

PC47 Natural Hazards

District Plan Comparison Report

Purpose

As part of the Natural Hazards Plan Change (PC47), a review of other District Plans Natural Hazard chapters has been undertaken. The purpose of the review was to gain an understanding of the management of Natural Hazards within each plan to help guide the development of the natural hazard provisions for Upper Hutt City Council. PC47 has three distinct areas of focus: The Wellington Fault, Mangaroa Peat, and areas of high slope hazards.

The Plans from the following Councils selected for review were:

- Thames Coromandel District Council
- Christchurch City Council
- Porirua City Council
- Dunedin City Council

The above Plans were chosen to give a range of assessment of approaches in regard to the Natural Hazards chapter. Consideration of selection was given to Plans that were working under a second generation plan or a proposed district plan and were using an electronic plan. It was also important to include plans that provided a variety of approaches to hazard management. Fault rupture and high slope hazards were covered across the Plans, but management of peatlands was not covered.

Comparison of the Porirua City Council Proposed District Plan was important to include due to the proximity to Upper Hutt, similar population size (as does Thames Coromandel), and the fact that Proposed District Plan review had been undertaken regarding the National Planning Standards (NPS) introduced in 2019.

The following information was taken from each of the Plans:

- Operative date of the Plan
- Location of the Natural Hazards chapter within the Plan
- Approach to managing Natural Hazards
- Definitions used for Natural Hazards
- The Objectives and Policies used for managing Natural Hazards
- The Activity Status and Standards for managing Natural Hazards

Operative Date of Plans

Thames Coromandel District Council are currently operating under two District Plans. The Operative District Plan became fully operative in 2010. Work on the Proposed District Plan has been underway since 2012, but it has some areas that are still subject to appeal.

The **Christchurch City Council** had started to review the District Plan; however, this was interrupted by the 2010/2011 Canterbury earthquakes. To enable recovery and development, the Government directed a new process to fast track the plan review process. The Plan was notified in stages, with the first stage being notified on 27 August 2014. The Christchurch District Plan became operative on 19 December 2017.

The **Porirua City Council** District Plan became operative in 1999 with The Proposed District Plan (PDP) being notified on 28 August 2020.

The **Dunedin City Council** released their current District Plan in 1995 and became fully operative in 2006. A full review of the current Plan started in 2012. This review produced the Proposed Second Generation Dunedin City District Plan, known as the 2GP. The 2GP is an entirely new plan, with a new format, new zones, objectives and policies, and many changes to the rules. As of 7 November 2018, all rules in the proposed 2GP had legal effect.

Natural Hazards Location in District Plans

As Introduced by the NPS, the Natural Hazards Chapter is to be in Part 2- District Wide Matters/Hazards and Risks/Natural Hazards (as shown below).

PART 2 – DISTRICT-WIDE MATTERS	
STRATEGIC DIRECTION	
Chapters:	[Insert name of strategic direction matter]
	Urban form and development
ENERGY, INFRASTRUCTURE, AND TRANSPORT	
Chapters:	[Insert name of chapter]
HAZARDS AND RISKS	
Chapters:	Contaminated land
	Natural hazards

Due to **Porirua City Council** releasing their Proposed District Plan after the release of the NPS, they have followed the expected format outlined above. The Natural Hazards chapter introduces natural hazards with a brief description which defines the characteristics of the hazards found in the region. This is followed by the objectives, policies, and rules. Natural hazards are addressed in two chapters; the Natural Hazards chapter covers non-coastal hazards, and the Coastal Environment chapter covers coastal hazards

Due to the other three District Plans being released prior to the establishment of the NPS, where the Natural Hazard chapter is located is varied. **Christchurch City Council** have natural hazards located in Chapter 5 Natural Hazards. This chapter has an introduction, followed by objectives, policies, and rules.

Thames Coromandel District Council have their Natural Hazards chapter located in Part II Objectives, Issues, Objectives and Policies. This chapter introduces natural hazards, relevant legislation followed by issues, objectives, and policies. The rules follow later in Part VI, Section 34 – Natural Hazards: River Flooding, Coastal Erosion, Tsunami and Flood Defences.

