Spatial-Plan-2024.pdf

3.2.2 Reflections on the Greater Christchurch Partnership

Currently, alignment between DP natural hazard objectives and policies in the Greater Christchurch Partnership is patchy despite the presence of the Greater Christchurch Partnership and the updated Canterbury RPS. However, when the partially operative Selwyn DP is made fully operative, there will be closer alignment between the Selwyn, Waimakariri and Christchurch City DPs and the Canterbury RPS, all of which adopt the risk-based planning approach promoted by the 2017 RMA amendments. This indicates the potential of the RMA and RPSs to promote risk-based planning approaches.

Waimakariri's DP does remain something of an outlier. Given the plan was made operative in June 2023, the Council had an opportunity to update their DP to align with the Canterbury RPS and the RMA. While there is evidence of a risk-based planning approach, this appears to be tagged to two specific hazards (flooding and earthquake).

The Christchurch Spatial Plan's policies towards natural hazards, and the impact of natural hazards on subdivision consents, are strategic rather than prescriptive in comparison with the various DPs and does not explicitly promote or adopt the risk-based planning approach signalled by the RMA amendment or Canterbury RPS.

3.2.3 Other District Plans in Canterbury

We anticipated that several drivers would result in the three Greater Christchurch Partnership councils (Christchurch, Waimakariri and Selwyn) aligning their DPs with the 2017 RMA amendments. These drivers included the Canterbury RPS, the creation of the Greater Christchurch Partnership, and the shared experience of devastating geohazards. As exhibited, despite these drivers there remains inconsistency between these DPs' natural hazards objectives and policies. Given this, we examined other DPs developed in Canterbury to see if their natural hazards approach aligns with the Canterbury RPS and RMA. Table 3 summarises the different approaches of Canterbury's TAs.

Table 3. District Plans in Canterbury and approaches to natural hazard planning and management

Territorial Authority	DP contains natural hazards chapter	DP adopts a risk-based planning approach to natural hazards
Ashburton	No	No
Christchurch	Yes	Yes
Hurunui	Yes	Yes
Kaikōura	Yes	Yes
Mackenzie	Yes	No
Selwyn	Yes	No (but proposed plan does)
Timaru	Yes	No
Waimakariri	Yes	No
Waimate	No.	No
Waitaki	Yes	Yes

Neither the Waimate[12] nor Ashburton[13] DPs contained a dedicated natural hazards chapter as per the National Planning Standards. In the Waimate DP, the 'residential zones' chapter appears to adopt an 'avoid and mitigate' approach to natural hazards. Objective 7 in this chapter states 'Avoid loss of life and avoid or mitigate damage to assets and infrastructure, or disruption to the community of the District, from natural hazards'. It lists flooding, severe climatic events, coastal erosion, seawater inundation, and earthquakes as the major hazards in the District. Relevant policies to meet this objective request the Council to 'maintain a high level of community awareness of the risk of natural hazards through the provision of advice and information' (Policy 7B), and to 'avoid, remedy, or mitigate the adverse effects on the environment arising from natural hazard mitigation measures' (Policy 7C). It is acknowledged in policies 7A and 7E that controls ought to be put on housing in areas close to waterways or at risk from coastal and riverbank erosion. Given the 'avoid and mitigate' focus, a lack of clear assessment of natural hazard likelihood, we have not classified this as a risk-based planning approach.

The Ashburton DP cites section 106 of the RMA and states:

> Land that is or could potentially be affected by hazards may not always be suitable for subdivision and the Council is obliged under section 106 of the Resource Management Act 1991 to decline consent to any subdivision in circumstances where natural hazards cannot be avoided, remedied or mitigated. (Page 9-9, Subdivision Section, 9.2.4 Hazards)

The Plan then acknowledges coastal erosion and surface flooding on the plains as the major natural hazards in the District, however, other hazards like landslips, rockfall, sediment related hazards and subsidence are also mentioned. Subdivisions (depending on zone) are either controlled or discretionary and may require a natural hazard assessment as part of the application. This allows subdivisions to be assessed case by case.

We have not classified the Ashburton DP as taking a risk-based planning approach as it lacks an assessment of natural hazard likelihood.

The Timaru DP[14] separates hazards into whole district' hazards (such as drought, earthquakes, and wind) and 'localised' hazards (such as flooding), similar to the approach adopted in Waimakariri. It then confirms that flooding from rivers and coastal inundations are the 'principal natural hazards that can be best addressed through the District Plan' (Part B4, p.1). According to the Timaru DP, other hazards such as earthquakes, wind, and subsidence damage are better addressed through the Building Act (Part B4, p.1). Despite many hazards not being considered by the DP, it provides relatively strong instructions regarding residential development in areas at risk from flooding and coastal inundation. The DP states one Council policy in Part B4, p. 3 as:

[12] https://www.waimatedc.govt.nz/council/publications/district-plan

[13] https://www.ashburtondc.govt.nz/ashburton-district/Plans-Reports-and-Strategies/district-plan

[14] https://www.timaru.govt.nz/services/planning/district-plan/district-plan-online

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

We have not classified the Timaru DP as a risk-based planning approach as it lacks an assessment of natural hazard likelihood, and only considers the impact and consequence of a small number of hazards.

The Hurunui DP[15] has a natural hazards chapter (Chapter 15) and explicitly adopts a risk-based planning approach. For example, objective 15.1. states*:* Subdivision, use and development of land is enabled while avoiding or mitigating the adverse effects of natural hazards.' Policy 15.1 asks the Council to:

> Avoid new subdivision, use and development of land in areas identified as subject to natural hazards:
>
> 1) if the risk from the natural hazard is unacceptable, having taken into account the likelihood of the natural hazard event and the potential consequences for people, property, infrastructure and the environment; and…

This objective and policy contain the three elements of the risk-based planning approach promoted by the 2017 RMA amendments.

Like the Christchurch DP, the Hurunui DP identifies different sites of risk and places certain rules on subdivision use in these zones. These policies and objectives specifically cite the Canterbury RPS. Some of these sites include areas at higher risk of flooding, those close to fault lines, coastal ponding sites, and a wildfire awareness site in Mt Lyford. However, the impact of the 2016 Kaikōura earthquake on the District ought to be acknowledged, as this event may have driven the Council to update their DP in response.

Kaikōura was also significantly impacted by the 2016 earthquake. The Natural Hazards chapter in the Kaikōura DP[16] was specifically updated in response to the 2016 earthquakes. The goal was to devise new objectives, policies, and rules based on the technical information and community engagement the Council engaged in following the earthquakes. As a result, it explicitly states it is taking a risk-based planning approach. On p. 1 of its NH (Natural Hazards) chapter the DP states:

> A risk-based approach to natural hazards balances allowing for people and communities to use their properties and undertake activities, while also ensuring that their lives and significant assets are not likely to be harmed as a result of a natural hazard event.

[15] https://dp.hurunui.govt.nz/eplan/rules/0/3/0/0/0/175

[16] https://www.kaikoura.govt.nz/council/plans-policies-reports/district-plan

It then states that level of risk can be determined by: 1) the likelihood of an event occurring; 2) the potential consequences of this event for people, property, infrastructure, the environment, and emergency response organisations; and 3) the consent process itself with hazards overlays identifying areas for assessment.

The Kaikōura DP also contains a specific chapter on subdivisions. In this chapter, it states an objective (SUB-O1) as being: 'Avoid *natural hazard* risks from *subdivision*'. SUB-O1 continues on to state that this is to be done by ensuring that subdivision is:

1 avoided in areas where the risk to life or property from natural hazards is unacceptable; and

2 managed in other areas to ensure that the risk of natural hazards to people and property is appropriately mitigated.

Natural hazards overlays are identified in the DP, and one of the subdivision policies is to ensure that any subdivision for new hazard sensitive buildings are not granted in these natural hazard overlays.

The Waitaki DP[17] was made operative on the 4 June 2013, and last updated on the 7 November 2023. It has a dedicated natural hazards chapter, which begins by outlining how the district assesses hazard risk. They argue two aspects are considered: the nature of the hazard (e.g. impact), and the vulnerability of the Waitaki community to those hazards. This leads the Waitaki DP to state that flooding, dam failure, coastal erosion and inundation, earthquakes, and severe climatic extremes such as floods and drought are the most concerning natural hazards.

Objective 4.2.1. states that the Council ought to: 'Avoid loss of life, and avoid or mitigate damage to assets, infrastructure, natural and physical resources, or disruption to the District's community, from natural hazards'. Several policies related to subdivision are articulated. One policy instructs the Council to 'Ensure that subdivision or development is carried out in a manner which avoids or mitigates against the potential adverse effects of natural hazards' (Natural Hazards Policy 3), and that any proposed developments have an adequate assessment completed to identify any risks (Natural Hazards Policy 4).

The way risk is assessed in the Waitaki DP – by considering the nature of the hazard and vulnerability – shares some similarities to the risk-based planning approach, but we argue they instead appear to be adopting an 'avoid and mitigate approach' to natural hazards management.

3.2.4 District Plans in the rest of New Zealand

Evidence thus far suggests that DPs within Canterbury show considerable variation despite the 2017 RMA amendments, the 2019 National Planning Standards, and an updated Canterbury RPS. While it is beyond scope of this report to examine every DP in the country to the same extent as those within Canterbury, we did attempt to gauge national trends.

[17] https://www.waitaki.govt.nz/Services/Planning-and-Resource-Consents/District-plan/Current-District-Plan

We examined all operative DPs developed by TAs and unitary authorities to ascertain whether they have: a) a dedicated Natural Hazards chapter as per the National Planning Standards; b) a dedicated Natural Hazards subsection within another chapter; c) no clear and discrete section regarding Natural Hazards. The results are summarised in Figure 2.

