

Plan Change PC1: Natural Hazards

Section 32 Evaluation Report

Prior to Public Notification

28 April 2023

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List of Abbreviations

Coastal Erosion Hazard Area	CEHA
Coastal Flooding Hazard Area	CFHA
Engineering Standards 2022	ES 2022
Long Term Plan	LTP
Ministry for the Environment	MfE
National Environmental Standards	NES
National Planning Standards	NP Standards
National Policy Statement on Urban Development	NPS- UD
New Zealand Coastal Policy Statement	NZCPS
Northland Regional Council	NRC
Northland Regional Policy Statement	NRPS
Proposed Northland Regional Plan	PNRP
Resource Management Act 1991	RMA
Rural Development Strategy	RDS
Section 32 of the RMA	s32
Section 42A of the RMA	s42A
Urban Growth Strategy	UGS
Whangarei District Council Operative District Plan	WDP
Whangarei District Growth Strategy, Sustainable Futures 30/50	30/50

1. Introduction and Purpose

1.1 Purpose of Report

1. This report is in relation to proposed changes to the Operative in Part Whangarei District Plan (WDP) seeking to review how the WDP manages natural hazards as part of the WDP rolling review. The report has been prepared in accordance with the requirements of Schedule 1 of the Resource Management Act 1991 (RMA) and incorporates an evaluation under section 32 of the RMA (s32).
2. Section 32 of the RMA requires Councils to examine whether the proposed objectives are the most appropriate to achieve the purpose of the RMA and whether the provisions (i.e. policies, rules and standards) are the most appropriate way to achieve the objectives. This assessment must identify and assess environmental, economic, social, and cultural effects, benefits and costs anticipated from the implementation of the provisions. Section 32 evaluations represent an on-going process in RMA plan development and a further evaluation under section 32AA of the RMA is expected throughout the review process in response to submissions received following notification of the proposed natural hazards chapter.

1.2 Overview of Topic

3. Natural hazard is defined in the RMA as:

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

4. The actual impact of any natural hazard event is dependent on the level of risk and exposure of the local community to the hazard, and the way this risk influences development and settlement patterns in a geographical area. The effects of natural hazard events range from general nuisance to creating significant damage to, or loss of, property and infrastructure such as roads, bridges and pipelines. In extreme cases, natural hazards can result in loss of life.
5. Hazard risk is a combination of the probability or likelihood of an event and the potential severity or consequence of that event. Accordingly, risk is not constant but varies depending on the type of hazard, the likelihood it will occur, the nature of activities it will affect and the consequences on those (and other) activities.
6. The risks that natural hazards pose are made up of a number of factors including:
 - The nature, magnitude and extent of the hazard;
 - The anticipated frequency or probability of the hazard event occurring; and
 - The exposure and vulnerability of the environment to the hazard, including the ability to recover from an event.
7. While natural hazards are natural occurrences, the likelihood of hazard events can be exacerbated by inappropriate subdivision, use and development of land. Additionally, the vulnerability of people, property and the environment to the hazard can be worsened if sensitive land uses and activities are enabled in inappropriate locations.
8. Much of Whangarei District is subject to various hazards. Established communities and households are already located within areas that experience natural hazard events such as flooding or coastal hazards, or live in locations with areas of moderate or high land instability risks. This is generally for historical reasons, such as access to water, transport, and agricultural production, or lack of suitable alternatives in the vicinity of important resources. Recent patterns of development are still occurring in at-risk areas within Whangarei District, due to the amenity value of local natural features such as beaches, coastline, and rivers/streams leading to these being popular residential localities.
9. The risk of natural hazards is likely to increase in the future because of climate change. Rainfall in Northland is predicted to reduce overall, and droughts are likely to increase in intensity and duration. However, tropical cyclones will likely be stronger and cause more damage because of heavy rain¹. This may result in fewer landslides overall, but potentially more severe damage when they do occur. Sea level

¹ <https://www.mfe.govt.nz/climate-change/likely-impacts-of-climate-change/how-could-climate-change-affect-my-region/northland>

rise will increase the risk and extent of coastal erosion and inundation affecting properties, roads and other infrastructure².

10. Flooding is the most common natural hazard faced by the District, while many of the District's settlements are also adjacent to the coast which exposes them to coastal hazard risks. Natural hazards are often driven by climatic conditions, for example extreme rainfall events (flooding/land instability). Coastal erosion, coastal flooding, and land instability (slips and slope failure) are also most likely to occur during (or because of) large storm events.
11. District plan provisions are required to manage activities to limit the exposure of people, property and the environment to significant risk from natural hazards.

2. Statutory and Policy Context

12. The WDP sits within a layered policy framework, which incorporates the National Policy Statements, National Environmental Standards, Iwi Management Plans, Regional Policy Statement, Regional Plans, Structure Plans and Long-Term Plans. Each of these policy documents and plans has been considered in accordance with the RMA. The relevant policy documents that were taken into consideration when preparing this plan change (PC1) are discussed below.
13. Since the 2007 'first generation' Whangarei District Plan was developed, there have been changes in legislation, as well as development in the technology and science to understand and plan for natural hazards. Recognising policy change is significant in directing PC1.

2.1 Resource Management Act 1991 (RMA)

14. The RMA provides the statutory framework for the sustainable management of natural and physical resources. The RMA defines sustainable management as:
'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'
15. Under the RMA it is mandatory for a territorial authority to prepare a district plan, which manages land use and development within its territorial boundaries. The RMA requires district plans, including changes to district plans whether private or Council initiated to meet the purpose and principles of the RMA. Consideration has been given to the extent to which PC1 achieves the purpose and principles of Part 2 of the RMA.
 - Recognise and provide for the matters of national importance identified in section 6;
 - Have particular regard to a range of other matters in section 7; and
 - Take into account the principles of the Treaty of Waitangi in section 8 of the RMA.
16. The operative natural hazards chapter of the district plan formed part of the 2001 proposed district plan and had minor amendments in the version adopted by council in the District Plan 2002 - As Amended by Council. Since the WDP provisions relating to natural hazards were last reviewed, there have been legislative changes that elevated the management of significant natural hazard risk and climate change.
17. The following section 6 matter is directly relevant to Natural Hazards:
(h) the management of significant risks from natural hazards.
18. Section 6(h) was introduced as part of the Resource Legislation Amendment Act 2017, following the Canterbury Earthquakes.
19. Section 7 sets out the specific matters that those exercising functions and powers under the RMA shall have particular regard to. The following subsections are considered most relevant for the development of provisions that relate to natural hazards:
 - (b) the efficient use and development of natural and physical resources:*
 - (f) maintenance and enhancement of the quality of the environment:*
 - (i) the effects of climate change:*

² <https://environment.govt.nz/facts-and-science/climate-change/impacts-of-climate-change-per-region/projections-northland-region/>

20. Section 8 of the RMA requires that all persons exercising functions and powers under it take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).
21. Section 31 (1) (b) of the RMA (Functions of Territorial Authorities under this Act) indicates that one of the functions of territorial authority under the RMA is “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.
22. Section 74 of the RMA (Matters to be considered by Territorial Authorities) indicates that the preparation of any change to a district plan must be in accordance with (amongst other matters) Sec 31, any national policy statement (NPS), any NZ coastal policy statement(NZCPS) and any national planning standard (NP Standard).
23. There is also an obligation in section 74(2)(e) to have regard to the national adaptation plan (**NAP**), which contains requirements for modelling for natural hazards.
24. Section 75 of the RMA (Contents of District Plans) requires district plans to give effect to any NPS, any NZCPS, a NP Standard and any regional policy statement RPS).
25. Section 79 (Review of Policy Statements and Plans) of the RMA requires Councils to complete review of district plans within any 10-year time period. The current natural hazard provisions within the operative WDP 2022 have not changed from the 2007 WDP version and are therefore based on data over ten years old. Monitoring of the WDP has identified areas of inconsistency and ineffectiveness.
26. Section 79 of the RMA also provides the opportunity for Councils to undertake rolling reviews of district plan provisions. Using this opportunity to improve the integrity of the WDP, a rolling review process has been implemented. To remedy some of the missing links between WDP sections, a new structure has been adopted in the drafting approach to the WDP in accordance with directions from the NP Standards. The WDP structure will evolve and the chapter format will be adjusted through the rolling review to be more consistent with the way the provisions are applied in practice (assessment of activities and resource consent applications and enforcement of rules).

2.2 National Policy

2.2.1 National Planning Standards

27. Section 75(3)(ba) of the RMA requires that district plans give effect to National Planning Standards (**NP**). The NP were Gazetted in April 2019 and the purpose is to assist in achieving the purpose of the RMA and improve consistency in the structure, format and content of RMA plans.
28. Where relevant, provisions, terms and definitions are aligned to the standards. The structure standard (Chapter 7. District-wide Matters Standard) for district plans specifies that provisions pertaining to natural hazards in the coastal environment must be located in the Coastal Environment chapter rather than being in the Natural Hazards chapter.
29. Standard 7 provides guidance on plan structure in relation to natural hazards, stating:
 10. *If provisions relating to natural hazards are addressed (except coastal hazards), they must be located in the Natural hazards chapter.*
 11. *The Natural hazards chapter must include cross-references to any coastal hazards provisions in the Coastal environment chapter.*
30. Standard 7 also indicates that provisions relating to earthworks must be located in the Earthworks chapter of the district plan, and provisions relating to subdivision must be located in the Subdivision Chapter of the district plan. This practice has been followed in the proposed plan change.

2.2.2 National Policy Statements

31. Section 75(3)(a) of the RMA requires that district plans give effect to any National Policy Statement (**NPS**)

32. There are six National Policy Statements currently in force:
- New Zealand Coastal Policy Statement 2010
 - NPS for Electricity Transmission 2008
 - NPS for Renewable Electricity Generation 2011
 - NPS for Freshwater Management 2020
 - NPS on Urban Development 2020
 - NPS for Highly Productive Land 2022
33. The New Zealand Coastal Policy Statement (NZCPS) and the NPS on Urban Development 2020 are the only National Policy Statement that is applicable to the natural hazards chapter. The NZCPS includes a number of objectives and policies of relevance to natural hazards and climate change as they relate to the coastal environment. Table 1 outlines the provisions in the NZCPS that are directly relevant to the management of natural hazards.

Table 1: Relevant NZCPS provisions

NZCPS– Relevant Policies – Natural Hazards		
Policy 3	Precautionary approach	Adopt a precautionary approach towards proposed activities whose effects on the coastal environment are uncertain, in particular ensuring avoidable social and economic loss and harm to communities does not occur.
Policy 24	Identification of coastal hazards	This policy requires the identification of areas in the coastal environment that are potentially affected by coastal hazards (including tsunami) over at least 100 years, giving priority to the identification of areas at high risk of being affected. Coastal hazard risks are to be assessed taking into account national guidance and the best available information on the likely effects of climate change on the region or district.
Policy 25	Subdivision, use, and development in areas of coastal hazard risk	For subdivision, use and development in areas identified as being potentially affected by coastal hazards over the next 100 years, this policy seeks to avoid the increase of risk and in some cases, reduce the risk of adverse effects from hazards. It also discourages the use of hard protection structures and promotes the use of alternatives, such as natural defences.
Policy 26	Natural defences against coastal hazards	This policy promotes the use of natural defences to protect coastal land uses from coastal hazards.
Policy 27	Strategies for protecting significant existing development from coastal hazard risk	In areas of significant existing development likely to be affected by coastal hazards, the range of options for reducing coastal hazard risk that should be assessed including risk reduction approaches, consequences of potential strategic options, means to protect existing infrastructure of national or regional importance, recognising and considering environmental and social costs, and planning for transition mechanisms.

34. In summary, the NZCPS seeks to ensure that coastal hazard risks, taking account of climate change, are managed by locating new development away from areas prone to such risks and considering responses, including managed retreat, for existing development in this situation; and protecting or restoring natural defences to coastal hazards. Policies 3, 24 to 27 direct a range of actions to identify and manage natural hazard risk in the coastal environment.

35. The coastal environment chapter of the natural hazards plan change forms a key part of WDC's strategy for managing coastal hazard risks. The provisions of the coastal environment chapter have been developed so that they implement the NZCPS, specifically the objective and policies listed above.
36. In regard to the National Policy Statement on Urban Development (NPS – UD), section 7.7 of this report demonstrates by incorporating the new hazard maps into the district plan along with provisions that restrict development in these areas, Whangarei district still has enough land zoned to meet housing supply needs.

2.2.3 National Environmental Standards

37. Under section 74(1)(f) of the RMA, a district plan must be prepared in accordance with any regulations, which includes National Environmental Standards (**NES**). Section 44A of the RMA requires local authorities to recognise NES by ensuring plan rules do not conflict or duplicate with provisions in a NES. The NES have been considered in the development of this proposed plan change. There is no NES that is of direct relevance to the management of natural hazards.

2.2.4 National Adaptation Plan (Adapt and Thrive: Building a climate-resilient New Zealand)

38. The National Adaptation Plan (**NAP**) is a requirement of the Climate Change Response (Zero Carbon) Act 2019. From 30 November 2022 the NAP is a matter to which territorial authorities must have regard when they change their district plans as per amendments to section 74 of the RMA.
39. This Plan sets out Aotearoa New Zealand's long-term strategy and first national adaptation plan. It contains Government-led strategies, policies and proposals that will help New Zealand adapt to the changing climate and its effects. Four priorities underpin the plan:
 - Enabling better risk-informed decisions
 - Driving climate-resilient development in the right places through planning and infrastructure investment decisions
 - Laying the foundations for a range of adaptation options including managed retreat.
 - Embedding climate resilience across government policy.
40. The Plan identifies local government as at the centre of risk management planning and response because most hazard events occur at the local or regional scale.
41. The NAP prescribes specific methodologies, called Shared Socioeconomic Pathway scenarios, to be used when developing plan changes. Northland Regional Council has confirmed their projections for coastal hazards and flooding are consistent with the methodologies required by the NAP. The Northland Regional Policy Statement (**NRPS**) requires WDC to incorporate the maps into the district plan along with rules, and this is discussed in Section 2.3 of this report.
42. The Emissions Reduction Plan was developed alongside the National Adaptation Plan and is part of the suite of legislation to reduce the impacts of climate change. It sets the direction of climate action by setting out interim emissions budgets out to 2050. Chapter 7 of the Emissions Reduction Plan addresses actions and strategic goals for planning and infrastructure. These include reorienting current practice toward non-built infrastructure solutions, including nature-based solutions, and avoiding development in areas vulnerable to the impacts of climate change, such as flooding.
43. The NAP, the National Climate Change Risk Assessment Framework and the Ministry for the Environment (**MfE**) Guide to local climate change risk assessments³ focus on the use of adaptation planning for natural hazards. The NAP recommends that councils should stress test plans, policies and strategies using a range of scenarios as per the interim guidance and the National Climate Change Risk Assessment Framework. NRC have confirmed that the coastal hazard maps are based on the methodologies and scenarios required by the aforementioned national policy documents. Given the strong indication of the direction of national policy on climate change, adaptation planning is considered in the options analysis for the proposed plan change in this report in section 7.