Dunedin City Council have their Natural Hazards chapter located in Section C. City Wide Provisions, Chapter 11 Natural Hazards. This chapter includes an introduction, guidance on risk, hazards provisions sensitivity classification, followed by objectives, policies, and rules. The Plan also has ‘Natural Hazard Mitigation Activities’ in Section B. City-wise Activities, Chapter 8. This section has an introduction followed by objectives, policies, and rules.

This district plan review demonstrates the location of chapters in plans can vary greatly. This reinforces the importance of the implementation of the NPS which has the purpose to ‘improve the

efficiency and effectiveness of the planning system by providing nationally consistent structure and format to make them more efficient and easier to prepare and use’.

Approach to managing natural hazards

The **Christchurch** and **Thames Coromandel District Plans** utilise the **risk-based** approach to managing natural hazards. Such an approach considers various scales of a particular natural hazard event (for example different magnitude earthquakes), together with the likelihood of that event occurring and the effects that it would cause, particularly on people and property.

The **Christchurch District Plan** expresses risk in several ways. For example, in areas at risk from slope instability such as cliff collapse, rockfall, or mass movement, it is the degree of risk to people’s lives that is of primary concern. In most areas at risk from flooding, the primary concern relates to damage to property and how often this may occur.

In areas of slope instability, risk is expressed as an “Annual Individual Fatality Risk” or AIFR, being the probability of a fatality for an individual occupying a specific site in any one year because of slope instability. In areas where there is likely to be a liquefaction risk to property, no specific measure of risk is applied. The area mapped is based on whether liquefaction is more likely to occur than not.

The level of control over activities in the District Plan is related to the consequence of the various natural hazards and whether such risks are acceptable or not. There is also a category where, following proper assessment, risk may be able to be managed such that the risk is reduced to acceptable levels.

The **Thames Coromandel District Plan** uses an ‘assessment of acceptable, tolerable and intolerable risk’ to determine the level of risk. The following table is used for this assessment:

10.1.2 Assessment of Acceptable, Tolerable and Intolerable Risk

The natural hazard provisions use the following risk terms: **acceptable**, **tolerable**, **intolerable**.

Likelihood	Consequences				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost certain 10%+ AEP (once every 1 - 10 years)	Yellow	Yellow	Yellow	Orange	Orange
Likely 9.9% - 1% AEP (once every 10.1 - 100 years)	Green	Yellow	Yellow	Yellow	Orange
Possible 0.99% - 0.1% AEP (once in 100.1 - 1,000 years)	Green	Yellow	Yellow	Yellow	Yellow
Unlikely 0.099% - 0.01% AEP (once in 1,000.1 - 10,000 years)	Green	Green	Yellow	Yellow	Yellow
Rare <0.01% AEP (once in 10,000+ years)	Green	Green	Green	Green	Yellow

The Plan also discusses the assessment of cumulative and cascading hazards. **Cumulative hazards** involve multiple unrelated natural hazards affecting a site or area. It is unlikely that all the natural

hazards occur at one time. However, as the area is susceptible to multiple natural hazards there is a higher likelihood that the area will experience a natural hazard event. **Cascading hazards** involve multiple natural hazards that are affected by each other. For example, an earthquake may trigger a tsunami.

The **Dunedin Second Generation District Plan** Natural Hazards Mitigation Activities chapter introduction discusses the **natural hazard mitigation approach** to managing natural hazards. Natural hazard mitigation activities include structures and earthworks, and the repair, maintenance and emergency activities that are necessary to manage or reduce the risk and effects of natural hazards. Mitigation works do not entirely remove the risk from natural hazards, and the works themselves can cause adverse effects that require careful management, for example effects on biodiversity through the removal of vegetation. Also, in some instances, natural hazard mitigation activities have the potential to create, exacerbate or transfer risk.

The Natural Hazards chapter introduction discusses the management of hazards through policies and rules attached to different overlays (overlay zones and mapped areas). The rules vary according to the type of natural hazard, the risk it poses, and the sensitivity of the activity proposed. The approach used in this Plan aims to strike a balance between enabling people to utilise their property without putting them or their important assets at risk if an event was to occur.