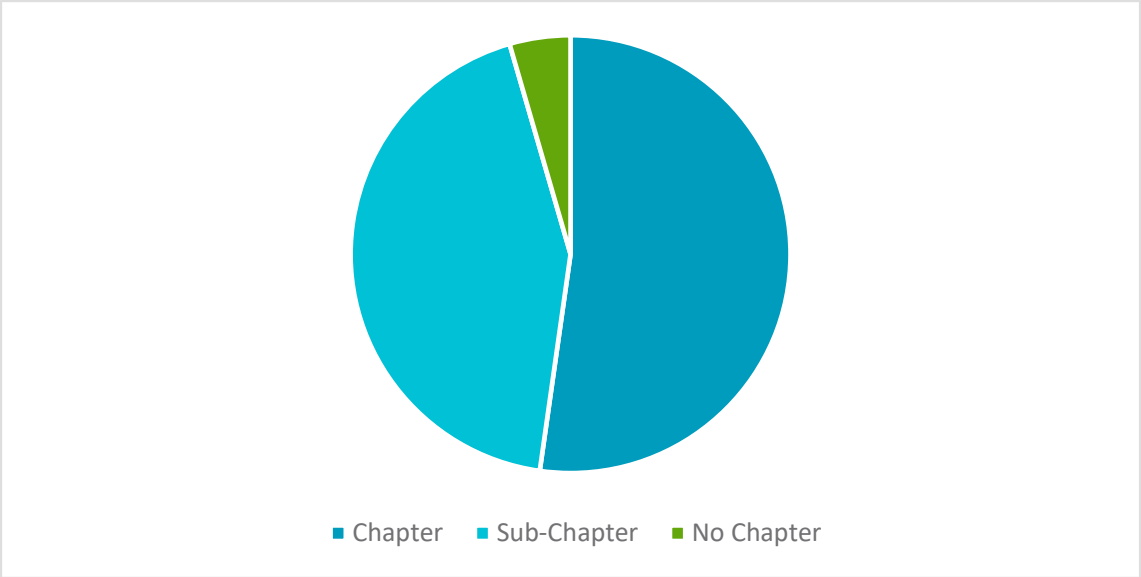


Figure 2. District Plans with natural hazard chapters or sub-chapters (Chapter *n* = 35; Sub-Chapter *n* = 29; No Chapter *n* = 3).

A more detailed breakdown of our analysis, divided into DPs by region (regional council region), is now shown in tabular form, broken down by the main regions.

Table 4. District Plan natural hazards chapters in New Zealand

Region	District or Unitary Authority	Natural Hazards Chapter in District Plan
Northland	Far North District Council	Yes – sub-chapter.
	Whangarei District Council	Yes.
	Kaipara District Council	Yes.
Waikato	Thames-Coromandel	Yes – sub-chapter.
	Hauraki	Split into Hauraki and Franklin sections. Hauraki section contains natural hazards chapter. Franklin section contains natural hazards sub-chapter.
	Waikato	Split into Waikato and Franklin sections. Waikato section contains natural hazards chapter. Franklin section **does not** contain natural hazards chapter or sub-chapter.
	Matamata-Piako	Yes.
	Hamilton City	Yes.
	Waipā	**No.**
	Ōtorohanga	Yes.

Region	District or Unitary Authority	Natural Hazards Chapter in District Plan
Waikato (cont.)	South Waikato	Yes.
	Waitomo	Yes.
	Taupō	Yes.
Bay of Plenty	Western Bay of Plenty	Yes.
	Tauranga City	Yes.
	Rotorua	Yes – sub-chapter.
	Whakatāne	Yes – sub-chapter.
	Kawerau	Yes – sub-chapter.
	Ōpōtiki	Yes.
Hawke's Bay	Wairoa	Yes.
	Hastings	Yes – sub-chapter in both the operative plan (2003) and the current partially operative plan.
	Napier City	Yes – sub-chapter.
	Central Hawke's Bay	Yes – sub-chapter.
Taranaki	New Plymouth	Yes – sub-chapter.
	Stratford	Yes.
	South Taranaki	Yes – sub-chapter.
Manawatū-Whanganui	Ruapehu	Yes.
	Whanganui	Yes – sub-chapter.
	Rangitikei	Yes – sub-chapter.
	Manawatu	Yes.
	Palmerston North City	Yes.
	Tararua	Yes.
	Horowhenua	Yes – sub-chapter.
Wellington	Kāpiti	Yes.
	Porirua City	Yes.
	Upper Hutt City	Yes.
	Hutt City	Yes – sub-chapter.
	Wellington City	Yes – sub-chapter in partially operative plan (2024). However, there is **no** natural hazards chapter or sub-chapter in fully operative plan (2000).
	Masterton	Yes – as part of Wairarapa Combined District Plan.
	Carterton	Yes – as part of Wairarapa Combined District Plan.
	South Wairarapa	Yes – as part of Wairarapa Combined District Plan.
West Coast	Buller	Yes – sub-chapter.
	Grey	Yes.
	Westland	Yes.
Canterbury	Kaikōura	Yes – sub-chapter.
	Hurunui	Yes.

Region	District or Unitary Authority	Natural Hazards Chapter in District Plan
Canterbury (cont.)	Waimakariri	Yes.
	Christchurch City	Yes.
	Selwyn	Yes – sub-chapter.
	Ashburton	**No.**
	Timaru	Yes.
	Mackenzie	Yes.
	Waimate	**No.**
	Waitaki	Yes – sub-chapter.
Otago	Central Otago	Yes.
	Queenstown-Lakes	Yes – sub-chapter.
	Dunedin City	Yes – sub-chapter.
	Clutha	Yes
Southland	Southland	Yes – sub-chapter.
	Gore	Yes.
	Invercargill City	Yes – sub-chapter.
Unitary Authorities	Auckland	Yes – sub-chapter.
	Gisborne	Yes – sub-chapter.
	Tasman	Yes.
	Nelson City	Yes – sub-chapter.
	Marlborough	The Wairau Awatere Resource Management Plan has a natural hazards sub-chapter. The Marlborough Sounds Resource Management Plan also has a natural hazards sub-chapter.
	Chatham Islands	Yes – sub-chapter.

Of the 67 DPs reviewed, 35 had a dedicated natural hazards chapter as might be expected under the National Planning Standards. Twenty-nine had a dedicated natural hazards sub-section within another chapter. Waipā, Waimate, and Ashburton did not appear to have a dedicated sub-section or chapter; and Wellington's operative DP does not have a chapter (but the partially operative DP does).

Like the Canterbury DPs, there was considerable variation in how these DPs were written. Some TAs split plans into different geographic sections (see Hauraki), with some areas of the TA having natural hazard specific planning rules and others not (see Waikato). In the Wairarapa, three small TAs combined to create a joint DP.

4 Conclusions

Despite the passing of legislation amending the RMA in 2017 and introduction of the National Planning Standards in 2019, there is considerable variation in both RPSs and DPs around 'risk-based planning'. Risk-based planning includes assessments of both likelihood (of an adverse event occurring) *and* impact (should the event occur) and recognises statutory planning (e.g. subdivision and land use) as a means of avoiding and mitigating risk.

Half of the RPSs explicitly adopted all three elements of the risk-based planning approach. The other half often implied such an approach, but sometimes conflated 'risk' with impact or likelihood. Several RPSs prioritised their most common hazard, such as flooding, neglecting low probability but high impact hazards. Some RPSs that did not adopt a risk-based planning approach still used strong phrasing around 'avoiding' development in hazard prone areas, whereas other examples discussed 'avoiding, where possible', and if not possible, 'mitigating' risks. Despite ostensibly trying to achieve broadly similar outcomes, the actual wording of natural hazard objectives and policies across RPSs showed great variation.

We then examined DPs developed in the Canterbury region. Despite various drivers which we anticipated might lead to consistent hazard planning we also found considerable variation among different TAs' DPs. The three councils within the Greater Christchurch Partnership had adopted, or are about to adopt, at least in part, a risk-based planning approach. However, this may have more to do with all three experiencing the Canterbury earthquake sequence rather than the Partnership itself. This is suggested by the observation that both Hurunui and Kaikōura (Districts that have also recently suffered disastrous earthquakes) subsequently adopted a risk-based planning approach in their revised DPs. This may indicate that the appetite for risk-based hazard management increases after a disaster. In addition, after a disaster, councils may have increased access to expertise and other resources able to inform revised plans.

Our analysis of DP development across New Zealand found 35 had a dedicated natural hazards chapter (as per the requirements of the National Planning Standards), 29 had a dedicated sub-section/sub-chapter, and three did not appear to have a sub-section or chapter.

4.1 Implications for hazard planning in NZ

Based on our research, one implication for hazards planning is that it takes a long time for Amendments (and National Policy Statements/National Planning Standards) to become embedded in statutory planning processes at the city/district level. It has been more than 5 years since the 2017 RMA amendments, yet, given our analysis of Canterbury's DPs, statements around whether risk will be proactively or adequately managed are still somewhat variable. With natural hazard management now a Matter of National Importance under Section 6 of the RMA, this lag is both notable and disturbing.

The factors that explain this lag need more attention, but some are suggested by our results.

First, given the technical nature of both likelihood and impact assessments, councils cannot sacrifice speed for rigour. Improved mechanisms to share 'good practices', expertise, and defensible methodologies need exploration.