³ MfE, 2021. A guide to local climate change risk assessments | Ministry for the Environment.
<https://environment.govt.nz/publications/a-guide-to-local-climate-change-risk-assessments/>

2.3 Regional Policy

2.3.1 Northland Regional Policy Statement

44. Section 75(3)(c) of the RMA requires district plans to 'give effect' to any Regional Policy Statement. The NRPS was made operative on 9 May 2016.
45. Section 7 of the NRPS sets out policies and methods for the management of natural hazards, with a particular focus on activities within flood plains and areas affected by coastal hazards, within the Northland region. The overall objective in relation to natural hazards is to minimise the risks and impacts of natural hazard events. This includes avoiding inappropriate new development in flood hazard areas and providing for appropriate mitigation measures to protect existing vulnerable development.
46. The NRPS also seeks to encourage risk reduction measures as a broad strategy on the basis that it can be less costly than the social and economic impacts caused by natural hazards, and generally ensure that development is appropriate to the level of risk faced and the relative vulnerability of different activities.
47. In accordance with the RMA, the natural hazards provisions proposed in PC1 give effect to the NRPS (in particular section 7). An integral part of giving effect to the NRPS is incorporating the Northland Regional Council (NRC) river flood and coastal hazard maps into the district plan. The river flood maps were first released in November 2021 with updates in March 2023 to resolve mapping issues where isolated areas of 50 year flooding were displayed without the 100 year overlay. The coastal hazard maps were released in April 2021. Technical reports prepared by consultants which underpinned the hazards identified on these maps, prepared for the NRC, are also available on NRC website: [Regionwide river catchments analysis – technical reports - Northland Regional Council \(nrc.govt.nz\)](https://www.nrc.govt.nz/environment/natural-hazards-portal/river-flooding/river-flood-hazard-maps/regionwide-river-catchments-analysis-technical-reports/)⁴ and [Coastal hazard assessment reports - Northland Regional Council \(nrc.govt.nz\)](https://www.nrc.govt.nz/environment/natural-hazards-portal/coastal-hazards/consultant-reports/)⁵
48. Table 2 lists the most relevant NRPS provisions which provide direction for the proposed provisions in PC1.

Table 2: Relevant provisions of the NRPS

NRPS Provisions – Natural Hazards	
Objective 3.13	Natural hazard risk
Policy 7.1.1	General risk management approach
Policy 7.1.2	New subdivision and land use within 10-year and 100-year flood hazard areas
Policy 7.1.3	New subdivision, use and development within areas potentially affected by coastal hazards (including high risk coastal hazard areas)
Policy 7.1.4	Existing development in known hazard-prone areas
Policy 7.1.5	Regionally significant infrastructure and critical infrastructure
Policy 7.1.6	Climate change and development
Method 7.1.7	Statutory plans and strategies
Method 7.1.8	Monitoring and information gathering

⁴ <https://www.nrc.govt.nz/environment/natural-hazards-portal/river-flooding/river-flood-hazard-maps/regionwide-river-catchments-analysis-technical-reports/>

⁵ <https://www.nrc.govt.nz/environment/natural-hazards-portal/coastal-hazards/consultant-reports/>

NRPS Provisions – Natural Hazards	
Method 7.1.9	Advocacy and education
Policy 7.2.1	Role of natural features
Policy 7.2.2	Establishing the need for hard protection structures
Policy 7.2.3	Protection and maintenance of structural mitigation assets
Method 7.2.4	Statutory plans and strategies

49. Appendix 2 provides greater detail on the relevant NRPS provisions and the direction they provide for the provisions of PC1.

2.3.2 Regional Plans

50. Section 75(4)(b) of the RMA states that any district plan must not be inconsistent with a regional plan for any matter stated in section 30(1) of the RMA. Section 74(2)(a) of the RMA states that when preparing or changing a district plan, a territorial authority shall have regard to any proposed regional plan of its region in regard to any matter of regional significance or for which the regional council has primary responsibility under Part 4 of the RMA.
51. There are several Regional Plans for Northland that have been developed under the RMA. These include the Regional Water and Soil Plan, Air Quality Plan, and the Coastal Plan. Having reviewed each document and taking into account all of the provisions, it is considered that the proposed objectives for PC1 are consistent with the Regional Plans.
52. NRC has also notified a Proposed Regional Plan for Northland (**PNRP**). The PNRP was notified September 2017 and is currently subject to appeals that are progressively being resolved or determined. As such, large parts of the plan are now 'past appeal' and are operative.
53. Table 3 outlines operative objectives and policies of the Northland Regional Council's Regional Plan which are relevant to the proposed provisions of this plan change WDP. All objectives and policies referenced in the Table 3 below are beyond challenge and are operative.

Table 3: Relevant objectives and policies that are now beyond challenge in the Proposed Northland Regional Plan

Proposed Regional Plan Natural Hazards Objectives and Policies	
Objective F.1.10 Natural hazard risk	<ol style="list-style-type: none"> 1) Increasing the understanding of natural hazards, including the potential influence of climate change on natural hazard events and the potential impacts on coastal biodiversity values. 2) Becoming better prepared for the consequences of natural hazard events. 3) Avoiding inappropriate new development in 100-year flood hazard areas and coastal hazard areas. 4) Not compromising the effectiveness of existing natural and man-made defences against natural hazards. 5) Enabling appropriate hazard mitigation measures to be implemented to protect existing vulnerable development. 6) Promoting long-term strategies that reduce the risk of natural hazards impacting on people, communities and natural systems. 7) Recognising that in justified circumstances, critical infrastructure may have to be located in natural hazard-prone areas. 8) Anticipating and providing for, where practicable, landward migration of coastal biodiversity values affected by sea-level rise and natural hazard events.

Proposed Regional Plan Natural Hazards Objectives and Policies

<p>Policy D.6.1 - Appropriateness of hard protection structures</p>	<p>Priority will be given to the use of non-structural measures over the use and construction of hard protection structures when managing hazard risk. New hard protection structures may be considered appropriate when:</p> <ol style="list-style-type: none"> 1) alternative responses to the hazard (including soft protection measures, restoration or enhancement of natural defences against coastal hazards and abandonment of assets) are demonstrated to be impractical or have greater adverse effects on the environment, or 2) they are the only practical means to protect: <ol style="list-style-type: none"> a) existing or planned regionally significant infrastructure, or b) existing core local infrastructure, or c) concentrations of existing vulnerable development, and d) they provide a better outcome for the local community, district or region, compared to no hard protection structure, and the works form part of a long-term hazard management strategy, which represents the best practicable option for the future. <p>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.</p>
<p>Policy D.6.2- Design and location of hard protection structures</p>	<p>New hard protection structures must:</p> <ol style="list-style-type: none"> 1) be located as far landward as possible in order to retain existing natural defences against coastal hazards as much as possible, and 2) be designed and constructed by a suitably qualified and experienced person, and 3) incorporate the use of soft protection measures where practical, and 4) be designed to take into account the nature of the coastal hazard risk and how it might change over at least a 100-year time-frame, including the projected effects of a sea level rise, using the latest national guidance and best available information.
<p>Policy D.6.3 Re-building of materially damaged or destroyed buildings in high-risk hazard areas</p>	<p>Resource consent may only be granted for the re-building of materially damaged or destroyed buildings in high-risk flood hazard areas and high-risk coastal hazard areas if the natural hazard risk to the building is demonstrated to be reduced (compared with the risk to the building previously) and hazard risk to other property is not increased.</p>
<p>Policy D.6.4 Flood hazard management – flood defences</p>	<p>Recognise the significant benefits that flood defences can play in reducing flood hazard risk to people, property and the environment.</p>
<p>Policy D.6.5 Flood hazard management – development within floodplains.</p>	<p>Development in flood hazard areas and continually or intermittently flowing rivers (including high-risk flood hazard areas) must not increase the risk of adverse effects from flood hazards on other property or another person's use of land or property.</p>

54. In summary, the PNRP requires that the risks and impacts of natural hazard events (including the influence of climate change) on people, communities, property, natural systems, infrastructure and the regional economy are minimised, and includes a range of mechanisms to do so.
55. The requirement for resource consents for activities potentially affected by natural hazards under the PNRP has been considered in the development of PC1 provisions for natural hazards. Drafting was aimed to minimise any unnecessary overlap with regional consent requirements – although some overlap is inevitable due to the overlapping functions of regional and district plans.
56. Section C of the NRP contains rules which cover aspects on natural hazard management. Table 4 below outlines those that are relevant to the management of Natural Hazards.

Table 4: Relevant rules in the Proposed Northland Regional Plan

Regional Plan Rule
<p>C.1 – Coastal Activities</p> <p>C.1.1.22 Hard protection structures – discretionary activity</p> <p>C.1.1.23 Hard protection structures associated with regionally significant or core local infrastructure – discretionary activity</p> <p>C.1.1.24 Hard protection structures in significant areas – non-complying activity</p>
<p>C.2 Activities in the beds of lakes and rivers and in wetlands</p> <p>C.2.1.5 Maintenance or repair of authorised flood defence – permitted activity</p> <p>C.2.1.12 New flood defence – discretionary activity*</p> <p>C.2.1.14 New flood defence in significant areas – noncomplying activity*</p>
<p>C.3 Damming and diverting water</p> <p>C.3.1.9 Obstructions that divert water onto other property – discretionary activity</p>
<p>C.8.3 Earthworks</p> <p>C.8.3.3 Earthworks in a flood hazard area – controlled activity</p>
<p>C.8.6 Re-building</p> <p>C.8.6.1 Re-building of materially damaged or destroyed buildings – restricted discretionary activity.</p> <p>C.8.6.2 Re-building of materially damaged or destroyed buildings – non-complying activity.</p>

* subject to appeal

57. Activities which are subject to appeal require assessment of operative provisions contained in the Regional Water and Soil Plan for Northland.
58. Flood defence in the Proposed Regional Plan is defined as any structure or equipment, including any bund, weir, spillway, floodgate, bank, stopbank, retaining wall, rock or erosion protection structure or groyne, that is designed to have the effect of stopping, diverting, controlling, restricting or otherwise regulating the flow, energy or spread of floodwater in or out of a water body or artificial watercourse.
59. Section 29 Regional Water and Soil Plan for Northland covers rules for structures (other than dam structures or weirs) in, on, under or over the bed of a river or lake. The plan does not specifically reference “flood defence” but does have rules which cover some of the same activities which are subject to appeal in the regional plan.
60. There is permitted activity standards for Minor River Bank Protection Works. This rule permits minor bank protection works provided any structure does not extend into the river channel. Section 29.4 of the water and soil plan lists discretionary activities which includes new floodgates and any new major flood control and drainage works. Although the provisions are different, particularly in the specific reference to flood defences in the PNRP, there is similar management of activities.
61. To avoid unnecessary duplication of the PNRP, PC1 has taken into account those matters which fall within the PNRP’s natural hazards rules.

2.3.3 Te Tai Tokerau Climate Adaptation Strategy

62. This strategy was drafted in a collaborative process by Climate Adaptation Te Tai Tokerau, a joint working group made up of staff from all four Northland councils (Kaipara, Whangarei and Far North District councils, and Northland Regional Council), as well as hapū and iwi representatives. A key objective for the group is to align local government climate adaptation policy, information and methodologies, and pursue collaborative opportunities to enable effective regional adaptation planning.

63. This strategy has been endorsed by Northland's Joint Climate Change Adaptation Committee; a formal standing committee set up under the Local Government Act 2002. Each council has independently contributed to, reviewed and formally adopted this strategy.
64. The strategy aims to identify ways in which the councils can help communities adapt to the localised impacts of a changing climate. It recognises that we need to reduce emissions but there are climate change impacts that are already locked in even if emission reductions are achieved.
65. The strategy outlines a comprehensive programme of actions covering four areas where the councils can improve their response to climate change. There are several actions that are specific to the management of natural hazards such as flooding, coastal hazards, and land instability which are listed Table 5.

Table 5: Te Tai Tokerau Climate Adaptation Strategy priority actions

Priority actions	Aim
11 - Consistent infrastructure risk assessment criteria	Improve consistency and quality of climate risk assessments for council assets and infrastructure.
12- Infrastructure risk assessments	Improve knowledge of climate risk for council assets and infrastructure.
13 -Roading risk assessments	Improve understanding of long-term climate risks to roading infrastructure.
14 -Lifelines risk assessments	Improve understanding of long-term climate risks to lifelines infrastructure.
18- River flood risk assessment	Improve understanding of river flood risk under climate change and plan future river flood management programmes.
19- Coastal hazards	Improve understanding of coastal hazards under climate change scenarios.
20 - Land hazard data	Improve understanding of land hazards under climate change scenarios.
25 – District Plan	Avoid increasing risk from new development and redevelopment in areas exposed to projected hazards.
28 - Embed community adaptation plans	Ensure community adaptation plans are embedded in regulatory instruments.
32- Nature-based solutions	Promote nature-based solutions as interim hazard-reduction options for coastal impacts.
33- River flood management	Reduce flooding risk to communities through river management.
34- Coordinated flood risk management	Improve coordination between the District and Regional Councils in pluvial and fluvial flood management.