The **Porirua Proposed District Plan** use a **risk-based approach** to managing hazards but also incorporates **mitigation measures**. Risk is described as ‘a product of both the consequences and likelihood from a natural hazard’. A risk-based approach to natural hazards balances allowing for people and communities to use their property and undertake activities, while also ensuring that their lives or significant assets are not harmed or lost because of a natural hazard event. When addressing the consequences from natural hazards, priority has been given as follows:

- Protection of people including loss of life, and injury.
- Maintaining key infrastructure to ensure the health and safety of communities.
- Maintaining functionality of buildings after a natural hazard event and the ability for communities to recover.

While in most instances development is unable to change the likelihood side of the risk equation, incorporating mitigation measures or avoiding any further development in certain hazard areas can reduce the consequences from natural hazards, thereby over time reducing the associated risks. Potential mitigation measures that can be incorporated into developments to reduce the consequences of natural hazards include:

- Building design.
- The introduction, retention, or improvement of existing natural systems.
- Use or size of materials in infrastructure design and building construction.
- The type of activities within buildings and structures.
- The use of soft engineering options.

Definitions used



As Introduced by the NPS, Natural Hazards should be defined as shown below. Definitions should be included in Part 1 – Introduction and General Provisions as shown below in Table 4: District plan structure

natural hazard	<p>has the same meaning as in section 2 of the RMA (as set out in the box below)</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>means any atmospheric or earth or water related occurrence (including earthquake, tsunami, erosion, volcanic and geothermal activity, landslip, subsidence, sedimentation, wind, drought, fire, or flooding) the action of which adversely affects or may adversely affect human life, property, or other aspects of the environment.</p> </div>
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Table 4: District plan structure

PART 1 – INTRODUCTION AND GENERAL PROVISIONS	
INTRODUCTION	
Chapters:	Foreword or mihi
	Contents
	Purpose
	Description of the district
HOW THE PLAN WORKS	
Chapters:	Statutory context
	General approach
	Cross boundary matters
	Relationships between spatial layers
INTERPRETATION	
Chapters:	Definitions
	Abbreviations
	Glossary

Porirua Proposed District Plan follows the definition and location of definitions as outlined above in the NPS.

Thames Coromandel District Plan define Natural Hazards as per the NPS definition. Definitions are in Part I Introduction/ Section 3 – definitions. It also includes a section called ‘Natural Hazard Terms’ which covers a variety of terms related to natural hazards including defended area, flood flow area, flood hazard risk assessment, ‘hard’ defence, high flood hazard, area, low flood hazard area, medium flood hazard area, natural hazard defence, ponding area, residual risk, residual risk area, ‘soft’ defence, and stormwater flow area.

Christchurch City District Plan has no definition for Natural Hazards in their definition section but is included in the introduction for the Natural Hazards chapter. The definition used is the Resource Management Act 1991 definition. Definitions are found Chapter 2 Abbreviations and Definitions/ Definitions List.

Dunedin Second Generation District Plan has definitions located in Plan Overview and Introduction/ 1.4 Definitions, but no definition for Natural Hazards in this section. However, the following related

terms have been defined: Natural Hazard Mitigation Activities, Natural Hazard Mitigation Earthworks, Natural Hazard Mitigation Structures, Natural Hazards Least Sensitive Activities, Natural Hazards Least Sensitive Activity, Natural Hazards Potentially Sensitive Activities, Natural Hazards Potentially Sensitive Activity, Natural Hazards Sensitive Activities, and Natural Hazards Sensitive Activity.

Objectives and Policies

As Introduced by the NPS, direction for provisions of Natural Hazards in the District Plan should be set out as shown below.

Mandatory directions

Order and grouping of provision types

1. Unless otherwise stated, if a type of provision listed below is used, the title must be used, in the order shown and the provisions must be located beneath the title:

Regional plans/district plans

Issues (if stated)

Objectives

Policies

Rules (if any)

Methods other than rules (if stated)

Principal reasons (if stated)

Anticipated environmental results (if stated).

The Objectives and Policies of the Plan set out what the Plan should be achieving. They are tailored for each Council region and specific natural hazards so there will be different outcomes being sought. Objectives and Policies are key for detailing what the consequent rules are seeking to achieve. To develop a strong set of Objectives and Policies there must also be a clear understanding of the Issues which need to be addressed.