Second, councils undertake a range of functions and have recently been faced with a diverse suite of central government directives, subject to change with a change of government. Councils are therefore confronted with unstable and uncertain directives and priorities. Hazard management is just one of many matters councils must accommodate and it may then take an actual disaster to make it a priority. Cross-party support for hazard management approaches at central government level will likely mitigate some of this instability, potentially creating space for councils to take a more proactive approach. However, capacity issues within councils will still remain, as they need to balance the labour needed to respond to government directives while also processing different consent applications in a timely manner.

Third, our research shows a rather patchy appearance of impact assessments and subdivision/land use as mechanisms for managing risk. Reports show almost 2000 new dwellings have been consented in known hazard zones, since the Auckland floods, between February and November 2023 (Radio New Zealand [RNZ] 2024). Anecdotally, councils rarely use the RMA tools they now have because the costs of defending their decisions to decline consents in the Environment Court are too high. Declining subdivisions may also reduce the rates base. Further research is needed to explore this anecdotal evidence and determine why councils are not using the tools they do have.

Finally, our research shows various and variable policies relating to assessments of likelihood and impact, erratic references to subdivision/avoiding new developments in areas prone to hazards, frequent mention of hazard awareness raising, as well as indications that hard infrastructure might still be used to mitigate risk. Overall, this shows an uneasy relationship between statutory and non-statutory planning tools such as information provision, infrastructure and strategic spatial planning. This is extremely problematic as statutory and non-statutory planning tools must work together to promote effective and *equitable* risk mitigation.

Technical risk assessments are needed and may be required during the (statutory) consenting process. However analyses of the unfair distributive effects of disasters are also necessary (Beban and Gunnell, 2013). Enhanced understanding of the distribution of risk is increasingly urgent; for example, the death and destruction associated with Hurricane Katrina fell disproportionately on low-income groups and African Americans (American Civil Liberties Union [ACLU] 2007). Globally, 'natural' disasters kill more women than men, and kill them at a younger age (Neumayer & Plumper 2007). In New Zealand, in the 24 hours following the Christchurch earthquake on 22 February 2011, of the 182 deaths, 35% were male and 65% female (65%). Of those hospitalised, 36% were male and 64% were female (Ardagh et al. 2013). The relationship between the three components of risk-based planning (impact, likelihood and subdivision/land use) should be clearer, as should the relationship between risk-based planning and social vulnerability.

5 References

American Civil Liberties Union (ACLU) 2007. Race & Ethnicity in America: Turning a Blind Eye to Injustice. New York, NY https://www.aclu.org/sites/default/files/pdfs/humanrights/cerd_full_report.pdf - (accessed 16 August 2024).

Ardagh M, Standring S, Deely J, Than M 2013. A sex disparity among earthquake victims. Disaster Medicine and Public Health 10(1): 1–7.

Beban J, Gunnell S 2013. Incorporating social vulnerability into land use planning and local government processes for managing natural hazards and climate change in New Zealand. Wellington, Urban Edge Planning.

Canterbury Maps 2024. Red Zone. Canterbury Maps Open Data. https://opendata.canterburymaps.govt.nz/datasets/894ed05bbc3745c0bc2dbed6382b9b58/about (accessed 1 July 2024).

Christchurch City Council (CCC) 2024. The process behind the plan. https://ccc.govt.nz/the-council/plans-strategies-policies-and-bylaws/plans/christchurch-district-plan/understanding-the-district-plan/history (accessed 20 June 2024).

Glavovic BC, Saunders WSA, Becker JS 2010. Land-use planning for natural hazards in New Zealand: the setting, barriers, 'burning issues' and priority actions. Natural Hazards 54: 679–706.

Greater Christchurch Partnership 2022. Greater Christchurch Partnership Committee & Whakawhanaka Kāinga Committee. https://www.greaterchristchurch.org.nz/assets/Documents/greaterchristchurch/Spatial-Plan/Greater-Christchurch-Partnership-Committee-Whakawhanake-Kainga-Committee-Briefing-Pack.pdf – (accessed 21 June 2024).

Gunder M, Mouat C 2016. Symbolic violence and victimization in planning processes. Planning Theory 1(2): 124–145.

Insurance Council of New Zealand (ICNZ) 2024. Cost of natural disasters. https://www.icnz.org.nz/industry/cost-of-natural-disasters/ (accessed 1 July 2024).

McDermott P 1998. Positioning planning in a market economy. Environment and Planning A: Economy and Space 30(4): 631–46.

Memon A 2002. Reinstating the purpose of planning within New Zealand's Resource Management Act. Urban Policy and Research 20(3): 299–308.

Ministry for the Environment (MfE) 2023. Proposed National Policy Statement for Natural Hazard Decision-Making. https://environment.govt.nz/assets/publicaitons/RMA/Proposed-National-Policy-Statement-for-Natural-Hazard-Decision-making-2023.pdf (accessed 8 August 2024).

National Planning Standards (NPS) 2019. https://environment.govt.nz/assets/publications/national-planning-standards-november-2019-updated-2022.pdf (accessed 27 June 2024).

Neumayer E, Plümper T 2007. The gendered nature of natural disasters: the impact of catastrophic events on the gender gap in life expectancy, 1981–2002. Annals of the Association of American Geographers 97(3): 551–566.

Potter S H, Becker JS, Johnston DM, Rossiter KP 2015. An overview of the impacts of the 2010-2011 Canterbury earthquakes. International Journal of Disaster Risk Reduction 14: 6–14.

Radio New Zealand (RNZ) 2010 September 9. Bexley should never have been built on – Sir Miles. https://www.rnz.co.nz/news/canterbury-earthquake/56409/bexley-should-never-have-been-built-on-sir-miles (accessed 20 June 2024).

St Clair M, McMahon D 2011. Canterbury fact finding project. Wellington, Hill Young Cooper Ltd. https://canterbury.royalcommission.govt.nz/documents-by-key/20111005.23/$file/SEI.HIL.0001.pdf (accessed 16 August 2024).

Truebridge N 2024. Wayne Brown says council needs more control after 1400 buildings approved on flood plains since deadly floods. https://www.newshub.co.nz/home/new-zealand/2024/01/wayne-brown-says-council-needs-more-control-after-1400-buildings-approved-on-flood-plains-since-deadly-floods.html (accessed 26 June 2024).

Vallance S 2007. The sustainability imperative and urban New Zealand. Unpublished PhD thesis Lincoln University, Lincoln, New Zealand.

Appendix 1 – Auckland RPS natural hazard objectives and policies (operative 2019)[18]

Natural Hazard Objective	Natural Hazard Policies
B10.2.1. Objectives (1) Communities are more resilient to natural hazards and the effects of climate change. (2) The risks to people, property, infrastructure and the environment from natural hazards are not increased in existing developed areas. (3) New subdivision, use and development avoid the creation of new risks to people, property and infrastructure. (4) The effects of climate change on natural hazards, including effects on sea level rise and on the frequency and severity of storm events, is recognised and provided for. (5) The functions of natural systems, including floodplains, are protected from inappropriate subdivision, use and development. (6) The conveyance function of overland flow paths is maintained.	**Identification and risk assessment** (1) Identify areas potentially affected by natural hazards, giving priority to those at high risk of being affected, particularly in the coastal environment. (2) Undertake natural hazard identification and risk assessments as part of structure planning. (3) Ensure the potential effects of climate change are taken into account when undertaking natural hazard risk assessments. (4) Assess natural hazard risks: (a) using the best available and up-to-date hazard information; and (b) across a range of probabilities of occurrence appropriate to the hazard, including, at least, a 100-year timeframe for evaluating flooding and coastal hazards. (5) Manage subdivision, use and development of land subject to natural hazards based on all of the following: (a) the type and severity of potential events, including the occurrence natural hazard events in combination; (b) the vulnerability of the activity to adverse effects, including the health and safety of people and communities, the resilience of property to damage and the effects on the environment; and (c) the cumulative effects of locating activities on land subject to natural hazards and the effects on other activities and resources. (6) Adopt a precautionary approach to natural hazard risk assessment and management in circumstances where: (a) the effects of natural hazards and the extent to which climate change will exacerbate such effects are uncertain but may be significant, including the possibility of low-probability but high potential impact events; or (b) the level of information on the probability and/or impacts of the hazard is limited.

[18] https://unitaryplan.aucklandcouncil.govt.nz

Natural Hazard Objective	Natural Hazard Policies
	Management approaches (7) Avoid or mitigate the effects of activities in areas subject to natural hazards, such as earthworks, changes to natural and built drainage systems, vegetation clearance and new or modified structures, so that the risks of natural hazards are not increased. (8) Manage the location and scale of activities that are vulnerable to the adverse effects of natural hazards so that the risks of natural hazards to people and property are not increased. (9) Encourage activities that reduce, or do not increase, the risks posed by natural hazards, including any of the following: (a) protecting and restoring natural landforms and vegetation; (b) managing retreat by relocation, removal or abandonment of structures; (c) replacing or modifying existing development to reduce risk without using hard protection structures; (d) designing for relocatable or recoverable structures; or (e) providing for low-intensity activities that are less vulnerable to the effects of relevant hazards, including modifying their design and management. 10) Encourage redevelopment on land subject to natural hazards to reduce existing risks and ensure no new risks are created by using a range of measures such as any of the following: (a) the design and placement of buildings and structures; (b) managing activities to increase their resilience to hazard events; or (c) change of use to a less vulnerable activity. **Role of natural systems** (11) Strengthen natural systems such as flood plains, vegetation and riparian margins, beaches and sand dunes in preference to using hard protection structures. **Infrastructure** (12) Minimise the risks from natural hazards to new infrastructure which functions as a lifeline utility by: (a) assessing the risks from a range of natural hazard events including low probability but high potential impact events such as tsunami, earthquake and volcanic eruptions; (b) utilising design, location and network diversification to minimise the adverse effects on infrastructure and to minimise the adverse effects on the community from the failure of that infrastructure.