2.4 District Policy

2.4.1 Whangarei District Growth Strategy, Sustainable Futures 30/50 (30/50)

66. The 'Whangarei District Growth Strategy: Sustainable Futures 30/50' (**30/50**) is Whangarei's strategic planning document, produced in response to growth in the District over the period 2001 -2008. It was adopted by Council in 2010. Council has since adopted in 2021 an update to the Growth Strategy focussed on urban development. The 2010 Growth Strategy and the associated implementation plan are still relevant strategic direction for natural hazards, noting that the implications caused by natural hazards on 'feasible development' will be factored in through the next iteration of the Housing and Business Land Capacity Assessment (HBA) and the Future Development Strategy required by the NPS-UD.
67. The 30/50 Growth Strategy developed three broad long-term development scenarios for Whangarei. After extensive consultation, a long term integrated, strategic planning programme was developed based on the principles which will assist progress towards the sustainable development of the District over the next 30-50 years. The 30/50 identifies four sustainability criteria – sustainable economy, environment, society and culture.
68. The 30/50 in Part B: Section 2.2 identifies the key natural hazards within Whangārei, including: flood hazards, extreme weather events, coastal hazards, droughts, biological hazards, volcanic hazards, earthquake hazards, land instability, mine subsidence, erosion prone land, and wildfire hazards.
69. An Implementation Plan for 30/50 details key actions, timeframes, and costings. Part A: Section 3.2 of the Implementation Plan sets out actions relating to natural hazards. While all these actions are of some relevance to PC1; those in Table 6 are considered particularly relevant.

Table 6: Implementation Actions

30/50 IMPLIMENTION PLAN ACTIONS RELEVANT TO PC1	
Action	Response
2.1 Develop a long term coastal hazard strategy and management plan for Whangarei District that undertakes a comprehensive evaluation of coastal hazard risks and management options.	Identification and mapping of coastal hazards areas was completed by NRC. The NRPS requires WDC to incorporate new flood and coastal hazard maps into the district plan. Management of coastal hazards is a key part of PC1.
2.4 – Investigate options for managing existing risk in developed areas that already have substantial natural hazard constraints, including developing community response plans for vulnerable locations and mitigation of natural hazard risk during the development process.	PC1 manages hazards at a district-wide policy level and also proposes specific provisions to manage more specific hazards and identifying hazard prone areas. The proposed policies and rules seek to require appropriate hazard mitigation measures to ensure appropriate development. Specific provisions are designed to direct vulnerable activities to locations outside of land subject to high risk. natural
3.1 – Examine and review the effectiveness of natural hazards provisions (objectives, policies, and methods including rules) in the District Plan and improve existing provisions as necessary.	<p>PC1 seeks to implement this action while giving effect to the NRPS and the NZCPS:</p> <ul style="list-style-type: none"> • The NRC April 2021 coastal hazard maps are incorporated into the WDP by PC1 along with provisions for managing and mitigating risk within these areas. • NRC flood maps are incorporated by PC1 along with provisions that apply to mapped areas • Specific new policies are proposed to require identification of land instability hazards through geotechnical investigation and to require that remediation and mitigation works necessary to minimise land instability hazards are included as a resource consent condition. • PC1 proposes more precise rules within areas of Mining Subsidence Risk that correspond to the level of risk within areas.
5.1 – Provide information to, liaise with, and collaborate when required with property owners, developers, external bodies, stakeholders, other councils, and the public on the risks associated with natural hazards, together with management options.	<p>The pre-notification consultation process for PC1 provided an early opportunity to engage with stakeholders interested in or affected by natural hazards.</p> <p>The Schedule 1 plan change process provides opportunity for interested parties to be formally involved in PC1 once the plan change is notified.</p>

2.4.2 Whangarei District Growth Strategy 2021

70. The 2021 Whangārei District Growth Strategy replaces the 2010 Whangārei District Growth Strategy- Sustainable Futures 30/50. The growth strategy identifies a changing climate and natural hazards as one of its strategic drivers. The strategic drivers are key issues that require careful management over the next 30 years.
71. Issues identified are the impact of a changing climate on key assets such as roads, water infrastructure and sea walls which will face increased and ongoing exposure to changes in tidal water, storm surge, surface flows and groundwater. The strategy highlights the importance of having regard to climate change projections when planning investment into new, and replacing existing, assets. New infrastructure will need to recognise future pressures and be resilient and adaptable.
72. The strategy identifies strategic outcomes which includes that future development avoids areas where the risk from climate change and natural hazards cannot be mitigated. There are also some place specific strategic outcomes sought such as in Waipū, accommodating growth in a way that does not put future housing at risk from climate change and natural hazards. The strategy also highlights the issue of Marae are often located in isolated locations vulnerable to natural hazards. This is looked at in more depth in section 5.2.1 Potential impacts on Māori.

2.4.3 Whangarei District Plan Operative in Part 2022

73. The Whangarei District Plan Operative in Part (operative **WDP**) manages natural hazards in the district wide matters section of the district plan. The Natural Hazards Chapter contains a set of objectives and policies relating to managing risk from natural hazards. The Coastal Environment Chapter also contains objectives and policies relating to coastal hazards. These policies and objectives are implemented through identification of natural hazards areas on the planning maps including:
 - Flood Susceptible Areas
 - Coastal Hazard Area 1 and 2
 - Mining Hazards Areas
74. Resource Area rules relating to activities in natural hazard areas set permitted activities standards. These are summarised as follows:
 - In the Flood Susceptible Areas, a report or certificate is required from a suitability qualified person to demonstrate that the proposed building is designed to accommodate the flood hazard.
 - In the Coastal Hazard Area for the construction or alteration of structures it must not be in Coastal Hazard Area 1 and must have a minimum floor level of 2.5m above the One Tree Point datum. There are permitted standards for the location and volume of earthworks in Coastal Hazard Areas.
 - In the Mining Hazard Areas, a geotechnical survey of the ground and a report certifying that the site is suitable for the activity or structure is required.
75. The operative district plan recognises the significance of natural hazards (refer to section 3 of this report for detail on these provisions). However, it lacks the technical data to adequately manage natural hazards within the District. The operative plan does not reflect a risk-based approach to managing areas affected by natural hazards which is inconsistent with higher order policy direction. The proposed provisions, which will replace the current district plan provisions, represent a more comprehensive approach to managing natural hazards as they are based on current technical information and give effect to higher order planning documents.

2.4.4 Whangarei District Natural Hazard Constraints Report

76. The Whangarei District Natural Hazard Constraints Report was prepared in July 2009 as part of the 30/50 project. The report provides an overview of the risks posed by natural hazards within the Whangarei District and their implications for development. Landslides are a geological hazard in Northland and Whangarei and present an ongoing risk to life and property. Flood hazards, coastal hazards, and land instability are recognised as being the higher risk events.

2.4.5 Whangarei District Council Long Term Plan 2021 -2031

77. The latest LTP was adopted in 2021 and supports the direction of prior strategic documents regarding the management of natural hazards. Broadly it seeks to minimise risk and adapt to change. It identifies that climate change will increase the frequency, location and intensity of some hazards such as storm events (wind damage), flooding, coastal erosion and inundation by sea water.
78. The LTP highlights the importance of responding to the changing climate. Central to this is updating hazard mapping to inform decisions on design and location of assets. Coastal hazards, flooding and land instability can be exacerbated by climate change. PC1 helps to achieve this direction by seeking to incorporate recently released NRC coastal and flood hazard mapping, along with provisions to manage land use.
79. The proposed coastal hazard and flooding provisions seek to minimise risk by locating new development away from areas that are exposed to risk, recognising that the risk of flood events and coastal erosion and coastal flooding are likely to get worse because of climate change.
80. The risk of landslides is also affected by climate change. Rainfall in Northland is predicted to reduce overall, and droughts are likely to increase in intensity and duration. However, tropical cyclones will likely be stronger and cause more damage as a result of heavy rain⁶. This may result in fewer landslides overall, but potentially more severe damage when they do occur. In response to this, the PC1 provisions will require geotechnical assessment, in areas of moderate and high susceptibility to land instability hazards, on site prior to subdivision and development in order to identify land at high risk from natural hazards and ensure natural hazard risk is managed to an appropriate level.
81. As there is a degree of uncertainty associated with mining subsidence risk, the timing and location of subsidence events cannot be predicted with any reliability. The cautious approach to managing mining hazards proposed in PC1 aligns with the LTP direction to minimise risk.

2.5 Other Legislation and Policy Documents

2.5.1 Iwi and Hapu Management Plans

82. According to s74(2A) of the RMA, Council must take into account any relevant planning document recognised by an iwi authority and lodged with the territorial authority, to the extent that its content has a bearing on the resource management issues of the district.
83. At present there are four such documents held by Council, being Te Iwi O Ngatiwai Environmental Policy Document (2007), Patuharakeke Te Iwi Trust Board Environmental Plan (2014), Ngati Hine Iwi Environmental Management Plan (2008) and Ngati Hau Hapu Environmental Management Plan 2016. Each plan is comprehensive and covers a range of issues of importance to the respective iwi. The plans contain statements of identity and whakapapa and identify the rohe over which mana whenua (and mana moana) are held. The cultural and spiritual values associated with the role of kaitiaki over resources within their rohe are articulated.
84. The iwi management plans do not specifically address natural hazards but are more broadly concerned with development issues and the protection and use of natural resources including water, soil, and air. However, many of the issues, objectives and policies recorded within these documents make mention of various natural features that will influence the potential management of natural hazards such as flooding. Significantly, each IMP has significant sections on water quality and much of this is centred around rehabilitation as well as integrated approaches to catchment management.
85. With regard to the overarching objectives proposed under PC1, the most relevant provisions within the iwi management plans are considered to be the objectives and policies relating to climate change within the Patuharakeke Te Iwi Trust Board Environmental Plan. The policy most relevant to PC1 is considered to be 4.2.3(b):
 - b) PTB require that the relevant local authorities and agencies recognise and provide for the potential effects of climate change on resources and values of importance to Patuharakeke, for example:*

⁶ <https://www.mfe.govt.nz/climate-change/likely-impacts-of-climate-change/how-could-climate-change-affect-my-region/northland>

- i. effects of sea level rise on our coastal marae and waahi tapu, including urupa;*
- ii. increased salination of rivers and estuaries, affecting mahinga kai resources and customary use;*
- iii. warming of oceans and effects on marine ecosystems, including those on the sea floor;*
- iv. changes to the amount of rainfall, and effects on aquifer recharge;*
- v. changes to the habitats of indigenous flora and fauna, including taonga species;*
- vi. increased pressure on already failing infrastructure;*
- vii. changes in tourism (especially eco-tourism markets);*
- viii. increased transportation costs and energy costs (the end of cheap oil and security of supply);*
- ix. health impacts (eg. tropical diseases)*

86. It is considered that PC1 is consistent with this approach as it seeks to ensure that the effects of climate change are considered in the consenting process by proposing objectives and policies specific to climate change.
87. With regard to the mapping of hazard prone areas, in section 9.5.2 Te Iwi O Ngatiwai Environmental Policy Document contains the following method:
- 5. Coastal sand dune areas will be classified as "hazard prone areas" because of skeletal burials.*
88. It is noted that some coastal sand dune areas have been identified as hazard prone areas due to the potential for coastal hazards in those areas. Where there are additional areas of wāhi tapu these can be identified and protected through the upcoming Sites and Areas of Significance to Māori Plan Change.

2.5.2 Building Act

89. The Building Act 2004 (Building Act) manages natural hazards in relation to the construction and modification of buildings. Performance requirements for buildings to protect against certain hazards, such as ground shaking, liquefaction and flooding, are set out in the Building Code.
90. The Building Act definition of natural hazard is narrower than the RMA definition and provides a specific list of natural hazards which includes erosion (including coastal erosion, bank erosion and sheet erosion), falling debris (including soil, rock, snow and ice), subsidence, inundation (including flooding, overland flow, storm surge, tidal effects and ponding), and slippage. Importantly, the Building Act is limited to the 'building' itself and cannot look at wider hazard issues, for example the risks to people and property and adverse effects on the environment.
91. Sections 71 to 74 of the Building Act provide a process to follow when issuing a Building consent for building on land subject to natural hazards. In these cases, a condition is imposed on the building consent resulting in a notation on the Certificate of Title about the natural hazard concerned. This process provides protection to District Councils against civil liability when granting consent to build on land subject to a natural hazard. However, there is a risk to landowners as the Earthquake Commission has discretion to decline (or meet only part of) a claim where a certificate of title contains an entry identifying the natural hazard concerned.
92. The Building Act also includes provisions in relation to earthquake-prone buildings (sections 122-132A).
93. Changes to the Building Code on 29 November 2021 brought the rules in relation to building on liquefaction-prone ground that were previously in place in Canterbury to the rest of New Zealand. Local authorities are required to develop liquefaction hazard maps. However, there is no requirement for WDC to include policies or rules to manage building on liquefaction prone land as this is already covered by the Building Code. In this context, liquefaction hazard maps do not need to be statutory as there is no direct requirement for their inclusion in the district plan.