Thames Coromandel District Plan sets out the issues, objectives and policies as outlined above through the NPS. However, the rules are in a different chapter of the Plan. The Plan has a clear link between issues, objectives and policies with the objectives seeking to manage the impacts of natural hazards on development through the risk based approach. The objectives and policies try to strike a balance between ensuring development can occur without increasing the risk to people, their property, and the environment.

Dunedin Second Generation District Plan Natural Hazards chapter follows the structure of the NPS with objectives and policies followed by rules. No issues are stated. The policies link to the objective of 'Land use and development is located and designed in a way that ensures that the risk from

natural hazards, and from the potential effects of climate change on natural hazards, is no more than low, in the short to long term'. The Hazards Mitigation chapter has one key objective of 'Natural hazard mitigation activities are enabled where they are the most effective and appropriate way of avoiding or mitigating the risks of natural hazards' with associated policies to support this objective.

Christchurch City District Plan Natural Hazards chapter has objectives covering subdivision, critical infrastructure, strategic infrastructure, increased public awareness, and the repair of damaged land with appropriate policies to support this objective. This plan also follows the NPS format. No issues are stated.

Porirua Proposed District Plan follows the format of the NPS covering objectives, policies, and rules. The Plan covers two key objectives 'Risk from natural hazards' and 'Planned mitigation works' and has policies to support these objectives.

Activity Status

As Introduced by the NPS direction for matters associated with rules of Natural Hazards in the District Plan should follow the matters shown below.

Matters associated with rules

3. Any rules must be ordered in the following way: permitted, controlled, restricted discretionary, discretionary, non-complying, prohibited. Where a single rule contains more than one activity status, this order must be used within the single rule.
4. Activity status must be located with the specific rule it applies to. Relevant matters of control or discretion must be located with or cross referenced in the rule they apply to.
5. If a activity status is abbreviated the following abbreviations must be used: 'PER' for permitted, 'CON' for controlled, 'RDIS' for restricted discretionary, 'DIS' for discretionary, 'NC' for non-complying and 'PR' for prohibited.

To develop an activity status for land uses within natural hazard areas, it is important to understand what the land use activities are, and how the activity would be impacted by the occurrence of a particular natural hazard. This then helps to consider what the activity should be classified as.

Plans need to carefully consider what the Permitted Activities should be in the different Natural Hazard zones, and what activities may be necessary, but the effects need to be suitably managed, such that they may be a Discretionary Activity. The Non-complying and Prohibited classes are to cover activities which need to be avoided. These have the potential to have a significant impact on people and their property, in the case of the occurrence of a natural hazard.

- **Porirua Proposed District Plan** follows the format of the NPS with activity status order and location of activity status within the rule. Activity status has not been abbreviated. Rules follow on clearly from the objectives and policies

Permitted Activities

Less-Hazard-Sensitive Activities within the Low and Medium and High Hazard Areas contained in a Natural Hazard Overlay.
Flood mitigation or stream or river management works undertaken by a statutory agency or their nominated contractor or agent within the Flood Hazard Overlays in a Natural Hazard Overlay.
Soft engineering measures undertaken by either a statutory agency or their nominated contractor or agent within a Natural Hazard Overlay.
Additions to existing buildings in Hazard Areas contained in a Natural Hazard Overlay with conditions.
Earthworks within a Natural Hazard Overlay associated with hazard mitigation works undertaken by a statutory agency.

Restricted Discretionary Activities
Less-Hazard-Sensitive Activities within the Low and Medium and High Hazard Areas contained in a Natural Hazard Overlay when compliance is not achieved for a Permitted Activity.
Additions to existing buildings in Hazard Areas contained in a Natural Hazard Overlay when compliance is not achieved for a Permitted Activity.
Earthworks within a Natural Hazard Overlay associated with hazard mitigation works undertaken by a statutory agency when compliance is not achieved for a Permitted Activity.
Any Hazard-Sensitive Activity and Potentially-Hazard-Sensitive Activity and associated buildings in Low Hazard Areas in a Natural Hazard Overlay.

Discretionary Activities
Any Hazard-Sensitive Activity and Potentially-Hazard-Sensitive Activity and associated buildings in Low Hazard Areas in a Natural Hazard Overlay when compliance is not achieved with Restricted Discretionary Activity.
Any Hazard-Sensitive Activity and Potentially-Hazard-Sensitive Activity and associated buildings within the Medium Hazard Area in a Natural Hazard Overlay.