Natural Hazard Objective	Natural Hazard Policies
	Coastal hazards
	(13) Require areas potentially affected by coastal hazards over the next 100 years to do all of the following: (a) avoid changes in land use that would increase the risk of adverse effects from coastal hazards; (b) do not increase the intensity of activities that are vulnerable to the effects of coastal hazards beyond that enabled by the Plan; (c) in the event of redevelopment, minimize natural hazard risks through the location and design of development; and (d) where it is impracticable to locate infrastructure outside of coastal hazard areas, then ensure coastal hazard risks are mitigated.

Appendix 2 – Bay of Plenty RPS natural hazard objectives and policies (operative 2016)[19]

Natural Hazard Objective	Natural Hazard Policies
Objective 31: Avoidance or mitigation of natural hazards by managing risk for people's safety and the protection of property and lifeline utilities.	14 policies listed to help achieve this objective. **Policy NH 1B**: Taking a risk management approach. **Policy NH 2B**: Classifying risk. **Policy NH 3B**: Natural hazard risk outcomes. **Policy NH 4B**: Managing natural hazard risk on land subject to urban development. **Policy NH 5B**: Avoiding increasing and encouraging reducing natural hazard risk in the coastal environment. **Policy NH 6B**: Exemptions from the natural hazard risk management approach. **Policy NH 7A**: Identifying areas susceptible to natural hazards. **Policy NH 8A**: Assessment of natural hazard risk at the time of plan development. **Policy NH 9B**: Assessment of natural hazard risk at the time of subdivision, or change or intensification of land use before Policies NH 7A and NH 8A have been given effect to. **Policy NH 10B**: Assessment of natural hazard risk at the time of subdivision, or change or intensification of land use after Policies NH 7A and NH 8A have been given effect to. **Policy NH 11B**: Providing for climate change. **Policy NH 12A**: Managing natural hazard risk through regional, city and district plans. **Policy NH 13C**: Allocation of responsibility for natural hazard identification and risk assessment. **Policy NH 14C**: Allocation of responsibility for land use control for natural hazards.

[19] https://www.boprc.govt.nz/your-council/plans-and-policies/policies/regional-policy-statement/

Appendix 3 – Waikato RPS natural hazard objectives and policies (operative 2016)[20]

Natural Hazard Objective	Natural Hazard Policies
Objective 3.24 The effects of **natural hazards** on people, property and the environment are managed by: a) Increasing community resilience to hazard risks b) Reducing the risks from hazards to acceptable or tolerable levels; and c) Enabling the effective and efficient response and recovery from natural hazards.	The RPS states Objective 3.24 is achieved by implementing the following policies: 4.1. – Integrated approach 4.2. – Collaborative approach 4.3. – Tangata whenua 6.1. – Planned and co-ordinated subdivision, use and development 6.2. – Planning for development in the coastal environment. 6.10 – Implementing the Coromandel Peninsula Blueprint. 7.1. – Interest in the coastal marine area 9.3. – Development Geothermal Systems 9.4. – Limited Development Geothermal Systems 13.1. – Natural hazard risk management approach 13.2. – Manage activities to reduce the risks from natural hazards. 13.3. – High impact, low probability natural hazard events. All of these policies contain numerous sub-policies and explanations that were too lengthy to cut-and-paste into this document.

[20] https://www.waikatoregion.govt.nz/assets/WRC/Council/Policy-and-Plans/RPS-Regional-Policy-Statement/RPSv2018.pdf

Appendix 4 – Canterbury RPS natural hazard objectives and policies (operative 2013)[21]

Natural Hazard Objective	Natural Hazard Policies
Objective 11.2.1 – Avoid new subdivision, use and development of land that increases risk associated with natural hazards.	Six policies listed under this objective: 11.3.1, 11.3.2., 11.3.3, 11.3.4., 11.3.5, and 11.3.8. **Policy 11.3.1** *Avoidance of inappropriate development in high hazard areas*. To avoid new subdivision, use and development (except as provided for in Policy 11.3.4) of land in high hazard areas, unless the subdivision, use or development: 1. is not likely to result in loss of life or serious injuries in the event of a natural hazard occurrence; and 2. is not likely to suffer significant damage or loss in the event of a natural hazard occurrence; and 3. is not likely to require new or upgraded hazard mitigation works to mitigate or avoid the natural hazard; and 4. is not likely to exacerbate the effects of the natural hazard; or 5. Outside of greater Christchurch, is proposed to be located in an area zoned or identified in a district plan for urban residential, industrial or commercial use, at the date of notification of the CRPS, in which case the effects of the natural hazard must be mitigated; or 6. Within greater Christchurch, is proposed to be located in an area zoned in a district plan for urban residential, industrial or commercial use, or identified as a "Greenfield Priority Area" on Map A of Chapter 6, both at the date the Land Use Recovery Plan was notified in the Gazette, in which the effect of the natural hazard must be avoided or appropriately mitigated; or 7. Within greater Christchurch, relates to the maintenance and/or upgrading of existing critical or significance infrastructure. **Policy 11.3.1** seeks to achieve the principle of avoiding the potential effects of natural hazards in high hazard areas in the first instance. A definition of high hazard areas is provided in the definitions section. "High hazard areas" are: 1. flood hazard areas subject to inundation events where the water depth (metres) x velocity (metres per second) is greater than or equal to 1, or where depths are greater than 1 metre, in a 0.2% AEP flood event; 2. land outside of greater Christchurch subject to coastal erosion over the next 100 years; and 3. land within greater Christchurch likely to be subject to coastal erosion including the cumulative effects of sea level rise over the next 100 This includes (but is not limited to) the land located within Hazard Zones 1 and 2 shown on Maps in Appendix 5 of this Regional Policy Statement that have been determined in accordance with Appendix 6; and 4. land subject to sea water inundation (excluding tsunami) over the next 100 years. This includes (but is not limited to) the land located within the sea water inundation zone boundary shown on Maps in Appendix 5 of this Regional Policy Statement.

[21] https://www.ecan.govt.nz/your-region/plans-strategies-and-bylaws/canterbury-regional-policy-statement/crps-2013

Natural Hazard Objective	Natural Hazard Policies
	When determining high hazard areas, projections on the effects of climate change will be taken into account. **Policy 11.3.2 -** *Avoid development in areas subject to inundation*. In areas not subject to Policy 11.3.1 that are subject to inundation by a 0.5% AEP flood event; any new subdivision, use and development (excluding critical infrastructure) shall be avoided unless there is no increased risk to life, and the subdivision, use or development: 1. is of a type that is not likely to suffer material damage in an inundation event; or 2. is ancillary or incidental to the main development; or 3. meets all of the following criteria: a. new buildings have an appropriate floor level above the 0.5% AEP design flood level; and b. hazardous substances will not be inundated during a 0.5% AEP flood event; provided that a higher standard of management of inundation hazard events may be adopted where local catchment conditions warrant (as determined by a cost/benefit assessment). When determining areas subject to inundation, climate change projections including sea level rise are to be taken into account. **Policy 11.3.3 -** *Earthquake hazards*. New subdivision, use and development of land on or close to an active earthquake fault trace, or in areas susceptible to liquefaction and lateral spreading, shall be managed in order to avoid or mitigate the adverse effects of fault rupture, liquefaction and lateral spreading. **Policy 11.3.4 -** *Critical infrastructure.* New critical infrastructure will be located outside high hazard areas unless there is no reasonable alternative. In relation to all areas, critical infrastructure must be designed to maintain, as far as practicable, its integrity and function during natural hazard events. **Policy 11.3.5 -** *General risk management approach*. For natural hazards and/or areas not addressed by policies 11.3.1, 11.3.2, and 11.3.3, subdivision, use or development of land shall be avoided if the risk from natural hazards is unacceptable. When determining whether risk is unacceptable, the following matters will be considered: 1. the likelihood of the natural hazard event; and 2. the potential consequence of the natural hazard event for: people and communities, property and infrastructure and the environment, and the emergency response organisations. Where there is uncertainty in the likelihood or consequences of a natural hazard event, the local authority shall adopt a precautionary approach. Formal risk management techniques should be used, such as the Risk Management Standard (AS/NZS ISO 31000:2009) or the Structural Design Action Standard (AS/NZS 1170.0:2002). **Policy 11.3.8 –** *Climate change*. When considering natural hazards, and in determining if new subdivision, use or development is appropriate and sustainable in relation to the potential risks from natural hazard events, local authorities shall have particular regard to the effects of climate change.