2.5.3 CDEM Act

94. The Civil Defence and Emergency Management (CDEM) Act sets out the duties, responsibilities and powers of central and local government, lifeline utilities and emergency services. It is based on the '4R's' of reduction, readiness, response and recovery. Regional CDEM groups, which include territorial authorities, each must prepare a CDEM Group Plan that details how the risks in their region will be managed.
95. Under the CDEM Act, local CDEM Group Plans must not be inconsistent with the National Disaster Resilience Strategy 2019. Among the recommended actions that apply to regional CDEM groups are the requirements for risk assessments, building risk literacy and consideration of community perspectives and tikanga Māori in creating organisational structures for risk management. CDEM Groups are required to work with hapū and marae in their region to develop emergency management protocols to provide for Māori resilience in accordance with tikanga.
96. In Northland, the Northland Emergency Management Group, with representatives from the Regional Council, District Council, Police, Fire Serve and Health Services, have prepared a Northland Civil Defence Emergency Management Plan (2016-2021). The plan is based on an all-hazards approach and identifies action plans under reduction, readiness, response and recovery.
97. The Northland CDEM Plan includes objectives and actions to manage tsunami risk. These include maintaining and testing CDEM warning and alerting systems and ensuring the Northland tsunami siren network meets the required national standards, providing information digitally and on tsunami information boards and through engagement with CDEM stakeholders, partners and communities. Due to the dynamic and unpredictable nature of tsunami with a focus on response and recovery, this hazard is more appropriately managed through the CDEM Plan rather than district plan rules. To facilitate safe and efficient evacuation in the event of a tsunami, PC1 includes a tsunami hazards policy that supports installation of tsunami sirens and consideration of evacuation routes.

2.5.4 National guidance

2.5.4.1 Meeting the Challenges of Future Flooding in New Zealand

98. In 2008, the Ministry for the Environment released a report entitled "Meeting the Challenges of Future Flooding in New Zealand"⁷. The report presented a vision for flood risk management in New Zealand to reduce the consequences of flooding. The findings from this report were incorporated into the guidance document: "Preparing for Future Flooding: A Guide for Local Government in New Zealand." Ministry for the Environment (2009).
99. The principles to guide future flood risk management policy can be summarised as:
 - **Take a precautionary approach to decision-making** taking into account the level of risk, residual risk, existing knowledge and accounting for uncertainties.
 - **Use flexible or adaptive management options:** these are options implemented incrementally or as small steps over time, responding to new information and adjusting management gradually, rather than acting in one step.
 - **Use no-regrets options:** these will deliver benefits that exceed their costs whatever the extent of climate change.
 - **Use low-regrets options:** these have relatively low costs and seek to maximise the return on investment when certainty of the associated risks is low.
 - **Avoid making decisions that will make it more difficult for you or others to manage climate change flood risks in the future:** this involves not locking in options that limit further adaptation in the future.
 - **Use progressive risk reduction:** new developments should not be exposed to, nor increase, flood risk over their intended lifetime. For existing developments the level of risk should be progressively reduced.

⁷ Ministry for the Environment. (2008). Meeting the Challenges of Future Flooding in New Zealand. <https://environment.govt.nz/assets/Publications/Files/meeting-challenges-of-future-flooding-in-nz.pdf>

- **Adopt an integrated, sustainable approach to the management of flood risk:** this approach aims to consider a wide range of perspectives to decision-making that contributes to the environmental, cultural, social and economic well-being of people and communities.

100. These guiding principles are incorporated into the objectives and policies of PC1 which seeks to manage present-day and future risk from flooding.

2.5.4.2 Coastal Hazards and Climate Change

101. "Coastal hazards and climate change: Guidance for local government" was developed in 2017 by MfE.⁸ This guidance supports councils to manage and adapt to the increased coastal hazard risks posed by climate change and sea-level rise.

102. It recommends a new 'pathways' approach to adaptive planning that is dynamic and flexible. It is designed to be used when there is uncertainty about future physical conditions affecting the coastal environment.

103. It also highlights how the district plan can be a mechanism to help in managing coastal hazard risks:

- Can indicate the basis for staged retreat through policy across successive plans.
- Can set policy (objectives and policies that apply differentially across a district, e.g., through natural hazards overlays, including risk-based overlays).
- Establish development rights through zoning and associated permitted, controlled, discretionary, non-complying and prohibited activities.
- Can set standards to be achieved through rules (e.g., setbacks, floor levels, density, intensity, redevelopment controls and construction types, such as relocatable buildings).
- Can manage all land uses (including infrastructure, except where designated) directly through rules.
- Can be used to incentivise land-use change through identifying and providing for no- or low-hazard development areas.

104. The coastal hazard provision of PC1 generally align with this national guidance and utilise the district plan to help in managing coastal hazard risk.,

105. In July 2022, MfE released an interim update of certain aspects of the 2017 document – "Interim Guidance on the use of new sea level rise projections"⁹. MfE also indicated a full review of the 2017 document would occur in early 2023.

106. This interim guidance reflects the latest sea-level rise scenarios from the Intergovernmental Panel on Climate Change (IPCC) and NZSeaRise.

107. The interim guidance indicates that councils should use the minimum transitional sea-level rise allowances recommended in the interim guidance which include:

- Category A: Coastal subdivision, greenfield developments and major new infrastructure – using SSP5-8.5 H+ (upper likely range), including vertical land movement (**VLM**) out to 2130. This is typically 1.7 metres of rise before including VLM.
- Category B: Changes in land use and redevelopment (intensification) – using all five updated "medium confidence" scenarios (including VLM) out to 2130, or if a more immediate decision is needed, using SSP5-8.5 H+ (upper likely range), including VLM out to 2130. This is typically 1.7 metres of rise before including VLM.
- Category C: Land-use planning controls for existing coastal development and assets planning – using SSP5-8.5 M (fossil fuel intensive development), including VLM out to 2130. This is typically 1.2 metres of rise before including VLM.
- Category D: Non-habitable short-lived assets with a functional need to be at the coast – using the SSP5–8.5 M (fossil fuel intensive development), including VLM out to 2090. This is typically 0.7 metres of rise before including VLM.

⁸ Ministry for the Environment. (2017). Coastal hazards and climate change: Guidance for local government. <https://environment.govt.nz/publications/coastal-hazards-and-climate-change-guidance-for-local-government/#:~:text=Change%20and%20NZSeaRise,-.A%20full%20update%20to%20the%20coastal%20hazards%20and%20climate%20change.change%20and%20sea%2Dlevel%20rise.>

⁹ Ministry for the Environment (July 2022). Interim Guidance on the Use of New Sea Level Rise projections

108. PC1 has not adopted this guidance in relation to coastal hazards as the sea level rise mapping and other related matters that the PC1 coastal hazard rules and maps originate from the NRC who has not yet updated its coastal hazards maps or its RPS directions to give effect to the interim guidance.
109. The main difference is in the projected high sea level rise (1.7m in the interim guidance vs. 1.5m in the NRC's April 2021 maps). Until the NRC amends its coastal hazards maps to reflect the projected high sea level rise line to reflect a 1.7m rise, it would not be prudent for PC1 to include rules in relation to that level of sea level rise. This is because the technical model that determines how MfE's guidance on new sea level rise projections impact on Whangarei District's coastline is owned by NRC.
110. It is understood that the NRC intends to update their coastal hazard maps to reflect the interim guidance from MFE but the timing of that is currently unknown.
111. This means that if, during the processing of PC1, the NRC amends its coastal maps as a result of this interim guidance (or the final MFE guidance when it is released), the Council will publicly notify a variation to PC1 to rectify any inconsistencies in the coastal hazards maps and potentially the rules. If NRC makes those amendments after PC1 has progressed to a final decision and is operative, the Council will notify a new plan change as soon as practicable to address those matters.

3. Current State and Resource Management Issues

3.1. Known Resource Management Issues

3.1.1 Flooding

112. Flooding is generally accepted as having the highest risk potential within both Whangarei District and Northland as a whole. The bulk of Whangarei District's development has historically occurred in floodplains or close to areas with flood hazard risk because of factors such as water, transport, key agricultural and horticultural areas, and difficulties in settling on steep hills¹⁰.
113. Whangarei is also susceptible to flood events because it is exposed to high intensity rainfall events. Several weather systems contribute to Northland's wet climate. For example, ex-tropical Cyclones are experienced reasonably regularly in the district and consist of high-pressure revolving storms that carry a lot of energy, moisture and cause heavy rain. The district also experiences North Tasman Lows which are wider weather systems that develop in the North Tasman Sea, in the warm waters off Queensland, and carry a lot of moisture. They are very deep depressions, and when they are hemmed in by high pressure systems, they release this moisture onto Northland.

3.1.2 Coastal

114. The Whangarei district contains a long and varied coastline made up of a range of coastal types, from rocky cliffs and headlands to sandy open coasts, harbours, and more sheltered estuaries and bays. Along with high natural and cultural values, the district's coastal environment is highly valued for the recreational opportunities and amenity values it provides. It is also a highly desirable place to live with numerous settlements located close to the coast.
115. However, locating development too close to the coast runs the risk of it being adversely affected by coastal processes such as erosion or flooding. The interaction of these natural coastal processes with human activities, buildings, structures and other aspects of the environment can result in coastal hazards. Coastal erosion is a natural process that occurs when waves, wind and water currents wear away the shoreline. Specific impacts or consequences of coastal erosion in the District include:
- land instability
 - danger to life in the case of sudden onset landslide or cliff collapse events
 - structural damage or destruction of buildings or structures
 - damage or destruction of lifeline infrastructure such as water, sewer, gas pipes and roads

¹⁰ WDC. Background Report Natural Hazards Sustainable Futures 30/50

- loss of land, resulting in coastal cliffs or shoreline retreating closer to buildings
- threats to significant habitats or species, or the life-supporting capacity of the natural environment
- loss of beach amenity due to a reduction in beach width or sea wall construction.

116. Coastal flooding results from inundation caused by storm tides and wave setup. Specific impacts or consequences of coastal flooding and inundation in the District include

- coastal communities cut-off and isolated
- evacuation of some coastal areas
- damage to properties and critical infrastructure from flooding and waves
- stormwater and drainage networks overwhelmed
- corrosion damage to electricity networks and metal objects
- disruption to nesting areas for birds, particularly rare or endangered species
- salinisation of flooded land affecting agriculture, gardens and habitats.

117. These coastal hazards have been identified as a key issue for District.¹¹ They pose a significant risk to a number of communities and settlements within the district's coastal environment, adversely affecting the health, wellbeing and safety of people and communities, as well as the local economy and natural environment values. As sea level rises coastal hazards will increasingly impact the district's coastal margins.

3.1.3 Land Instability

118. The Northland Region has a complex geology with a wide variety of soft rocks susceptible to movement, including those on gentle slopes. Whangārei District is well known for its geological instability with landslides being relatively common events. Landslides can have significant consequences on people, property, the environment and infrastructure, and their likelihood depends on existing land conditions, activities which weaken slope stability, and triggering events. The main trigger has often been intense or prolonged rainfall¹². There have been relatively few large-scale landslides in Whangārei and none which have caused widespread damage. However, there have been several landslides throughout Whangārei which have had significant impact on property and on local communities that are dependent on access to local roads.

3.1.4 Mining Subsidence Hazard

119. Coal mining was formerly a major industry in Northland with over five million tonnes extracted. The coal was extracted by the "room and pillar" method which relies on the coal pillars being left to support the overburden. Collapse of the mine roof, or collapse of the pillars, can lead to surface subsidence.¹³ Although mining hazards are a consequence of man-made activities, they manifest as subsidence which is considered to be a natural hazard for the purposes of the WDP. Evidence of subsidence is present around the Waro area in Hikurangi, causing depressions in the lawns and structural deformations¹⁴, and at a number of locations in Kamo¹⁵. Subsidence events can pose significant risks to people, property, and the environment including damage to property, physical injury or loss of life, and loss of vegetation, and siltation/blocking of rivers, streams and roads.

3.1.5 Liquefaction

120. In November 2019 changes were made to the Building Code as a result of recommendations made by the Royal Commission of Inquiry following the 2011 Canterbury earthquakes. This change took effect from November 2021, giving councils two years to produce mapping of liquefaction prone areas.

¹¹ Coleman D. (2009) Whangarei District Natural Hazards Constraints Report – Sustainable Future 30/50.

¹² Northland Civil Defence Emergency Management Group Plan, 2004.

¹³ Tonkin + Taylor Ltd (2001): Mine Subsidence Hazard Hikurangi Area, Whangarei.

¹⁴ Tonkin + Taylor Ltd (2001): Mine Subsidence Hazard Hikurangi Area, Whangarei.

¹⁵ Tonkin + Taylor Ltd (2013): Mine Subsidence Hazard Kamo Area, Whangarei.

121. MfE and the Ministry of Business, Innovation and Employment (**MBIE**) prepared a document in 2017 to provide guidance for planners and engineers on managing risks from liquefaction. It covers how to determine if liquefaction is an issue that needs to be managed, and appropriate land-use planning and building controls.¹⁶
122. The focus of the MBIE/MfE Guidance is to assess the potential for liquefaction-induced ground damage to inform Resource Management Act (RMA) and Building Act planning and consenting processes. WDC engaged Tonkin and Taylor to undertake a liquefaction vulnerability study and mapping in accordance with the 2019 changes to the Building Code and the MBIE/MfE Guidance. This mapping was completed in 2020. Compared to other parts of New Zealand there are relatively few geotechnical investigations within the Whāngarei District on the New Zealand Geodetic Database (NZGD). A review of the historical earthquake records by the Tonkin and Taylor liquefaction vulnerability study indicated that there are no recorded observations of liquefaction related damage in Whāngarei District. Further, due to limited information about groundwater and the relatively limited amount of geotechnical investigation data the study was carried out at a regional scale (level A – basic desktop assessment), which was sufficient to meet the MBIE/MfE requirements.
123. The change to B1/AS1 in the Building Code requires buildings on liquefaction-prone ground to use specified foundations. The change also revokes the use of a 'deemed to comply' pathway for foundations unless the ground has been assessed and/or categorised as not being liquefaction-prone – i.e., 'good ground'. Since the changes to the Building Code came into force in November 2021, there is sufficient practice around New Zealand in relying on the Building Code to effectively manage this hazard.
124. Inclusion of additional provisions in the WDP to manage risks from liquefaction hazards would be a duplication of what the building consent process and the resource consent process already have adequate tools to deal with. Requiring a resource consent due to liquefaction hazards would be onerous and inefficient, as assessments would have to go down to the level of detail that would be required at building consent stage.
125. The ES 2022 also include detailed requirements for geotechnical investigations as part of any subdivision, which includes investigation for soil types, with particular reference to soils subject to liquefaction (section 2.3.3.6 of ES 2022).
126. Liquefaction maps are provided to the public outside the plan through GIS maps and LIM reports.
127. It is considered the management of risks from liquefaction through the WDP is not required. Northland is a low-risk area for liquefaction¹⁷, and existing provisions under the RMA and Building Act appropriately manage the risk. Therefore, the proposed plan change on natural hazards does not include any provisions relating to liquefaction hazards.