Non-complying Activities
Any Hazard-Sensitive Activity and Potentially-Hazard-Sensitive Activity and associated buildings in Low Hazard Areas in a Natural Hazard Overlay when compliance is not achieved with Restricted Discretionary Activity.
Any Hazard-Sensitive Activity and Potentially-Hazard-Sensitive Activity and associated buildings within the High Hazard Areas in a Natural Hazard Overlay.

Dunedin Second Generation District Plan does not follow the NPS format for order of activity status and the abbreviation used. For example, P is used for Permitted instead of the NPS directed PER. However, the activity status has been located within the rule.

The activity status table in below shows the activity status of natural hazard mitigation activities across all zones within the Plan.

Activity	Activity Status
Emergency natural hazard mitigation	P
Repairs and maintenance of natural hazard mitigation earthworks features or natural hazard mitigation earthworks	P

Natural hazard mitigation earthworks	D
Natural hazard mitigation structures	D

Any site development activities provided for in the activity status table, are subject to the provisions of the relevant management zone section. Any earthworks, other than those that meet the definition of hazard mitigation earthworks, provided for in the activity status table are subject to the further provisions. Any construction associated with an activity provided for in the activity status table are also subject to further provisions.

Christchurch City District Plan has rules following on from policies and objectives in the Natural Hazards chapter. The rules are separated into three sections: 5.4 Rules – Flood Hazard, 5.5 Rules – Liquefaction Hazard, and 5.6 Rules – Slope Instability. It also includes section 5.3 How to interpret the rules. The Plan follows the format of the NPS with activity status order and location of activity status within the rule. Activity status has not been abbreviated. Flood hazard and slope instability tend to focus specifically on certain areas within the region while liquefaction hazard is more regionally generic. Due to this, as well as having more relevance to PC47, I have focussed on this section for review.

Permitted Activities
All activities in the Liquefaction Management Area are a permitted activity unless specified in Rules under Controlled or Permitted activities, or as otherwise specified elsewhere in the District Plan.

Controlled Activities
Any subdivision which creates an additional vacant allotment or allotments in the Liquefaction Management Area.
Any resource consent application arising from this rule shall not be limited or publicly notified.

Restricted Discretionary Activities
Any activity located on a site with an area of 1500m ² or more, qualifying as a controlled or restricted discretionary activity under residential rules.
Any application arising from this rule in respect to the Enhanced Development Mechanism or the Community Housing Redevelopment Mechanism shall not be limited or publicly notified.

Thames Coromandel District Plan has rules in a different chapter than the objectives and policies, these can be found in PART VI – OVERLAY RULES. Section 34 – Natural Hazards: River Flooding, Coastal Erosion, Tsunami, and Flood Defences. These are the major hazards that impact on this region but have little relevance to natural hazard focus areas of PC47, so I have chosen not included it in the review for activity status.

Standards

The standards in the different plans are reflective of the necessary methods to achieve the objectives and policies as stipulated. Standards need to be carefully considered, as they will effectively manage the extent and size of activities that occur within the identified natural hazards areas and in doing so will ensure the effects of activities are not significant.

There are limited specific standards contained within the Natural Hazards chapter of the Plans. This is due to the activities which are permitted or discretionary, do not need to have specific controls in this chapter as they are controlled through district wide matters. This is evident in the **Christchurch City District Plan** which states 'all activities in the Liquefaction Management Area are a permitted activity unless specified in Rules under Controlled or Permitted activities, or as otherwise specified elsewhere in the District Plan'.

For the standards review of the **Christchurch City District Plan** I will again focus on Liquefaction Hazard due to the greater relevance to PC47. Controlled activities focus on subdivision and matters related to:

- location, size and design of allotments, structures, roads, access, services or foundations as they relate to the liquefaction hazard.
- timing, location, scale and nature of earthworks as they relate to the liquefaction hazard
- liquefaction hazard remediation methods.

Any activity located on a site with an area of 1500m² or more, qualifying as a controlled or restricted discretionary activity. Discretion is limited to the following matters:

- location, siting and layout, design of buildings, car parking areas, access, services, or foundations as they relate to the liquefaction hazard.
- timing, location, scale, and nature of earthworks as they relate to the liquefaction hazard
- liquefaction hazard remediation methods.