Appendix 5 – Nelson RPS natural hazard objectives and policies (operative 2004)[22]

Natural Hazard Objective	Natural Hazard Policies
Objective 5.1 Management of hazard risk will consider people's health and safety, and the protection of lifeline utilities; **Objective 5.2** Development should be managed in a way that ensures natural hazard risk is reduced or mitigated; **Objective 5.3** The Nelson community is more resilient to natural hazards including the impacts of climate change, and they are aware of options adopted for managing natural hazards; **Objective 5.4** Ensure all planning and development recognises the implications of climate change; **Objective 5.5** Whakatu tāngata whenua Iwi cultural heritage areas are protected from natural hazards where appropriate.	**Policy 5.1** A risk based management approach will be adopted to control the use, development and protection of land. The focus will be on the presence and level of risk of the natural hazard occurring, including climate change, and the potential consequences. **Policy 5.2** Avoid new subdivision, development and placement of regionally significant infrastructure and community assets in areas at high risk from natural hazards, unless: a) there is no reasonable alternative, in which case regionally significant infrastructure and community assets must be designed to maintain, as far as practicable, their integrity and function during natural hazard events; or b) avoidance is impossible or impractical and adverse effects are mitigated to an acceptable level; or c) subdivision is solely for the purpose of boundary adjustments. **Policy 5.3** Mitigate the adverse effects of natural hazards on subdivisions and development in areas other than those in high risk areas. **Explanation** In some areas it is impossible or impractical to avoid natural hazard risks altogether. Some forms of development are also less susceptible to risk than others, for example toilet blocks and sheds. In such areas hazard risks can be mitigated to tolerable or acceptable levels. For flooding and some coastal inundation hazard risks the following measures can be implemented to reduce that risk: a) building platforms that utilise the highest ground b) minimum floor levels for dwellings, industrial and commercial buildings c) site or land filling/raising where this does not increase off site hazard risk d) lower density development e) elevation of flood sensitive equipment f) restrictions on the activities that take place on the land g) flood proofing h) removable structures

[22] https://www.nelson.govt.nz/environment/nelson-resource-management-plan/nelson-resource-management-plan-2/view-the-nrmp/explore-the-nrmp/

Natural Hazard Objective	Natural Hazard Policies
	The degree to which the above measures are applied will depend on the type of development proposed and its susceptibility to natural hazard risks, the standard of flood protection provided by physical or structural flood alleviation activities and ultimately the extent to which an area is subject to actual or potential inundation. For other hazards such as land instability, liquefaction and coastal erosion, similar measures may be appropriate, especially the identification of building platforms and land use restrictions. **Policy 5.4** Ensure that on any land within the coastal environment that is potentially affected by coastal erosion or coastal inundation over at least the next 100 years: a) no land use change or redevelopment occurs that would increase the risk from that coastal hazard; and b) land use change or redevelopment that reduces the risk from that coastal hazard is encouraged. **Policy 5.5** Actively engage with property owners and the Nelson community to raise awareness of the natural hazard risks using the most up to date information available. **Policy 5.6** Where appropriate protect, re-create or enhance natural features and landforms of regional significance and where they provide protection from natural hazards. **Policy 5.7** Whakatu tāngata whenua Iwi cultural heritage areas are protected from natural hazards where appropriate.

Appendix 6 – Otago RPS natural hazard objectives and policies (operative 2024)[23]

Natural Hazard Objective	Natural Hazard Policies
Objective 4.1. Risks that natural hazards pose to Otago's communities are minimized.	**Policy 4.1.1** *Identifying natural hazards.* Identify natural hazards that may adversely affect Otago's communities, including hazards of low likelihood and high consequence by considering all of the following: a) Hazard type and characteristics; b) Multiple and cascading hazards; c) Cumulative effects, including from multiple hazards with different risks; d) Effects of climate change; e) Using the best available information for calculating likelihood; f) Exacerbating factors. **Policy 4.1.2** *Natural hazard likelihood.* Using the best available information, assess the likelihood of natural hazard events occurring, over no less than 100 years. **Policy 4.1.3** *Natural hazard consequence.* Assess the consequences of natural hazard events, by considering all of the following: a) The nature of activities in the area; b) Individual and community vulnerability; c) Impacts on individual and community health and safety; d) Impacts on social, cultural and economic wellbeing; e) Impacts on infrastructure and property, including access and services; f) Risk reduction and hazard mitigation measures; g) Lifeline utilities, essential and emergency services, and their co-dependence; h) Implications for civil defence agencies and emergency services; i) Cumulative effects; j) Factors that may exacerbate a hazard event.

[23] https://www.orc.govt.nz/media/16328/otago-regional-policy-statement-rps-2019-final-march-2024.pd

Natural Hazard Objective	Natural Hazard Policies
	Policy 4.1.4 *Assessing activities for natural hazard risk.* Assess activities for natural hazard risk to people, property and communities, by considering all of the following: a) The natural hazard risk identified, including residual risk; b) Any measures to avoid, remedy or mitigate those risks, including relocation and recovery methods; c) The long-term viability and affordability of those measures; d) Flow-on effects of the risk to other activities, individuals and communities; e) The availability of, and ability to provide, lifeline utilities, and essential and emergency services, during and after a natural hazard event. **Policy 4.1.5** *Natural hazard risk.* Manage natural hazard risk to people, property and communities, with particular regard to all of the following: a) The risk posed, considering the likelihood and consequences of natural hazard events; b) The implications of residual risk; c) The community's tolerance of that risk, now and in the future, including the community's ability and willingness to prepare for and adapt to that risk, and respond to an event; d) Sensitivity of activities to risk; e) The need to encourage system resilience; f) The social costs of recovery. **Policy 4.1.6** *Minimising increase in natural hazard risk.* Minimise natural hazard risk to people, communities, property and other aspects of the environment by: a) Avoiding activities that result in significant risk from natural hazard; b) Enabling activities that result in no or low residual risk from natural hazard; c) Avoiding activities that increase risk in areas potentially affected by coastal hazards over at least the next 100 years; d) Encouraging the location of infrastructure away from areas of hazard risk where practicable; e) Minimising any other risk from natural hazard. **Policy 4.1.7** *Reducing existing natural hazard risk.* Reduce existing natural hazard risk to people and communities, including by all of the following: a) Encouraging activities that: i. Reduce risk; or ii. Reduce community vulnerability; b) Discouraging activities that: i. Increase risk; or ii. Increase community vulnerability; c) Considering the use of exit strategies for areas of significant risk to people and communities;

Natural Hazard Objective	Natural Hazard Policies
	d) Encouraging design that facilitates: i. Recovery from natural hazard events; or ii. Relocation to areas of lower risk; or iii. Mitigation of risk; e) Relocating lifeline utilities, and facilities for essential and emergency service, to areas of reduced risk, where appropriate and practicable; f) Enabling development, upgrade, maintenance and operation of lifeline utilities and facilities for essential and emergency services; g) Reassessing natural hazard risk to people and communities, and community tolerance of that risk, following significant natural hazard events. **Policy 4.1.8** *Precautionary approach to natural hazard risk.* Where natural hazard risk to people and communities is uncertain or unknown, but potentially significant or irreversible, apply a precautionary approach to identifying, assessing and managing that risk. **Policy 4.1.9** *Protecting features and systems that provide hazard mitigation.* Avoid, remedy or mitigate adverse effects on natural or modified features and systems, that contribute to mitigating the effects of both natural hazards and climate change. **Policy 4.1.10** *Mitigating natural hazards.* Give preference to risk management approaches that reduce the need for hard protection structures or similar engineering interventions, and provide for hard protection structures only when all of the following apply: a) Those measures are essential to reduce risk to a level the community is able to tolerate; b) There are no reasonable alternatives that result in reducing the risk exposure; c) It would not result in an increase in risk to people and communities, including displacement of risk off-site; d) The adverse effects can be adequately managed; e) The mitigation is viable in the reasonably foreseeable long term. **Policy 4.1.11** *Hard protection structures.* Enable the location of hard protection structures or similar engineering interventions on public land only when either or both of the following apply: a) There is significant public or environmental benefit in doing so; b) The work relates to the functioning ability of a lifeline utility, or a facility for essential or emergency services. **Policy 4.1.12** *Lifeline utilities and facilities for essential or emergency services.* Locate and design lifeline utilities and facilities for essential or emergency services to: a) Maintain their ability to function to the fullest extent possible, during and after natural hazard events; and b) Take into account their operational co-dependence with other lifeline utilities and essential services to ensure their effective operation.

Natural Hazard Objective	Natural Hazard Policies
	Policy 4.1.13 *Hazard mitigation measures, lifeline utilities, and essential and emergency services.* Protect the functional needs of hazard mitigation measures, lifeline utilities, and essential or emergency services, including by all of the following: a) Restricting the establishment of other activities that may result in reverse sensitivity effects on those measures, utilities or services; b) Avoiding significant adverse effects on those measures, utilities or services; c) Avoiding, remedying or mitigating other adverse effects on those measures, utilities or services; d) Maintaining access to those measures, utilities or services for maintenance and operational purposes; e) Managing other activities in a way that does not restrict the ability of those mitigation measures, utilities or services to continue functioning.

Appendix 7 – Southland RPS natural hazard objectives and policies (operative 2017)[24]

Natural Hazard Objective	Natural Hazard Policies
Objective NH.1 – Communities becoming more resilient.	The policies listed in relation to this objective change depending on the issue. Overall, 8 different policies are presented in relation to this objective. **Policy NH.1** *Awareness and understanding of risks.* Raise public awareness and promote and understanding of the risks of natural hazards, and encourage people, businesses and communities to reduce their long term risk. **Policy NH.2** *Identify and manage risks from natural hazards.* Identify in district plans, where practicable, areas subject to known natural hazard risk, and actively engage with individuals and the community in managing those and other natural hazard risk areas, using the most up to date information available. **Policy NH.3** *Precautionary approach.* Take a precautionary approach towards managing the effects of climate change and sea level rise, and any associated changes in the scale and frequency of natural hazards, to ensure potential adverse effects are avoided or mitigated. **Policy NH.4** *Management priorities.* In managing natural hazards, the following implementation priorities are to be adopted: 1. Avoid exposure to areas at significant risk from natural hazards where practicable by adopting a precautionary approach; 2. Mitigate the effects of natural hazards by managing land use in areas known to be susceptible to the effects of natural hazards; 3. Undertake physical works needed to reduce the potential for the natural hazard to affect people and infrastructure. **Policy NH.5** *Avoid areas of significant risk from natural hazard.* Avoid new subdivision, development and placement of critical infrastructure in areas at significant risk from natural hazards, unless: (a) There is no reasonable alternative, in which case critical infrastructure must be designed to maintain, as far as practicable, its integrity and function during natural hazard events; or (b) Avoidance is impossible or impractical and adverse effects are mitigated to an acceptable level; or (c) Subdivision is solely for the purpose of boundary adjustments. **Policy NH.6** *Mitigate the effects of natural hazards.* Mitigate the adverse effects of natural hazards on new subdivision and development in areas other than those at significant risk. **Policy NH.7** *Works may affect other land.* Avoid, where practical, or mitigate the potential for activities to have adverse off-site natural hazard effects on other land. **Policy NH.8** *Natural features and landforms.* Protect, recreate or enhance natural features and landforms that provide protection from natural hazards.