3.1.6 Acid Sulphate soils

128. Acid sulphate soils are naturally occurring and are caused by sulphate salts that were deposited in the land by the sea. When sulphate soils are disturbed, they react with oxygen and create an acidic environment which can corrode buried infrastructure including concrete and steel. In 2014 damage from acid sulphate soils severely affected a development at Marsden City/Ruakaka.

¹⁶ <https://www.building.govt.nz/assets/Uploads/building-code-compliance/b-stability/b1-structure/planning-engineering-liquefaction.pdf>

¹⁷ Tonkin and Taylor. (2020). Liquefaction Vulnerability Study – Whangarei District

129. Following issues caused by acid sulphate soils in the Marsden City development, a technical investigation was sought. This was undertaken by Opus in 2015. As New Zealand did not have acid sulphate soil investigation methods and guidelines, Opus relied on the Australian Standard AS 4969 Series and the Queensland Acid Sulphate Soil Technical Manual. Following the study, Opus and WDC developed the Acid Sulphate Soil Planning Policy¹⁸ for WDC. The policy focuses on risks to infrastructure which could be prone to acid sulphate soil damage. This policy led to a number of investigations being conducted at some proposed subdivisions in Whangārei District. A map of acid sulphate soils was prepared by Opus, however it was accompanied by a statement from Opus that the lines are indicative and not precise enough to relate to cadastral boundaries. Due to this it is considered the current maps do not meet the threshold required to be included in the District Plan as statutory maps.
130. There are currently no specific provisions in the WDP to manage acid sulphate soils. Despite this, there are mechanisms available outside the WDP to manage the risks from this hazard. These include:
- The Building Code
 - S106 RMA
 - S244c RMA
131. Different risks of acid sulphate soils are considered at subdivision stage and at building stage. Internal consultation established that the Building Code manages the risks from acid sulphate soils well when it comes to buildings that require building consent. Inclusion of district plan provisions would not be efficient, as such controls would be a duplication of the Building Code.
132. Risks at subdivision stage relate to the placement of services in the ground in the process of subdivision where they can become damaged and corroded by acidic soil conditions. The Building Code mechanisms are not used at this stage. However, it is considered the existing provisions in the WDP allow the risk from acid sulphate soils to be considered at subdivision stage. The WDP already contains general provisions in relation to natural hazards, subdivision, services, three waters infrastructure and roading that together provide the ability to assess and manage the risk of acid sulphate soils at subdivision stage. Specifically, the existing controls in the WDP include objectives, policies and rules in the Subdivision (**SUB**), Three Waters Management (**TWM**) and Transport (**TRA**) chapters.
133. Existing objectives and policies in the WDP allow wider consideration of provision of infrastructure, including its design, construction and effectiveness, which can include consideration of acid sulphate soils. These are provided in Table 7.

Table 7: Existing WDP objectives and policies and enable consideration of acid sulphate soils

Subdivision chapter	SUB-O4 – Managing Adverse Effects	Subdivision is designed to avoid, remedy or mitigate any adverse effects on the environment and occurs in a sequenced and coherent manner.
Subdivision chapter	SUB-P5 – Infrastructure	To achieve efficient and effective provision of services and infrastructure by ensuring new allotments are capable of being provided with adequate services and infrastructure.
Three waters management chapter	TWM-O2 Reticulated Networks	Maintain the effectiveness, efficiency and sustainability of reticulated three waters networks.
Three waters management chapter	TWM-P5 – Vested Assets	To require vested assets, and connections to vested assets, to be designed and constructed in a manner that protects the ongoing operation, maintenance and upgrading of that asset.
Transport chapter	TRA-O1 – Transport Network	Provide and maintain a safe, efficient, accessible and sustainable transport network while avoiding, remedying or mitigating adverse effects on the

¹⁸ Opus. (2015). Acid Sulphate Soil Planning Policy Basic Guide. <https://www.wdc.govt.nz/Council/Council-documents/Policies/Acid-Sulphate-Soil-Planning-Policy>

		environment, adjoining land uses and the surrounding amenity and character.
Transport chapter	TRA-P1 – Design, Construction and Maintenance	To design, construct and maintain roads, cycleways, walkways, public transport infrastructure, car parks and pedestrian access in a manner that: (1). Provides a safe and efficient transport network.

134. In addition to the objectives and policies described above, specific rules across the SUB, TWM and TRA chapters enable processing planners to impose resource consent conditions for the management of acid sulphate soils. These provisions include:
- All subdivision is at a minimum a controlled activity status in the WDP. Matters of control include matters listed in the Relationship Between Spatial Layers Chapter, HPW-R9. The Rule HPW-R9(j) allows processing planners to consider “protection against natural hazards” as a matter over which control/discretion has been reserved.
 - All subdivision is Restricted Discretionary in the TWM chapter. This includes the following rules:
 - i. Rule TWM-R2(1)(a)(iv) requires stormwater systems to be designed and constructed for an asset life of at least 50 years. The matters of discretion include “the efficient provision of services” and acceptable means of compliance refer to the ES 2022.
 - ii. Rule TWM-R3 relates to wastewater. The matters of discretion include “the efficient provision of services” and acceptable means of compliance refer to the ES 2022.
 - iii. Rule TRA-R17 requires consent for the construction of any new public road or service lane as a Restricted Discretionary Activity. The matters of discretion include “the provision, design and construction of the road or service lane”, and acceptable means of compliance refer to the ES 2022.
135. The ES 2022 include clear requirements for risk assessment for projects that need an engineering design and a consent from WDC, including resource consents (section 1.5.1.3 ES 2022). The ES 2022 set out Performance Standards and Design Requirements for assets to be vested in WDC, which include requirements to consents and approvals, and inspection and testing requirements before assets are vested.
136. The ES 2022 in section 2.2 sets out the following requirements for consents and approvals:
- Section 2.2.2.4 specifically refers to the requirement for hazard mapping, and specifically mentions acid sulphate soils. Where the proposed development site is outside of an area covered by the WDC natural hazard Maps, an assessment by a Suitably Qualified and Experienced Person (**SQEP**) is required as to which hazard(s) and to what level(s) are applicable to the site.
 - Section 2.3.3 sets out requirements for geotechnical assessment reports, which include a requirement for the assessment of soil types, including acidic soils (section 2.3.3.6(e) ES 2022).
 - Section 2.3.4.2 requires an assessment of aggressive ground conditions, including the risk of saturated or aggressive soil conditions (e.g., acid sulphate soils) impacting on proposed (future) built structures. This site-specific hazard assessment report must be included with resource consent and building consent applications.
137. Any assets to be vested in Council as a result of subdivision are inspected by development engineers, who have the ability to not accept infrastructure if it does not comply with the ES 2022. This sign off is part of the s224c RMA process to confirm compliance with resource consent conditions.
138. Maps of acid sulphate soils risks are provided to the public outside the plan through GIS maps and LIM reports.

139. If any additional specific provisions for acid sulphate soils risk were to be added to WDP, the acid sulphate soil hazard would need to be appropriately identified in WDP either through a criteria-based definition or through maps. A criteria-based definition is not considered to be effective and efficient, as it may not accurately identify hazard areas and may be difficult to understand, interpret and enforce. As discussed above, the current maps of acid sulphate soil risk are not at a cadastral level and do not possess a sufficient level of precision to be suitable for incorporation into the WDP as statutory maps. A new mapping exercise would incur substantial costs to Council and ratepayers, and would not be the most efficient option given existing provisions in the WDP and ES 2022 that already provide adequate ability to manage the risks from acid sulphate soils through the resource consent process. In addition, the Wastewater Management Bylaw and the Stormwater Management Bylaw require council approval/acceptance of vested assets and refer to the ES 2022. Therefore, the proposed plan change on natural hazards does not include any provisions relating to acid sulphate soils.

3.2 Operative District Plan Approach to Natural Hazards

140. The WDP objectives and policies relating to natural hazards are in the Natural Hazards Chapter and in the Coastal Environment Chapter. In addition, the District Growth and Development Chapter contains an objective and policy relating to natural hazards, and the Earthworks chapter contains an objective and two policies to minimise the risk of land instability for earthworks associated with subdivision. Evaluation of existing objectives is provided in section 6.1 of this report.
141. The current policies refer to the location of activities, preservation of natural protections, discouragement of hard protection structures and obstruction of flood flow paths and fire threat. There is a requirement to ensure that mitigation measures in response to natural hazards do not, themselves, produce adverse effects. Sea level rise is recognised, adopting a 50-centimetre forecast. While the current policies provide for a basic level of management of natural hazards, they are no longer adequate to give effect to the RMA and higher order instruments.
142. The methods for implementing these policies are relatively weak. Development in areas identified with a hazard (mining, flooding, coastal hazard) would trigger a site-specific investigation which require demonstration that the site is suitable for development. The current policies do not meet best practice on risk identification, assessment and reduction as they are lacking in taking a risk-based approach to future subdivision and land use.
143. Rules relating to land uses in areas mapped as hazard areas are contained in Chapter 56 Natural Hazard Resource Area Rules. These areas are Coastal Hazard Areas 1 and 2, Flood Susceptible Area, and Mining Hazard Areas 1, 2 and 3. The plan notes the need to improve the quality of the natural hazards information.
144. The Flood Susceptible Areas identified on the planning maps identify flooding from river systems, potential overland flow and low-lying areas which have experienced, or could be subject to, flooding under conditions such as poor drainage. The controls in the Plan are intended to reduce the risk from flooding by requiring the flood risk to be assessed when undertaking any activity such as building or forming an access to an allotment or building.
145. The current flood and coastal hazard mapping occurred prior to the more recent mapping of these hazards by NRC and so are now out of date. The current rules do not give effect to the directions on how councils are to manage land use and development in identified flood and coastal hazard areas as set out in the operative version of the NRPS (operative on 9 May 2016).

146. Areas of land instability are not defined in the plan and the existing mapping remains non-statutory. This has resulted in differing views on the enforceability and relevance of the non-statutory mapping. The gaps in the mapping created inconsistencies with the management of land instability in these areas and results in uncertainty as to what level of information is required for site suitability reports under the WDP and Engineering Standards in these unmapped areas. The non-statutory maps have been updated following work undertaken in 2020 by Tonkin and Taylor¹⁹ to reflect the most up to date information. The updated maps provide coverage of the whole district. The reviewed WDC Engineering Standards 2022 refer to the Natural Hazard GIS overlay.
147. The WDP manages land instability by requiring consent as a controlled activity for any earthworks associated with subdivision (rule EARTH-R1). Consent is required as a restricted discretionary activity where compliance is not achieved with performance standard for a controlled activity. There is an identified gap whereby there are no provisions managing earthworks associated with land use or other land use activities.
148. The WDC Engineering Standards 2022 contain information requirements for assessments of land stability based on the level of hazard present within the site with reference to the non-statutory land instability overlay in WDC's GIS.
149. While Mining Hazard Area maps are incorporated into the District Plan, the current rule 56.2.4 Mining Subsidence does not distinguish between the three mapped areas with varying levels of risk (Mining Subsidence Hazard Areas 1-3). This approach is unsatisfactory as it does not provide for consideration of the higher levels of risk to people and property in the higher risk Mining Hazard Area 1.

3.2.1 Limitations with current approach

150. There have been significant changes, both in the direction on how natural hazards are to be managed and in natural hazard provisions, in the overarching statutory instruments (the RMA, the NZCPS, the RPS, the National Adaptation Plan and new NRC flood and coastal hazard maps) since the natural hazards related provisions in the WDP were prepared. Accordingly, while the high-level intent of the WDP provisions remain valid, the provisions do not give effect to the NRPS, particularly in relation to the management of flooding and coastal hazards nor do they reflect current best practice. The overall chapter structure and format also need to be updated to be consistent with the National Planning Standards (NP Standards).
151. The current approach of the WDP to managing natural hazards is a permitted activity classification, provided that a report certifies the suitability of development. This approach presents a number of risks as it relies on third party certification. Council has no discretion to decline consent if the report is provided. There are no information requirements detailed that stipulate what the report must include. Where an activity or land use does not require a building consent there is no formal way for Council to be aware of any such report except through targeted monitoring of known natural hazard areas. Such monitoring could only occur after the event and as such does not represent best practice response to known risk.
152. There is no permitted standard for low-risk activities or more restrictive status for higher risk activity. This does not give indication to the public about the types of activities which are discouraged within risk areas.
153. The current provisions in Chapter 56 Natural Hazard Resource Area Rules refer to a buildable area only in relation to mining subsidence. For the remaining natural hazards there is no direct link to subdivision aside from buildable area rule in the subdivision chapter where lots must demonstrate that they can accommodate 100m² buildable area. The buildable area rules for rural zones require the demonstration of compliance as a permitted activity with the relevant rules in this Plan, which could be interpreted as including natural hazards. The rest of the buildable area rules in the subdivision chapter refer only to compliance as a permitted activity with the zone rules.

¹⁹ WDC. (2022). Natural hazards. *Landslide Susceptibility Technical Report 2020*.