Porirua Proposed District Plan also include standards covering Natural Hazards in other chapters, this is explained in the following notes:

- There may be a number of provisions that apply to an activity, building, structure or site. Resource consent may therefore be required under rules in this chapter as well as other chapters. Unless specifically stated in a rule, resource consent is required under each relevant rule. The steps to determine the status of an activity are set out in the General Approach chapter.
- Rules relating to subdivision, including minimum allotment sizes for each zone, are found in the Subdivision chapter.

The rules relate closely to the policies outlined in the Activity Status of this report. As an example, specific standards outlined in the Restricted Discretionary activity status include:

- Any buildings and activities are located no closer than 20m from either side of either the fault rupture zone
- Any buildings within a Flood Hazard - Ponding Overlay are located above the 1:100 year flood level

Another example of specific standards is included in the Permitted activity status. These relate to additions to existing buildings in hazard areas contained in a Natural Hazard Overlay:

- The building footprint does not increase by more than 30m² in a Medium Hazard Area
- The building footprint does not increase by more than 20m² in a High Hazard Area

Dunedin Second Generation District Plan have a comprehensive standards section which relate to the policies outlined. Natural Hazards performance standards cover:

- Hazard Exclusion Area provisions in the swale and dune system mapped areas
- Vegetation clearance provisions in the Hazard Overlay Zones
- Relocatable building provisions
- Outdoor storage provisions

This section also covers Assessment of Restricted Discretionary Activities. These activities are assessed in accordance with section 104 and 104C of the RMA. This means only matters to which Council has restricted its discretion will be considered, and Council may grant or refuse the application. If granted, Council may impose conditions with respect to matters over which it has restricted its discretion.

Discretionary Activities are assessed in accordance with section 104 and 104B of the RMA and Non-Complying Activities are assessed in accordance with section 104, 104B and 104D of the RMA. Again, Council may grant or refuse the application, and, if granted, may impose conditions.

Thames Coromandel District Plan covers standards for River Flooding, Coastal Erosion, Tsunami and Flood Defences which have little relevance to PC47. This chapter was also comprehensive, and quite difficult to follow. For these reasons I have not included it in the review for standards.

Conclusions

The purpose of the district plan comparison was to gain an understanding of the management of natural hazards within each Plan. This will help guide the development of the Natural Hazards chapter for the Upper Hutt Proposed District Plan. The review showed that there is national variation within Plans mainly due to the different natural hazards found in each region.

Approaches to how natural hazards are managed was also varied across the Plans. Christchurch and Thames Coromandel District Plans utilise the risk-based approach to managing natural hazards. This takes into consideration the various scales of a particular natural hazard event, together with the likelihood of that event occurring and the effects it would cause. Regional objectives, policies, and rules are developed based on the level of risk.

The Dunedin Second Generation District Plan adopts the mitigation approach to managing natural hazards. This approach attempts to manage or reduce the risk and effects of natural hazards through mitigation works. This approach does not entirely remove the risk but aims to strike a balance between enabling people to utilise their property without putting them or their important assets at risk. Objectives, policies, and rules are attached to different overlay zones and mapped areas based on the presence of a natural hazard and the level of risk apparent.

The Porirua District Plan uses the risk-based approach to hazard management with mitigation measures incorporated. This approach to natural hazards management allows for people and communities to use their property and undertake activities, while also ensuring that their lives or significant assets are not harmed or lost because of a natural hazard event. The objectives, policies

and rules are developed and applied across the region based on the level of risk of the hazard with appropriate mitigation works.

Variation of Plans is also evident due to lack of consistency of format. The implementing of the NPS will allow for a greater level of consistency of structure, form, and definitions making plans more efficient and easier to prepare and use. The Porirua Proposed Plan Natural Hazards chapter follows the NPS format so it will have an influence on the development of the Upper Hutt Proposed District Plan Natural Hazards chapter. It is also beneficial due to having an in-depth coverage of fault rupture which is relevant to PC47.

Review of other District Plans was a useful exercise for the development of the Upper Hutt Proposed District Plan Natural Hazards chapter. Of particular importance was how each Plan managed natural hazards and how this was applied to standard levels and the wording of objectives and policies.