[24] https://www.es.govt.nz/repository/libraries/id:26gi9ayo517q9stt81sd/hierarchy/about-us/plans-and-strategies/regional-policy-statement/documents/Southland%20Regional%20Policy%20Statement%202017.pdf

Appendix 8 – Gisborne RPS natural hazard objectives and policies (operative 2023)[25]

Natural Hazard Objective	Natural Hazard Policies
B5.1.2 - A pattern of human settlement that: • *Provides a high level of personal safety from natural hazards for its inhabitants.* • *Avoids or mitigate the risk to property and infrastructure from natural hazards.* • *Does not accelerate or worsen the effects of natural hazards upon the natural and physical environment.*	1. To encourage and facilitate changes, over time, to patterns of human settlement, development and activities which are not affected by natural hazards and which do not induce or worsen the impacts of natural processes, and which recognise and allow for some natural features to migrate inland as a result of dynamic coastal processes. 2. To recognise the limitations of attempts to control natural processes by physical work and limit such attempts to appropriate situations where they are: a) needed to protect existing development, or waahi tapu or new public infrastructure such as ports, roads, bridges; and b) have a favourable benefit to cost ratio; and Tairāwhiti Resource Management Plan – Part B Last Updated 30 August 2023 40 c) will not have significant adverse effects on the natural character of the coastal environment, or other adverse environmental effects; and d) will not cause or worsen hazards to other lands/waters; and e) can be designed with confidence of long-term effective performance; and f) are the only practical alternative. 3. To maintain a strong commitment to researching, recording and publicising information about natural hazards. 4. To recognise that natural systems and features may provide a defence against natural hazards and that the integrity of such natural systems should be protected and enhanced, where appropriate. 5. To recognise the possibility of sea level rise and the likelihood of changes to the frequency and impacts of some natural hazards due to climate change and sea-level rise. 6. To encourage participation by the affected communities in managing the risks of natural hazards.

[25] https://www.gdc.govt.nz/council/tairawhiti-plan/chapters-and-appendices

Appendix 9 –Wellington RPS natural hazard objectives and policies (operative 2013)[26]

Natural Hazard Objective	Natural Hazard Policies
Objective 19: The risks and consequences to people, communities, their businesses, property and infrastructure from natural hazards and climate change effects are reduced. **Objective 20:** Hazard mitigation measures, structural works and other activities do not increase the risk and consequences of natural hazard events. **Objective 21:** 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 29:** Avoiding inappropriate subdivision and development in areas at high risk from natural hazards – district and regional plans **Policy 51:** Minimising the risks and consequences of natural hazards – consideration **Policy 52**: Minimising adverse effects of hazard mitigation measures – consideration

[26] https://www.gw.govt.nz/your-region/plans-policies-and-bylaws/policies/regional-policy-statement/

Appendix 10 – Hawke's Bay RPS natural hazard objectives and policies (operative 2006)[27]

Natural Hazard Objective	Natural Hazard Policies
OBJ 31. The avoidance or mitigation of the adverse effects of natural hazards on people's safety, property, and economic livelihood	**POL 55** *ROLE OF NON-REGULATORY METHODS*. To use non-regulatory methods set out in Chapter 4, as the principal means of addressing hazard avoidance and mitigation, in particular: (a) Liaison with territorial authorities - To provide information on natural hazard risk to territorial authorities, and advocate that future development is managed in such a way that the risk of exposure to natural hazards is avoided, remedied or mitigated. (b) Works and services - To provide hazard mitigation measures, in particular flood mitigation measures, where the benefits can be shown to outweigh the costs and the identified beneficiaries can meet the costs. (c) Natural hazard priorities - To focus both hazard avoidance and mitigation on areas of high human population density as a first priority.

[27] https://www.hbrc.govt.nz/our-documents/rrmp/

Appendix 11 – Taranaki RPS natural hazard objectives and policies (operative 2010)[28]

Natural Hazard Objective	Natural Hazard Policies
HAZ OBJECTIVE 1 To avoid or mitigate natural hazards within the Taranaki region by minimising the net costs or risks of natural hazards to people, property and the environment of the region.	**HAZ Policy 1.** *Community awareness and planning.* Reduce the susceptibility of the Taranaki community and environment to natural hazard by improving community awareness, responsibility and planning for the avoidance and mitigation of natural hazards. **HAZ Policy 2.** *Hazard protection works.* New subdivision, use and development should be located and designed that the need for hazard protection works is avoided. **HAZ Policy 3.** *Role of natural features.* The role of natural features to avoid or mitigate natural hazards should be recognized and maintained. **HAZ Policy 4.** *Modifying natural hazard processes and events.* The appropriateness of works and activities designed to modify natural hazard processes and events will be assessed by reference to: (a) The levels of risk and any likely increase in disaster or risk potential; (b) The costs and benefits to people and the community; (c) The potential adverse effects of the works on the environment; and (d) The effectiveness of the works or activities and the practicality of alternative means, including the relocation of existing development or infrastructure away from areas of natural hazard risk. **HAZ Policy 5.** *Reducing the cost of natural hazard events.* The cost to the community resulting from the occurrence of emergencies and natural disasters will be reduced through the application of emergency, relief and recovery programmes, which reduce the risk, and costs of emergencies or disasters. **HAZ Policy 6.** *Emergency services and infrastructure.* To recognize the importance of air, land and sea transportation and associated navigation systems and infrastructure as essential services that should have priority in a state of emergency.

[28] https://www.trc.govt.nz/assets/Documents/Plans-policies/RPS/rps-full-web.pdf

Appendix 12 – West Coast RPS natural hazard objectives and policies (operative 2020)[29]

Natural Hazard Objective	Natural Hazard Policies
OBJECTIVE. The risks and impacts of natural hazard events on people, communities, property, infrastructure and our regional economy are avoided or minimised.	1. Reduce the susceptibility of the West Coast community and environment to natural hazards by improving planning, responsibility and community awareness for the avoidance and mitigation of natural hazards. 2. New subdivision, use or development should be located and designed so that the need for hazard protection works is avoided or minimised. Where necessary and practicable, further development in hazard-prone areas will be restricted. 3. Avoid or mitigate adverse effects on the environment arising from climate change by recognising and providing for the development and protection of the built environment and infrastructure in a manner that takes into account the potential effects of rising sea levels and the potential for more variable and extreme weather patterns in coming decades. 4. The appropriateness of works and activities designed to modify natural hazard processes and events will be assessed by reference to: a) The levels of risk and the likely increase in disaster or risk potential; b) The costs and benefits to people and the community; c) The potential effects of the works on the environment; and d) The effectiveness of the works or activities and the practicality of alternative means, including the relocation of existing development or infrastructure away from areas of natural hazard risk.

[29]https://www.wcrc.govt.nz/repository/libraries/id:2459ikxj617q9ser65rr/hierarchy/Documents/Publications/Regional%20Plans/Regional%20Policy%20Statement/Operative%20RPS%20final%2014%20July%202020.pdf

Appendix 13 – Marlborough RPS natural hazard objectives and policies (operative 1995)[30]

Natural Hazard Objective	Natural Hazard Policies
7.4.2. Natural Hazards Avoid or mitigate the actual or potential effects of loss or damage to life or property from natural hazards.	**Policies – Hazard Mitigation** (a) Restrict land use activities in areas of known natural hazard (b) Restrict land use activities which would increase the risk of natural hazards to property and life *Land use activities should take into account any known natural hazard which could potentially affect that activity. This may, in certain circumstances, require special design, careful location, or specific construction techniques. It is also possible that the potential risk may be so severe as to preclude activity. Restrictions are sometimes necessary to provide for community safety.* (c) Recognise that decision have been made in the past to highly modify the floodways of the Wairau River system for the purpose of flood protection of the main Wairau flood plain, and Blenheim in particular, and that these historical decisions are now irreversible. *Originally the Wairau River flowed in a wide braided channel across the entire floor of the Wairau Valley. Extensive modification of the natural functioning of this system has occurred over the last century. The river now flows within a confined channel along the northern margin of the Plain. The urban and rural development on the Plain makes the process irreversible. Council must now manage and maintain the river within the present recognized channel for reasons of public safety and protection of property.*

[30] https://v3au.zone-secure.net/drive/5063/347838/index-56.html#page=75

Appendix 14 – Horizon's One Plan natural hazard objectives and policies (operative 2014)[31]