<https://www.wdc.govt.nz/files/assets/public/documents/council/reports/hazard-reports/land-stability/landslide-susceptibility-technical-report.pdf>

154. Landslides are an ongoing hazard in Northland. The dominant trigger is weak soils affected by intense or prolonged rainfall. The operative plan addresses land instability in the Earthworks chapter by managing earthworks associated with subdivision. This level of regulation is not adequate, as other earthworks that are not related to subdivision are not captured by the operative district plan.
155. In relation to mining subsidence hazard, the following technical issues have been identified with the WDP:
- There are no specific objectives and policies relating to mining hazards in the WDP
 - The three categories of mapped Mining Hazard Areas are not referenced in the WDP provisions. The same rule applies in all Areas despite differing levels of risk.
 - There is no specific subdivision rule within the MHAs.
 - The matters of discretion currently in Rule 56.2.4 do not provide sufficient clarity and certainty to applicants and Council.
 - The requirement to undertake a geotechnical survey of the ground under and in the immediate vicinity of the site in Rule 56.2.4(a) of the WDP lacks clarity and is considered redundant to the report required under Rule 56.2.4(b).
 - The Hikurangi mapping requires minor amendments to incorporate the updated maps provided through the 2001 T+T review.

The above issues are discussed in greater detail in section 6 of this report.

3.3 Key issues identified through pre-notification engagement and consultation

3.3.1 Summary of issues raised in pre-notification engagement and consultation phases

156. WDC undertook early engagement on draft natural hazards provisions from the end of March 2022 to the 6 May 2022. 35,000 letters were sent to landowners, iwi/hapū and other stakeholders inviting them to view draft plan changes and related maps and provide feedback. WDC also provided information about the draft provisions through a notice in the local paper (the Whangārei Advocate) and on its website in the “Have Your Say” section.
157. 120 pieces of feedback were received. A number of these were extensive in their feedback. The District Plan department have reviewed the feedback and considered where the draft plan changes could be improved. A key outcome of that early engagement was the decision to combine the main natural hazards provisions objectives and policies into one chapter of the plan rather than to have individual chapters specific to each natural hazard (as suggested in the draft provisions).
158. Table 8 sets out the general themes raised in the hazards specific feedback received. These have been grouped and summarised in the table and are discussed in further detail in the following subsections.

Table 8: Feedback themes

Theme	Summary
Maps	<ul style="list-style-type: none"> • Queries over impact of hazard maps on individual properties • Concern over accuracy of maps at a site level • Concern that incorporating maps into district plan captures point in time (static maps) when sea level rise/climate change effects are constantly changing with new data updating hazard risk. • Should refer to maps outside of district plan in non-statutory GIS layer. • Acknowledgement of NRPS direction to “incorporate maps into district plan
Rules	<ul style="list-style-type: none"> • Concern that rules too onerous • Concern that rules too permissive • Impact on ability to meet housing demand • Duplication with Building Act – floor levels; surface water

Theme	Summary
Impact on Māori land/landowners	<ul style="list-style-type: none"> • Māori land/landowners disproportionately affected by natural hazards • Concern that will be unable to use land or have the ability to adopt mitigation actions

3.3.2 Flooding feedback

159. The most frequent feedback received disputed the accuracy of the mapping. This varied in the level of detail provided to justify these claims. As the flood mapping was developed by NRC and incorporated in the NRPS, concerns regarding the mapping were passed on to NRC who indicated it would review the feedback and respond to the relevant individuals if appropriate.
160. Feedback was also received from planning consultancies on behalf of several different parties. A key concern was that the provisions referred to the “Flood Hazard Area” as defined by the flood hazard maps. The view of the feedback was that provisions should reference the flood event rather than a mapped area.
161. This feedback was taken on board and some amendments were made to the chapter as a result. The flooding specific policies in PC1 now reference the flood event and the subdivision provisions reference identifying a complying 100m² building platform outside of the 100 year flood event. This means that if an assessment against rules is triggered because of being located in a mapped flood hazard area, the site specific investigation may identify that the extent of the flood event for a specific site is different than the mapped flood hazard area.
162. This option was considered appropriate as the flood mapping is a region wide model and its purpose is to serve as a trigger for a site specific investigation. Reference to the flood event acknowledges accuracy issues and limitations associated with mapping the various flood extents, which is outlined in the flood mapping background technical reports. The peer review of the model states that it is a relatively simple 2D model. This is appropriate for catchment-scale modelling for indicative flood risk and planning maps. The limitations of the modelling mean that they can be refined at the local scale through the addition of more model detail.
163. Some feedback was concerned about the lack of infrastructure to mitigate flooding or infrastructure that does exist, not being maintained (i.e. blocked culverts or drains). The TWM chapter addresses flooding risk in relation to stormwater discharges. As the feedback related to how WDC manages its stormwater assets, the information was passed on to the WDC Infrastructure department.
164. Feedback was also received requesting permitted activity rules for activities in the flood hazard area relating to infrastructure providers and the agriculture sector including:
- Artificial crop protection structures.
 - Minor Upgrading of Regionally Significant Infrastructure.
 - “Maintenance, replacement or minor upgrading of existing infrastructure”
 - Underground infrastructure.
 - School buildings on land susceptible.
165. These activities were assessed in regard to the level of risk to people, property and the environment by allowing them to occur within known flood hazard areas. Those that posed a low level of risk were deemed appropriate to occur in the FHA and the draft plan change was amended accordingly.

3.3.3 Coastal Hazards feedback

166. The most frequent feedback received questioned why rules and therefore resource consents were triggered by reference to a map that showed a site was affected by a coastal hazard area rather than being triggered by a site actually meeting the description of the coastal hazard event itself.

167. The feedback expressed concern that mapping was a broad-brush approach and did not recognise specific considerations of individual sites. This feedback also included the view that any maps should not be contained within the district plan and instead should be in a non-statutory GIS map layer which could be referred to as guidance. The concern expressed was that by putting the maps into the district plan they would become a static representation of a point in time, and would not be able to be easily updated to reflect the changing nature and data of sea level rise. This approach is discussed further in section 7.2 to this report.
168. Site specific feedback was received for a few sites, querying the accuracy of the coastal hazard maps. This feedback was passed on to the NRC who indicated they would review the claims and respond accordingly.
169. Feedback was received that raised concern over how sea level rise had been determined and also pointed to what were perceived discrepancies between various NRC generated reports, and MfE guidance relating to the extent of sea level rise within 50 and 100 years. The draft plan change adopted the NRP's specified sea level rise scenarios and relies on the technical reports that sit behind those scenarios.
170. Feedback from one consultant indicated that it was considered the draft provisions were too onerous for
- i. Existing consented subdivisions where houses yet to be built
 - ii. Infrastructure – particularly local smaller infrastructure
 - iii. Land with specific DP precinct rules – view the precinct rules should take precedence e.g. Port Nikau, Marsden Point Refinery
171. In light of strong central government direction that a precautionary approach to natural hazards, particularly those affected by climate change, PC1 has taken a pre-cautionary approach to land subject to coastal hazards in order to reduce the risk to people, property and the environment. It would be inappropriate to permit new buildings or infrastructure to be built in an area now known to be at risk from one or more coastal hazards, just because the land may have had previous consent granted to subdivide the land or has specific district plan rules applying to it. Requiring such activity to be subject to a resource consent that carefully considers on a site specific basis the risk from the coastal hazard(s) ensures unnecessary future costs and disruption as a result of those hazards is avoided.
172. There was also feedback that the draft provisions were too permissive and that the draft rules in coastal hazard areas 0 and 1 did not reflect the long-term risk or costs to land owners and the wider community. The feedback was that in those areas subdivision and new buildings should be avoided.

3.3.4 Land Instability feedback

173. The majority of the feedback on the draft land instability chapter opposed the inclusion of statutory maps. Concern was raised about the scale of mapping and whether it was precise enough to be able to be applied to individual properties. Mixed feedback was received on the mapping methodology itself. Engagement revealed concerns that static mapping does not capture remediation improvements on sites carried out during development and therefore might not reflect true risk. Further queries were raised about the limited extent of field validation of the mapping model (for field validation locations see Figure 5 in Appendix A to the Tonkin and Taylor Landslide Susceptibility Assessment 2020). However, it is noted the mapping model draws on complex sources of information, including geological mapping of the district at 1:250,000 scale, but also more recent LiDAR data sampled on a 10m2 scale. It is considered that the mapping model provides sufficient certainty to use as a trigger for a resource consent. Where a resource consent is triggered, a site-specific investigation is required, which will provide the opportunity to reflect any remediation improvements.
174. Technical feedback was received during the consultation period about risks of land instability present even on gentler slopes due to underlying unstable geology which is not always intuitive or obvious from simple observation. This prompted re-consideration of activity statuses and permitted activity standards in areas susceptible to land instability hazards.

175. Strong concerns were expressed about the impacts of the draft provisions on property rights, ability to obtain insurance, consenting costs and falling property values. Site specific feedback was received for a few sites, querying the accuracy of the land instability maps. This was particularly in the instances where the updated maps differ from the older non-statutory maps available on the WDC GIS website. While these concerns are acknowledged, the analysis that follows in this document will show that the risk of natural hazards is escalating and benefits of managing the risks from natural hazards outweigh the costs. In this context, resilience against natural hazards may offer property owners more stability of their property values and better security of insurance cover.
176. Comments were received from industry/infrastructure seeking more enabling rules for earthworks, vegetation clearance, construction. Additional technical advice has been sought on these. Where possible, rules were simplified in response to feedback.
177. Internal consultation was undertaken with the Building department regarding rules for new buildings and major structures and water and septic tanks. Draft rules were revised following this consultation to align provisions with the Building Code. It is considered the proposed provisions are not a duplication of the building consent process as they address risk to vulnerable activities and effects on the environment. Rules in relation to water tanks and septic tanks were removed from the draft as is considered appropriate management can be achieved through the building consent process, the district plan earthworks rules and the now operative provisions in the Proposed Regional Plan in relation to effluent disposal.
178. Feedback was received requesting new permitted activity rules for activities related to infrastructure providers, forestry and agriculture sector:

Comment	Response
<ul style="list-style-type: none"> • permit forestry activities in accordance with the NES Plantation Forestry 	Accepted – district plan must give effect to NES
<ul style="list-style-type: none"> • permit artificial crop protection structures in areas susceptible to land instability 	Accepted – this is consistent with other chapters in WDP, particularly in the Rural Production zone which contain the majority of land susceptible to land instability
<ul style="list-style-type: none"> • permit maintenance, replacement or minor upgrading of existing infrastructure and permit earthworks and vegetation clearance associated with the same 	Accepted – this is in line with the overarching approach to existing infrastructure in this plan change
<ul style="list-style-type: none"> • allow establishment of new school buildings in areas susceptible to land instability 	Not accepted – new buildings in areas of high susceptibility to land instability should go through a site specific risk assessment.

3.3.5 Mining subsidence feedback

179. Very limited feedback from the public was received on mining subsidence.
180. One piece of feedback was received disputing mapped areas near lake Waro (Hikurangi). No real evidence or site specific investigation was provided in the feedback. The mapping of these areas is addressed in detail in the 2001 Tonkin and Taylor mining subsidence report for Hikurangi. The report states:

“In the Waro area evidence of crown-hole subsidence is widespread across the shallowest workings, either side of Hikurangi Lake. Further crown hole subsidence also appears to be continuing in this area.” (page 8)

The proposed PC1 provisions for development in mining subsidence areas require site specific investigations, which would address any concerns about the precision of mapping in relation to any particular site. The intention of the maps is to trigger a site specific assessment.

181. Further technical consultation on mining subsidence established the need for stronger avoidance of further subdivision and building in the highest risk area (Mining Subsidence Area 1). It was explained the level of investigation and remediation in the highest risk area would be quite onerous on applicants therefore clear signalling in the district plan is needed.

3.4 Summary of advice from engagement/consultation with iwi and hapu

182. Section 32(4A)(a) of the RMA requires that evaluation reports include a summary of advice on a proposed plan received from iwi authorities.
183. Iwi groups were invited to provide feedback during an early feedback period for the draft plan change.
184. Patuharakeke Te Iwi Trust Board provided feedback in relation to proposed wording of the draft provisions and highlighted its concern that Māori would be disproportionately affected by sea level rise as many marae, sites of significance, and Māori land are located on the coast. Feedback received in relation to natural hazards related topics is outlined in Table 9. Responses to this feedback are provided in section 4.6 of this report.

Table 9: Feedback on natural hazards related topics

Coastal hazards	<ul style="list-style-type: none"> • Plan enabling mitigation measures in “existing developed areas” - could that preclude mitigation strategies /measures in areas that are essentially “undeveloped” possibly Māori land /kainga etc? • Impacts on papakainga provisions? Ensure doesn't create additional barriers for those. • Implications for Marine and Coastal Area (Takutai Moana) Act 2011 and customary marine title/protected customary rights • Impacts on 355 Takahiwai Road and Marae Committee land • Logistics of retreat when no land available except uphill into ONL/overlay • Support for protection of dunes, restoration and enhancement of natural defences • Stronger directive on climate change impacts on infrastructure • Effects of hard protection structures. Include effects on cultural values/cultural landscape values. • Require avoidance rather than mitigation of adverse effects from coastal hazards to people, property and the environment • Stronger policy direction on consideration of long-term effects of climate change on greenfield subdivision, land use change and major infrastructure projects. • The extent to which hazardous substances will be exposed to a coastal hazard risk is an issue in their rohe. • Add consultation/engagement with tangata whenua as Information Requirements under CH-REQ1 and for the other plan changes where relevant
Land instability	<ul style="list-style-type: none"> • Likely that Māori land (marginal, steep, erodible soils) will be disproportionately affected by these provisions. How can we create less barriers for whanau trying to occupy, build on their own whenua (what remains)?
Flooding	<ul style="list-style-type: none"> • Vulnerability - Recognise that there are some new land uses and development that are resilient to the adverse effects of flooding events and can be carried out in Flood Hazard Areas. Could we get some information on what these new land-uses and developments are? • Add effects on cultural values/cultural landscapes as a matter of discretion in the provisions relating to new Infrastructure.

Overarching natural hazards provisions	<ul style="list-style-type: none"> • Need stronger policy direction for considering the effects of climate change • The Tsunami hazard policy reads like we are encouraging subdivisions in tsunami risk zones. If WDC are to allow them, these matters should be a requirement, not only encouraged.
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185. Feedback was also received from Te Parawhau Hapu c/o Georgina Olsen – Landform Consulting. This feedback stated that Te Parawhau Hapu have an interest in all matters relevant to the plan change package.

Specific matters of concern to the hapu, include, but are not limited to:

- Alienation of land
- Loss of kāinga
- Protection of wahi tapu and taonga
- Widespread environmental degradation
- Exercise of Tino Rangatiratanga

186. The feedback requested that the hapu is fully appraised of the plan change process and that adequate timing and information is requested to enable the hapu to provide an appropriate response. This will include engagement with the wider whanau and hapu.

187. Te Parawhau hapū requested that the opportunity is made available to work together to prepare and review the plan change package as the process progresses. A further meeting was held on 5 April 2023 with Georgina Olsen, Matua Pari Walker and Mira Norris of Te Parawhau hapū to discuss the draft plan change. Comments were raised around the following themes:

- Acknowledgement of tikanga guidance in relation to development in hazard areas.
- Continuity of organisational knowledge at Council in relation to liquefaction and acid sulphate soils if these are not managed directly in the district plan.
- Role of wetlands in mitigating impacts of flooding.
- Time commitment and shortage of resources to provide written submissions on plan changes. It was noted the hapū prefers to frontload engagement and collaboration to the pre-notification stage of plan development.

188. A response to this feedback is provided in section 4.6 of this report.

4. Proposed Plan Change 1 Provisions

4.1. Proposed management approach

189. This section provides a summary of the proposed management approach for natural hazards. Plan controls are focussed on areas of higher hazard risk, being those areas that are known to be, or are assessed as being highly likely to be, subject to river flooding, coastal erosion and flooding, land instability and mine subsidence hazards. These are identified through mapping and/or physical criteria.

190. Some hazards, such as acid sulphate soils, liquefaction and wildfire are excluded from the plan change as they managed through alternative mechanisms outside the district plan, including through the building consent process.

191. The proposed provisions relating to natural hazards seek to:

- Appropriately assess and manage natural hazard risk and impacts on people, property, infrastructure and the environment.
- Take a pre-cautionary approach when the potential adverse impact of the natural hazard risk on people, property and/or the environment is high.
- Consider the potential effects of climate change on managing subdivision, land use and development.
- Introduce maps which identify areas at risk from coastal flooding, coastal erosion, river flooding, and updated the mining subsidence maps

- Identify areas susceptible to land instability through statutory maps and requirements for site-specific investigation prior to subdivision and new development.

192. This will be achieved primarily through land use and subdivision rules which require specific performance standards to be met or alternatively require assessment through a resource consent process of the hazard risk specific to the site and the impact that risk may have on the proposed activity or land use.

This aims to ensure that the risks posed by natural hazards are adequately mitigated. This approach reflects that natural hazard issues, risks and mitigation will generally be site-specific to subdivisions and land use activities.

193. The proposed provisions seek to enhance, strengthen and extend the provisions in the WDP, consistent with more recent higher-order statutory direction.

194. The following five Natural Hazards were identified and are the focus of the PC1:

- Flooding
- Coastal Flooding
- Coastal Erosion
- Land Instability
- Mining Subsidence

195. It is acknowledged other natural hazards may be present, and would fall under the general objectives and policies of PC1, although not managed by specific rules. It has been identified that specific methods to manage some hazards, such as tsunami and earthquake are more appropriately delivered through civil defence procedures, although tsunami evacuation routes are considered in PC1 at a policy level. No rules for acid sulphate soils and liquefaction are proposed as it is considered the hazards can be adequately managed through the building consent process and WDC's Engineering Standards. The resource consent process through s106 RMA and the post-approval process through s244 RMA also provide mechanisms to assess natural hazards, including acid sulphate soils.

4.1.1 Key changes from operative district plan.

196. The WDP represents an effects-based approach to natural hazards. Objective 19.3.1 requires that the adverse effects of natural hazards on people, property and the environment are avoided, as far as practicable, or otherwise remedied or mitigated. Policies discuss adverse effects, impacts on health and safety, property and infrastructure, protection of buildings from the effects of sea level rise. While there is indirect inference of risk in policy 19.4.5 Coastal Hazards, overall the approach in WDP is outdated and does not provide for or give effect to higher order planning instruments that now require a risk-based approach and a consideration of the potential long term effects of climate change.

197. The proposed PC1 is conceptually based on the following approach:

- a dual risk-based approach to natural hazards, with avoidance of inappropriate new development and risk management for existing development.
- an activity-based approach with control of location of vulnerable activities and specific performance standards for other land-use activities.

198. The main changes in the management approach between the WDP and PC1 are related to introduction of more hazard specific rules and policies, requirements for risk identification and assessment, and implementation of updated and higher detailed maps.

199. While the current WDP provisions do not differentiate between coastal erosion and coastal flooding hazards and do not manage land instability, PC1 introduces specific rules for these hazards. The proposed provisions recognise differing vulnerability of activities and the consequences of natural hazards on those (and other) activities. Activities that are more vulnerable to some natural hazard risks have been identified and more stringent provisions have been applied to these activities. New provisions are proposed relating to infrastructure located in natural hazard areas.

200. PC1 offers greater recognition of increase in risk as a result of climate change and the need to plan for the long term. Accordingly, a precautionary approach is adopted in locations where natural hazards pose a high risk to people, property and the environment. In contrast to the WDP, risk assessments (including considering the long-term horizon and impact of climate change) are required by PC1 at subdivision stage to ensure that new sites and developments do not occur on land where the risk of impacts from natural hazards is high.
201. PC1 incorporates the regional flooding, coastal erosion and coastal flooding maps as required by NRPS.
- Flood hazard areas (first released by NRC in November 2021 and updated in March 2023) have been incorporated and both subdivision and land use provisions have been included to manage risk in the 1 in 100 year flood hazard area and in the 1 in 10 year flood hazard area. This reflects the significance of flood hazards in the District and the direction provided by the RPS;
 - Updated mapping of coastal hazards areas using the NRC's April 2021 maps, including the 50 year and 100 year medium projection coastal erosion and coastal flood hazard zones and referencing the mapped coastal flood and erosion hazards zone 3, which represents a scenario over a 100 year time frame with high projection sea level rise.
202. Mining subsidence maps are part of the WDP and will see only a minor update in a limited area. Due to the timing of when the operative Natural Hazards chapter was first notified in 2002, the 2001 Hikurangi mapping was not able to be included at the time. No further investigations have been carried out for Hikurangi, therefore the 2001 mapping remains the most relevant.
203. Land instability maps currently sit outside WDP, however they are already used for decision-making on building consents. The maps are provided to the public through the Land Information Memorandums. PC1 proposes to incorporate these maps into the District Plan to better manage land instability through RMA controls.

4.2 Northland Regional Policy Statement Direction

204. As described above (Section 2.3.1 and Appendix 2), the RPS is directive in how activities in some areas subject to natural hazards should be managed at the District Plan level. The management approach of the PC1 reflects the direction provided in the RPS, reflecting the RMA's mandatory requirement to give effect to this higher-order policy document (section 75(3)).
205. It is noted that the RPS, which became operative in 2016, was subject to the standard plan making process prescribed by Schedule 1 of the RMA (public consultation, submissions, hearing etc) and supporting evaluation reports (s32 and s42A). Where the policy direction in the management approach is the same as that in the RPS, this is considered the most appropriate way of achieving the purpose of the Act and the most efficient and effective policy approach.

4.3 Consent activity status and thresholds

206. Applying appropriate activity status for particular activities has been used in PC1 to manage hazard risk. This has been achieved, by ensuring an appropriate level of assessment is undertaken before allowing particular activities while at the same time providing for development to occur where effects have been adequately mitigated.
207. The activity status has been informed by an internal WDC Hazard risk matrix that was developed having regard to higher level planning documents and national direction and guidance. This matrix combines the vulnerability of the activity with the hazard severity, with an increasing activity status (as the vulnerability of the activity and the potential severity of the hazard increases). The activity status proposed is outlined in Table 10. It should be noted that this is a generalised table and that some hazard rules depart from this generalised approach due to hazard-specific reasons. Generally, high risk is considered to include the 10 year flood hazard area, Mining Subsidence Area 1, Coastal Erosion Hazard Area 0, Coastal Erosion Hazard Area 1, Coastal Flooding Hazard Area 0 and Coastal Flooding Hazard Area 1.

Table 10: Hazard Risk Matrix

	Hazard Severity		
	High	Medium	Low
Vulnerable Activities			
Potentially Vulnerable Activities e.g subdivision			
Less Vulnerable Activities e.g. non-habitable buildings used for farming activities			

Colour	Activity
	Permitted
	Controlled
	Restricted Discretionary
	Discretionary
	Non-Complying

208. The proposed objectives, policies and rules seek to ensure the following outcomes are achieved:
- Allowing less vulnerable activities such as small scale/lower risk activities to be undertaken as permitted activities within identified natural hazard areas (provided performance standards are met) – with a larger scale of ancillary buildings allowed as a permitted activity in rural areas as the risks of natural hazards are more likely to be internalised on large rural properties;
 - Discourage development for vulnerable activities in the Medium Hazard Area and potential vulnerable activities in the High Hazard Area. Requirements for resource consents, usually as a restricted activity where specified performance standards are met, to reflect that in areas affected by hazard the issues, risks and mitigation are best assessed at a site level. A restricted discretionary activity allows this assessment to be undertaken and relevant conditions imposed to ensure hazard risks are appropriately managed and mitigated;

- More stringent consent activity status (and hence assessment) within identified hazard areas where risks (likelihood, consequence or both) are greatest or specified performance standards are not met;
- More stringent consent activity status (and policies) for activities that are more vulnerable to the effects of natural hazards to ensure effect mitigation to protect these vulnerable activities; and
- Stringent regime for subdivision in hazard areas, in recognition that a key measure to avoid increasing hazard risks is to minimise enabling new development (particularly residential activities) in areas where the activity or occupants are at risk of natural hazards. This is consistent with a precautionary approach and requires a demonstration that hazard risks have been appropriately assessed and mitigated in accordance with the objectives and policies of the PDP.

4.4 Spatial Tools

209. PC1 incorporates mapping of the five main hazards for the district into the District Plan: river flooding, coastal flooding, coastal erosion, land instability, and mining subsidence.
210. In accordance with 7.1.7 of the NRPS, the flood and coastal hazard maps are incorporated into the district plan. A small degree of technical simplification is proposed to the coastal erosion maps to align with the proposed rules, this is further explained in section 4.4.2
211. All flood and coastal hazard mapping have been undertaken by the NRC and reference should be made to the technical reports on the NRC’s website that support that mapping. The NRC April 2021 coastal hazard maps and the November 2021 (updated March 2023) flooding hazard maps reflect the most up to date information on coastal and flooding hazard risk available to date. As NRPS section 7.1.7 directs the inclusion of the flood and coastal hazard maps, WDC does not have the ability to make change to those maps.
212. District-wide mapping of land instability was commissioned by WDC. This work builds on the earlier land instability mapping in the district, and incorporates new landslide data and refined methodology. The technical report was completed in 2020 and the maps released in 2022. Currently the non-statutory land instability maps are available to the public as an information layer outside the district plan.
213. The following sub-sections provide information on mapping for each of the five main hazard types.

4.4.1 Flood Mapping

214. The Flood maps were developed by NRC using computer models which take into consideration historic flood levels, topography, rainfall and river flows to provide an indication of areas potentially exposed flood risk. The flood data shows the likely extent of river flooding during a 10-year and 100-year Average Return Interval (ARI) flood event. A 10-year flood area has a 10% chance of flooding annually (10% Annual Exceedance Probability (AEP), whilst the more extensive 100-year flood area has a 1% chance of flooding annually (1% AEP).
215. The area affected by the NRC flood mapping and implications on the Whangarei District are outlined in Table 11 below with a comparison to the operative flood susceptible mapping.

Table 11: Areas affected by NRC flood mapping

Flood Hazard	Number of land parcels within or containing flood hazard	Number of land parcels where flood hazard covers more than 90% of land area	Number of land parcels where flood hazard covers less than 10% of land area
NRC nationwide 10 year	11,106	1,116	5,213
NRC nationwide 50 year	15,940	2,189	6,878
NRC nationwide 100 year	17,504	3,563	6,550
Operative District Plan	11,961	4,070	2,946

4.4.2 Coastal Hazards

216. The NRC coastal hazard mapping differentiates between two types of coastal hazard – coastal erosion and coastal flooding. The maps show land already subject to coastal erosion and coastal flooding (CEHA0 and CFHA0). The maps show land that will be at risk from coastal erosion over the next 50 years with a projected sea level rise of 0.6m by 2080 (CEHA1) and land that will be at risk from coastal erosion over the next 100 years with a projected medium sea level rise of 1.2m by 2130 (CEHA2) and with a high projection sea-level rise of 1.5m by 2130 (CEHA3). The maps show land at risk from coastal flooding in a 1-in-50-year storm event (CFHA1), with a projected sea-level rise of 0.6m by 2080 (50 year sea level rise projection) and land at risk of coastal flooding in a 1-in-100-year storm event with a projected medium sea-level rise of 1.2m by 2130 (CFHA2) and with a high projection sea-level rise of 1.5m by 2130 (CFHA3).

217. A small degree of simplification is made to the coastal erosion maps to align with the proposed rules. Specifically, notation of “uncertain” coastal erosion lines, as shown in the NRC coastal erosion maps, is removed and a solid line is used instead. This is considered the most efficient solution and in line with the precautionary approach as the maps in the district plan are intended to serve as a trigger for the rule framework. As the proposed provisions will require site specific assessments, such assessments will remove uncertainty in relation to any particular site in question.