Natural Hazard Objective	Natural Hazard Policies
HAZ-NH-02: Effects* of natural hazard events. The adverse effects* of natural hazard* events on people, property, infrastructure* and the wellbeing of communities are avoided or mitigated.	**HAZ-NH-P9**: *Responsibilities for natural hazard* management.* In accordance with s62(1)(i) RMA, local authority* responsibilities for natural hazard* management in the Region are as follows: 1. The Regional Council and Territorial Authorities* must be jointly responsible for: a. raising public awareness of the risks of natural hazards* through education, including information about what natural hazards* exist in the Region, what people can do to minimise their own level of risk, and what help is available. 2. The Regional Council must be responsible for: a. developing objectives and policies for Region-wide management of activities for the purpose of avoiding or mitigating natural hazards*, b. developing specific objectives, policies and methods (including rules^) for the control of: i. all land* use activities in the coastal marine area^, ii. erosion protection works that cross or adjoin mean high water springs, iii. all land* use activities in the beds* of rivers* and lakes*, for the purpose of avoiding or mitigating natural hazards*, and c. taking the lead role in collecting, analysing and storing regional natural hazard* information and communicating this information to Territorial Authorities*. 3. Territorial Authorities* must be responsible for: a. developing objectives, policies and methods (including rules^) for the control of the use of land* to avoid or mitigate natural hazards* in all areas and for all activities except those areas and activities described in (b)(ii) above, and b. identifying floodways* (as shown in RP-SCHED10) and other areas known to be inundated by a 0.5% annual exceedance probability (AEP) flood event1 on planning maps in district plans^, and controlling land* use activities in these areas in accordance with RPS-HAZ-NH-P10 and RPS-HAZ-NH-P11. **HAZ-NH-P10**: *Development on land prone to flooding*. 1. The Regional Council and Territorial Authorities* must not allow the establishment of any new structure* or activity, or any increase in the scale of any existing structure* or activity, within a floodway* mapped in RP-SCHED10 unless: a. there is a functional need to locate the structure* or activity within such an area, and

[31] https://www.horizons.govt.nz/CMSPages/GetFile.aspx?guid=a5e024c2-ebd0-4989-b4f6-655b6811c3d3

Natural Hazard Objective	Natural Hazard Policies
	b. the structure* or activity is designed so that the adverse effects* of a 0.5% annual exceedance probability (AEP) (1 in 200 year) flood event2 on it are avoided or mitigated, and c. the structure* or activity is designed so that adverse effects* on the environment*, including the functioning of the floodway, arising from the structure* or activity during a flood event are avoided or mitigated, in which case the structure* or activity may be allowed. 2. Outside of a floodway* mapped in RP-SCHED10 the Regional Council and Territorial Authorities* must not allow the establishment of any new structure* or activity, or an increase in the scale of any existing structure* or activity, within an area which would be inundated in a 0.5% AEP (1 in 200 year) flood event1 unless: a. flood hazard avoidance* is achieved or the 0.5% AEP (1 in 200 year) flood hazard is mitigated, or b. the non-habitable structure* or activity is on production land^, or c. there is a functional necessity to locate the structure* or activity within such an area, in any of which cases the structure* or activity may be allowed. 3. Flood hazard avoidance* must be preferred to flood hazard mitigation. 4. When making decisions under RPS-HAZ-NH-P10(1) and RPS-HAZ-NH-P10(2)(a) regarding the appropriateness of proposed flood hazard mitigation measures, the Regional Council and Territorial Authorities* must: a. ensure that occupied structures* have a finished floor or ground level, which includes reasonable freeboard, above the 0.5% AEP (1 in 200 year) flood level. b. ensure that in a 0.5% AEP (1 in 200 year) flood event the inundation of access between occupied structures* and a safe area where evacuation may be carried out (preferably ground that will not be flooded) must be no greater than 0.5 m above finished ground level with a maximum water* velocity of 1.0 m/s, or some other combination of water* depth and velocity that can be shown to result in no greater risk to human life, infrastructure^ or property*, c. ensure that any more than minor adverse effects* on the effectiveness of existing flood hazard avoidance* or mitigation measures, including works and structures* within River and Drainage Schemes, natural landforms that protect against inundation, and overland stormwater flow paths, are avoided, d. ensure that adverse effects* on existing structures* and activities are avoided or mitigated, e. have regard to the likelihood and consequences of the proposed flood hazard mitigation measures failing, f. have regard to the consequential effects* of meeting the requirements of RPSHAZ-NH-P10-4(b), including but not limited to landscape and natural character, urban design, and the displacement of floodwaters onto adjoining properties*, and g. have regard to the proposed ownership of, and responsibility for maintenance of, the flood hazard mitigation measures including the appropriateness and certainty of the maintenance regime. 5. Within that part of the Palmerston North City Council district that is protected by the Lower Manawatū River Flood Control Scheme to a 0.2% AEP (1 in 500 year) standard, including the Mangaone Stream stopbank system, additional flood hazard avoidance* or mitigation measures will generally not be required when establishing any new structure* or activity or increasing the scale of any existing structure* or activity.

Natural Hazard Objective	Natural Hazard Policies
	6. Despite RPS-HAZ-NH-P10(4)(a) and (b), within that part of the Whanganui central city bounded by Bates Street, Ridgway Street and Victoria Avenue, flood hazard mitigation measures will not be limited to considering flood height* and flow but will include such methods as resilient construction and emergency management systems. 7. This policy does not apply to new critical infrastructure* **HAZ-NH-P11**: *New critical infrastructure** The placement of new critical infrastructure* in an area likely to be inundated by a 0.5% AEP (1 in 200 year) flood event1 (including floodways mapped in RP-SCHED10), or in an area likely to be adversely affected by another type of natural hazard*, must be avoided, unless there is satisfactory evidence to show that the critical infrastructure*: 1. will not be adversely affected by floodwaters or another type of natural hazard*, 2. will not cause any adverse effects* on the environment* in the event of a flood or another type of natural hazard*, 3. is unlikely to cause a significant increase in the scale or intensity of natural hazard* events, and 4. cannot reasonably be located in an alternative location. **HAZ-NH-P12**: *Other types of natural hazards*^ The Regional Council and Territorial Authorities* must manage future development and activities in areas susceptible to natural hazard* events (excluding flooding) in a manner which: 1. ensures that any increase in risk to human life, property or infrastructure^ from natural hazard* events is avoided where practicable, or mitigated where the risk cannot be practicably avoided, 2. is unlikely to reduce the effectiveness of existing works, structures*, natural landforms or other measures which serve to mitigate the effects* of natural hazard* events, and 3. is unlikely to cause a significant increase in the scale or intensity of natural hazard* events. **HAZ-NH-P13**: Climate change^ The Regional Council and Territorial Authorities* must take a precautionary approach when assessing the effects* of climate change and sea level rise* on the scale and frequency of natural hazards* with regard to decisions on: 1. stormwater discharges* and effluent disposal, 2. coastal development and coastal land* use, 3. activities adjacent to rivers*, 4. water* allocation and water* takes, 5. activities in a Hill Country Erosion Management Site*, 6. flood mitigation activities, and 7. managing storm surge.

Appendix 15 – Northland RPS natural hazard objectives and policies (operative 2016)[32]

Natural Hazard Objective	Natural Hazard Policies
Objective 3.13 – Natural Hazard Risk The risks and impacts of natural hazard events (including the influence of climate change) on people, communities, property, natural systems, infrastructure and our regional economy are minimised by: (a) Increasing our understanding of natural hazards, including the potential influence of climate change on natural hazard events; (b) Becoming better prepared for the consequences of natural hazard events; (c) Avoiding inappropriate new development in 10 and 100 year flood hazard areas and coastal hazard areas; (d) Not compromising the effectiveness of existing defences (natural and man-made); (e) Enabling appropriate hazard mitigation measures to be created to protect existing vulnerable development; and (f) Promoting long-term strategies that reduce the risk of natural hazards impacting on people and communities. (g) Recognising that in justified circumstances, critical infrastructure may have to be located in natural hazard-prone areas.	**Policy 7.1** *Development in natural hazard-prone areas* **Policy 7.1.1**. – *General risk management approach.* Subdivision, use and development of land will be managed to minimize the risks from natural hazards by: (a) Seeking to use the best available information, including formal risk management techniques in areas potentially affected by natural hazards; (b) Minimising any increase in vulnerability due to residual risk; (c) Aligning with emergency management approaches (especially risk reduction); (d) Ensuring that natural hazard risk to vehicular access routes and building platforms for proposed new lots is considered when assessing subdivision proposals; and (e) Exercising a degree of caution that reflections the level of uncertainty as to the likelihood or consequences of a natural hazard event. **Policy 7.1.2.** – *New subdivision and land use within 10-year and 100-year flood hazard areas.* New subdivision, built development (including wastewater treatment and disposal systems), and land use change may be appropriate within 10-year and 100-year19 flood hazard areas provided all of the following are met: (a) Hazardous substances will not be inundated during a 100-year flood event. (b) Earthworks (other than earthworks associated with flood control works) do not divert flood flow onto neighbouring properties, and within 10-year flood hazard areas do not deplete flood plain storage capacity (c) A minimum freeboard above a 100-year flood event of at least 500mm is provided for residential buildings. (d) Commercial and industrial buildings are constructed so as to not be subject to material damage in a 100 year flood event. (e) New subdivision plans are able to identify that building platforms will not be subject to inundation and / or material damage (including erosion) in a 100-year flood event (f) Within 10-year flood hazard areas, land use or built development is of a type that will not be subject to material damage in a 100-year flood event; and

[32] https://www.nrc.govt.nz/media/clxj0ndy/regionalpolicystatementfornorthlandmay2016updatedmay2018.pdf

Natural Hazard Objective	Natural Hazard Policies
	(g) Flood hazard risk to vehicular access routes for proposed new lots is assessed. **Policy 7.1.3.** – *New subdivision, use and development within areas potentially affected by coastal hazards (including high risk coastal areas).* Within areas potentially affected by coastal hazards over the next 100 years (including high risk coastal hazard areas), the hazard risk associated with new use and development will be managed so that: (a) Redevelopment or changes in land use that reduce the risk of adverse effects from coastal hazards are encouraged; (b) Subdivision plans are able to identify that building platforms are located outside high risk coastal hazard areas and these building platforms will not be subject to inundation and / or material damage (including erosion) over a 100-year timeframe; (c) Coastal hazard risk to vehicular access routes for proposed new lots is assessed; (d) Any use or development does not increase the risk of social, environmental or economic harm (from coastal hazards); (e) Infrastructure should be located away from areas of coastal hazard risk but if located within these areas, it should be designed to maintain its integrity and function during a hazard event; Regional Policy Statement for Northland Page 119 of 178; (f) The use of hard protection structures is discouraged and the use of alternatives to them promoted; (g) Mechanisms are in place for the safe storage of hazardous substances. **Policy 7.1.4.** – *Existing development in known hazard-prone areas.* In 10-year and 100-year flood hazard areas and coastal hazard areas, mitigation measures to reduce natural hazard risk to existing development will be encouraged. These may include one or more of the following: (a) Designing for relocatable or recoverable structures (when changing existing buildings); (b) Providing for low or no risk activities within hazard-prone areas; (c) Providing for setbacks (from rivers / streams or the coastal marine area); (d) Managed retreat by relocation, removal, or abandonment of structures; (e) Replacing or modifying existing development without resorting to hard protection structures (see Policy 7.2.2); or (f) Protecting, restoring or enhancing natural defences against natural hazards (see Policy 7.2.1). **Policy 7.1.5.** – *Regionally significant infrastructure and critical infrastructure.* New regionally significant infrastructure and critical infrastructure: 1. Must be designed to maintain, as far as practicable, its integrity and function during natural hazard events; and 2. May be considered appropriate to locate within flood and coastal hazard areas, even if it cannot meet policies 7.1.2 or 7.1.3 provided:

Natural Hazard Objective	Natural Hazard Policies
	(a) There is a need to be located within the flood hazard and / or coastal hazard area; (b) infrastructure providers have demonstrated that the proposed location within the hazard area is the most appropriate (taking into account social, cultural, and economic costs and benefits) to service the needs of the community; and (c) (An engineer's assessment identifies the potential for the infrastructure to exacerbate flood and erosion hazard risk on neighbouring properties, and where the assessment shows that risk will be exacerbated; the assessment must outline ways this risk can be minimised); **Policy 7.1.6.** – *Climate change and development.* When managing subdivision, use and development in Northland, climate change effects will be included in all estimates of natural hazard risk, taking into account the scale and type of the proposed development and using the latest national guidance and best available information on the likely effects of climate change on the region or district **Policy 7.2** *General risk reduction policies* **Policy 7.2.1.** – *Role of nature features.* Recognise and protect, restore or enhance natural systems and features that contribute to reducing the impacts of natural hazard events on the built environment **Policy 7.2.2.** – *Establishing the need for hard protection structures.* Priority will be given to the use of non-structural measures over the use / construction of hard protection structures when managing hazard risk. New hard protection structures may be considered appropriate when: (a) The level of hazard risk reduction that the proposed structural asset is seeking to achieve is appropriate and cannot reasonably be achieved through non-structural options; OR (b) They will provide protection for concentrations of vulnerable existing development and the works form part of a long-term hazard management strategy that represents the best practicable option for the future; and (c) The financial costs of non-structural measures (compared to the costs of the hard protection structure that will achieve the desired level of hazard risk reduction) are too high for the community; and (d) It can be demonstrated that the benefits of mitigation outweigh the adverse effects and that the form and location of the hard protection structure is such that any adverse effects on the environment are minimised. Hard protection structures, when considered necessary to protect private assets, should not be located on public land unless there is significant public or environmental benefit in doing so. **Policy 7.2.3.** – *Protection and maintenance of structural mitigation assets.* Impediments to accessing established natural hazard structural mitigation assets for maintenance purposes, and activities that may compromise the integrity or functioning of these assets, will be avoided.

Appendix 16 – Tasman RPS natural hazard objectives and policies (operative 2001)[33]

Natural Hazard Objective	Natural Hazard Policies
Objective 5.2. Avoidance, remedying or mitigation of the adverse effects arising from urban development locating or expanding in: (a) hazard-prone areas; and (b) coastal areas; and (c) areas where the amenity standards of adjacent rural activities would not be accepted in an urban context; and (d) areas of natural character, outstanding natural features and landscapes, significant indigenous vegetation or fauna, or other heritage values; and (e) Wetlands, lakes, rivers, and their margins. **Objective 11.1** Reduced risks arising from flooding, erosion, inundation and instability and earthquake hazards **Objective 11.2** Efficient reinstatement of utility services after damage by environmental hazard. **Objective 11.3** Reduced risks of fire to natural and built resources, from the use or development of land.	**Policy 5.2.** The Council will avoid locating new urban development in areas subject to natural hazards, except that extensions in areas that are so subject may be allowed provided adequate mitigation measures are undertaken. **Policy 5.4** The Council will avoid, remedy or mitigate adverse effects across property boundaries, especially between urban and rural land use or development, including effects of: (a) noise; (b) odour; (c) shelter-belts (microclimate and biological effects) (d) contaminant discharges (e) fire risk. **Policy 5.5** The Council will protect the natural character of the coastal environment from adverse effects of further urban development, including effects on: (a) natural features and landscapes, such as headlands, cliffs and the margins of estuaries; (b) habitats such as estuaries and wetlands; (c) ecosystems, especially those including rare or endangered species or communities; (d) natural processes, such as spit formation; (e) water and air quality; having regard to the: (i) rarity and representativeness; (ii) vulnerability or resilience; (iii) coherence and intactness; (iv) interdependence; and (v) scientific, cultural, historic or amenity value; of such features, landscapes, habitats, ecosystems, processes and values.

[33] https://www.tasman.govt.nz/my-council/key-documents/tasman-regional-policy-statement/

Natural Hazard Objective	Natural Hazard Policies
	Policy 6.3. The Council will: (a) protect and enhance areas of significant indigenous vegetation, significant habitats of indigenous fauna, outstanding natural features and landscapes, and sites, areas, or features of heritage significance, and in determining significance of all such areas, habitats, landscapes, or features, the following criteria shall be applied: (i) size of the area or feature; and (ii) diversity of species and abundance of populations of indigenous flora and fauna; and (iii) representativeness; and (iv) rarity of any species of flora, fauna or of habitat type; and (v) connectedness of habitat with other areas; and (vi) intactness or condition of the area or feature; and (vii) coherence, visibility, and vulnerability to change of any landscape; and (viii) special scientific, cultural, historic, or amenity values of any site, area, or feature of heritage significance; and (ix) recognised international, national or regional importance of any area or feature; and in relation to all significant areas or features, the risk of adverse effects on their natural, landscape, or heritage values shall be relevant to achieving such protection; and (b) protect and enhance the margins of wetlands, lakes and rivers for the purposes of: (i) preserving the natural character of wetlands, lakes, rivers and their margins; and (ii) maintaining and enhancing natural habitats, water quality and the natural functioning of the adjacent water body; and (iii) maintaining and enhancing public access to or along the margin; and (iv) enabling public recreational use of the margin; and (v) maintaining channel stability and floodway efficiency of any adjacent river. **Policy 8.1.** The Council will seek to maintain the stability and efficiency of river channels and floodway land. **Policy 9.7** The Council will avoid, remedy or where appropriate, mitigate adverse effects of the subdivision, use or development of coastal land on: (a) coastal habitats, including wetlands, estuaries and dunes; (b) coastal ecosystems, especially those including rare or endangered species or communities, and indigenous or migratory species; (c) natural coastal features and landscapes, including headlands, beaches, spits;

Natural Hazard Objective	Natural Hazard Policies
	(d) sites of coastal processes; (e) public access to and along the coastal marine area; (f) water and air quality; (g) traditional associations of Māori with ancestral coastal lands, waters, sites, wahi tapu, turanga waka, mahinga mataitai, taonga raranga and other taonga; having regard to the: (i) rarity or representativeness; (ii) coherence and intactness; (iii) vulnerability or resilience; (iv) interdependence; and (v) scientific, cultural, historic or amenity values; of such habitats, ecosystems, features, landscapes, sites, values or taonga. **Policy 11.1.** The Council will seek to reduce risks to communities in relation to land use and development on floodplains that are subject to flooding. **Policy 11.2.** The Council will seek to reduce risks: (i) to the use and development of land subject to erosion, inundation or instability; and (ii) to the use and development of any other land that may be affected as a result of such erosion or instability; **Policy 11.3.** Council may allow activities at risk from flooding or land instability provided that: (i) the activity does not cause risk to the land itself, or to other people, land or natural values; and (ii) the person carrying out the activity is aware of the risk; and (iii) that person carries responsibility for risk management, including the costs of any protection. **Policy 11.4.** The Council will seek to reduce risks to people, structures and land from the effects of earthquake shaking and ground movement. **Policy 11.5.** Council will establish principles for re-establishing utility services after damage by environmental hazard, to overcome threats to life and health, minimise waste of resources, and avoid further environmental damage. **Policy 11.6.** Council will seek to reduce risks to people, property, land and ecosystems from fire.