A high projection sea level rise (more rapid sea level rise of 1.5m by 2130) for both coastal erosion and coastal flooding areas has been mapped in the district plan in accordance with the Northland Regional Council’s April 2021 maps. However, PC1 does not include coastal hazards rules for land affected by the 100-year high projection sea-level rise due to the uncertainty of whether or when that high projection sea level rise will occur. Instead those high projection sea level rise mapped areas provide a useful contribution to an understanding of the potential long-term effects of climate change within the Whangārei District that may impact on resource consent applications in coastal hazard areas. As the science of climate change and sea level rise projections is a constantly changing area, the NRC’s maps for coastal hazards may change in the future which would lead to the updating of the district plan coastal hazard maps through a plan change process.

218. Subdivision and development implications of coastal hazard mapping on the Whangarei District are outlined in Tables 12 and 13. These figures exclude land parcels of schools, hydro²⁰, road, railway, common marine and coastal area, streambed parcels as such parcels are not considered to represent subdivision capacity.

Table 12: Subdivision and development implications of coastal erosion hazards

	CEHA 0	CEHA 1	CEHA 2	Total
Number of land parcels where hazard is >50% of parcel	4	92	282	378
Number of land parcels where hazard is >90% of parcel	1	28	48	77
Number of land parcels where hazard is <10% of parcel	24	306	247	499
Total number of land parcels within hazard	39	664	968	1,023

Assumptions:

- Excludes schools
- Excludes Hydro, Road, Railway, Common Marine and Coastal Area, Streambed parcels.

²⁰ LINZ defines “hydro” parcels as a primary parcel defining the residual or balance portion of the bed of a lake, river, stream or the sea. Includes land that has already become part of the common marine and coastal area pursuant to the Marine & Coastal Area Act 2011. Land that will become common marine and coastal area on subdivision pursuant to Sec 237A (1)(b) RM Act must have the parcel intent “Common Marine and Coastal Area (Sec 237A(1)(b) RM Act)”. Source: <https://www.linz.govt.nz/guidance/survey/cadastral-survey-guidelines/parcel-intent-usage#c-0-s-14>

Table 13: Subdivision and development implications of coastal flood hazards

	CEHA 0	CEHA 1	CEHA 2	Total
Number of land parcels where hazard is >50% of parcel	813	1579	2,968	2,968
Number of land parcels where hazard is >90% of parcel	409	956	2,062	2,062
Number of land parcels where hazard is <10% of parcel	2,006	1,930	1,750	3,243
Total number of land parcels within hazard	3,915	4,975	6,266	6,273

Assumptions:

- Excludes schools
- Excludes Hydro, Road, Railway, Common Marine and Coastal Area, Streambed parcels.

4.4.3 Land instability

219. The following land instability assessments have been completed within the District:

- Beetham, D., Kerr, J., McSaveney, M., Perrin, N., Rosenberg, M., Smith, W. (2003) A review of natural hazards information for Whangarei District. Wellington: National Institute of Water & Atmospheric Research Ltd.
- Beetham, R.D., McSaveney, M., Dellow, G., Rosenberg, M., Johnston, D., Smith, W. (2004). A review of Natural Hazards Information for Northland Region. Wellington: Institute of Geological and Nuclear Sciences.
- Tonkin + Taylor Ltd (2005): Coastal Structure Plan Slope instability hazard potential and effluent disposal potential Oakura to Langs Beach.
- Tonkin + Taylor Ltd (2006): Land Zonation Mapping Stability hazard mapping/geotechnical assessment level and effluent disposal potential for Kamo, Maunu, Onerahi, Otaika and Tikipunga.
- Tonkin + Taylor Ltd (2007): Land Zonation Mapping Geotechnical assessment level/stability hazard mapping for East and West Kensington, Morningside and the Port.
- Tonkin + Taylor Ltd (2008): Land Zonation Mapping Geotechnical assessment level/stability hazard mapping for Hikurangi, Mid Kensington, Whangarei City Centre, East Kamo & Portland.
- Tonkin + Taylor Ltd (2020): Landslide Susceptibility Assessment for Whangarei District Council.

220. The early Tonkin and Taylor reports above provided a series of assessments for the main residential and business areas within the District but did not include rural areas of the District beyond the fringes. The latest 2020 report updated the mapping to provide a district-wide assessment. The reports and associated modelling distinguish areas of low, moderate and high susceptibility to landslides/ land instability.

221. Areas that are susceptible to land instability hazards (at low, moderate or high levels) are mapped within WDC's internal Geographical Information System (**GIS**) mapping system. These maps are informational in nature and do not form part of the WDP. Likewise, WDC Engineering Standards refer to low, medium and high stability hazards with reference to the GIS maps. However, as the proposed PC1 provisions do not introduce specific rules in relation to areas of low susceptibility to instability hazards, these areas are not notated on the proposed maps to be incorporated into the district plan. Accordingly, the maps to be included in WDP will notate only areas of moderate and high susceptibility to land instability hazards. Nevertheless, the maps are derived from the same mapping model as the aforementioned Tonkin + Taylor reports.

222. The latest 2022 figures in Table 14 identify 181,401.85 hectares of land (across 32,454 different parcels) as land with high or moderate susceptibility to land instability.

Table 14: Extent of land and parcels affected by land instability

Where instability hazard is greater than 50% of parcel			
	High Instability	Moderate Instability	Total
Number of land parcels	11,984	8,902	20,866
Area of instability hazard within parcel (ha)	86,983.18	33,045.50	120,028.68
Total parcel Area (ha)	103,410.93	54,223.31	157,634.24

Assumptions:

- *Instability area is greater than 50% of land parcel area*
- *Excludes schools*
- *Excludes Hydro, Road, Railway, Common Marine and Coastal Area, Streambed parcels.*

All land parcels where land instability hazards is present			
	High Instability	Moderate Instability	Total
Number of land parcels	23,301	25,871	32,454
Area of instability hazard within parcel (ha)	114,071.55	67,330.30	181,401.85
Total parcel Area (ha)	232,978.63	240,858.88	473,837.51

Assumptions:

- *Excludes schools*
- *Excludes Hydro, Road, Railway, Common Marine and Coastal Area, Streambed parcels.*

4.4.4 Mining Subsidence

223. In 1981 WDC commissioned assessments of the mine subsidence hazards to address the associated risks. The resulting reports and investigations identified and mapped the extent of the underground mines.

224. As a result of the initial reports and subsequent reviews²¹, the mining hazard areas have been spatially mapped. The areas have been divided into the following three categories based on low, medium and high levels of risk of subsidence hazards:

- **Mining Hazard Area 1** (higher risk): indicates the area where there is a possibility of crown-holing and major subsidence due to there being less than 10.t cover ('t' being seam thickness).
- **Mining Hazard Area 2** (moderate risk): indicates:
 - a) Areas where there is up to 100 metres of cover and "medium" subsidence is possible; and
 - b) Areas where there has been 2 seam pillaring and greater than 100 metres of cover exists.

²¹ Subsequent reviews include:

Tonkin & Taylor, 1999. *Kamo Mine Subsidence Review*. Report to Whangarei District Council dated October 1999.

Tonkin & Taylor, 2001. *Mine Subsidence Hazard Hikurangi Area, Whangarei*. Report to Whangarei District Council dated January 2001.

Tonkin & Taylor, 2005a. *Mine Subsidence Hazard, Kamo Area, Whangarei*. Report to Whangarei District Council dated March 2005.

Tonkin & Taylor, 2005b. *Review and Usage of Mine Subsidence Hazard Zones for Kamo and Hikurangi*. Addendum to T&T (2005a). Letter report to Whangarei District Council dated 5 December 2005.

- **Mining Hazard Area 3** (lower risk): indicates areas where there is greater than 100 metres of cover. Although this is a lower risk zone, it is possible for buildings to be affected by mining.

225. As part of Plan Change 120 (PC120) to the 2007 WDP: Kamo Walkability Environment, a review was undertaken to assess the current management of mining hazards in the WDP and the operative mapping of mining hazard areas within Kamo. A summary of the key findings was provided in an updated 2013 Tonkin and Taylor report²²:

- It was considered appropriate to continue to manage mining hazards within the WDP because there is a long history of mining-related subsidence and the hazard can be expected to continue into the foreseeable future.
- The mapped mining hazard areas in Kamo were considered appropriate because they were based on an extensive and robust assessment.
- The cautious, risk-assessment based approach taken in the WDP was considered appropriate at the time. In addition, it was noted that development would need to be assessed on a case by case basis because there was no uniform building design or foundation loading that could be applied within mining hazard areas.
- There is no information, qualitative or quantitative, which indicates that the mapping for Kamo is inaccurate.

226. The mapping in Hikurangi was based on the same methodology; however, a review of the Hikurangi mapping was undertaken by Tonkin and Taylor in 2001²³ and recommended minor amendments to the WDP mapping. The 2001 Hikurangi review is the basis for the updated map proposed for PC1.

227. Most of the land within the mining hazard areas has been urbanised and there is limited capacity for further green-field development. Indicative analysis estimates current plan-enabled subdivision potential in mining hazard area 1 at approximately 340 new land parcels (this estimate does not include physical limitations such as topography and provides no allowance for ancillary services). With introduction of more stringent controls on subdivision in mining hazard area 1 the subdivision potential could be reduced to about 96 new parcels.

228. Based on desk-top analysis, of the 1,855 properties where mine hazard is greater than 50% of parcel, approximately 453 are vacant sites and have plan-enabled capacity²⁴ to construct a residential unit based on the underlying zoning without the proposed mining hazard provisions applying. Only 38 vacant parcels have been identified where more than 50% of the area of the parcel is affected by a Mining Subsidence Area 1. The effects of the proposed stricter controls on development must be considered in the context of well-established community awareness of mining subsidence risk in Kamo and Hikurangi and historically lower development demand in these areas.. Details of this analysis are provided in Table 15.

²² Tonkin + Taylor Ltd (2013): Mine Subsidence Hazard Kamo Area, Whangarei.

²³ Tonkin + Taylor Ltd (2001): Mine Subsidence Hazard Hikurangi Area, Whangarei.

²⁴ "Plan-enabled" has the same meaning as in the National Policy Statement on Urban Development 2020.

Table 15: Analysis of vacant parcels in Mining Subsidence Hazard Areas

Table 13a: Where mine hazard is greater than 50% of parcel				
	Mining Subsidence Hazard Area 1	Mining Subsidence Hazard Area 2	Mining Subsidence Hazard Area 3	Total
Number of land parcels	148	740	967	1,855
Number of vacant land parcels	38	142	273	453
Area of mine hazard within parcel (ha)	86.49	90.19	242.76	419.44
Total parcel Area (ha)	100.49	98.00	287.82	486.31

Assumptions:

- Mine area is greater than 50% of land parcel area
- Excludes schools
- Vacant site includes vacant land and sites with buildings that are less than 60m² ie shed.
- Excludes Hydro, Road, Railway, Common Marine and Coastal Area, Streambed parcels.

Table 13b: Includes all land parcels				
	Mining Subsidence Hazard Area 1	Mining Subsidence Hazard Area 2	Mining Subsidence Hazard Area 3	Total
Number of land parcels	208	924	1,133	2,265
Number of vacant land parcels	78	238	372	688
Area of mine hazard within parcel (ha)	102.12	129.20	280.66	511.98
Total parcel Area (ha)	238.41	319.69	941.73	1,499.83

Assumptions:

- Excludes schools.
- Vacant site includes vacant land and sites with buildings that are less than 60m² ie shed.
- Excludes Hydro, Road, Railway, Common Marine and Coastal Area, Streambed parcels.

4.5 Summary of proposed objectives and provisions

229. This section provides a summary of the proposed objectives, policies and rules and other matters proposed by Plan Change 1.

4.5.1 Summary of objectives

230. Six objectives are proposed in Natural Hazards chapter. These seek:

- To ensure natural hazard risk is appropriately managed and assessed.
- To avoid inappropriate new development, particularly vulnerable activities, in areas subject to natural hazard risk.
- Build resilience to natural hazards in existing developed areas.
- To appropriately manage the development of infrastructure in natural hazard areas, where it is necessary to be located in the hazard area.
- To recognise the importance of natural systems and features which act as natural defence to natural hazards; and that priority will be given to the use of non-structural and existing

measures over the use / construction of new hard protection structures when managing hazard risk.

- To ensure that effects of climate change are taken in to account when managing subdivision and land use.

231. There are also amendment to subdivision, earthworks chapter to align with direction and wording of the plan change

4.5.2 Summary of policies

232. For the purposes of section 32 evaluations, 'provisions' are the "policies, rules, or other methods that implement, or give effect to, the objectives of the proposed plan or change". Policies have been drafted to give effect to these objectives and provide specific guidance as to how the objectives are to be achieved. These have been grouped into:

General policies relate to the following:

- The identification of natural hazards, including mapping and defining natural hazard areas;
- Managing subdivision and land use activities within natural hazard areas;
- Taking a precautionary approach to manage natural hazard risk for new subdivision and development; while relying on pragmatic risk management in existing developed areas.
- Enabling maintenance and operation of existing infrastructure in hazard areas and new infrastructure where it has a functional/ operational requirement to be located in a hazard area.

Hazard-specific policies are included which guide how the risks associated with the following hazards will be managed:

- Flood hazards;
- Coastal hazards (erosion and flooding)
 - Managing hard and natural protection structures in relation to coastal hazards
 - Requiring building floor levels to be above defined coastal flood events
- Areas susceptible to land instability;
- Mining Subsidence

233. Some policies explicitly give effect to the directive policies of the RPS, including requirements for building platforms and freeboard.

4.5.3 Summary of rules

234. The Natural Hazard rules incorporate:

- General permitted activities that apply to all hazard areas;
- General rules for infrastructure in hazard areas
- Hazard specific land use and subdivision rules that apply in the mapped hazard areas (flooding, coastal hazards, land instability and mining subsidence). Note that due to the NP Standards direction rules relating to coastal hazards (including the general natural hazard rules) are located within the Coastal Environment chapter, and the rules related to earthworks in the earthworks chapter.

235. In general, the rules:

- Allow the continued use and minor upgrading of existing buildings/ structures/ infrastructure in hazard areas.
- Differentiate between buildings and other structures and infrastructure, reflecting the different nature and susceptibility of these activities to risks from natural hazards; i.e provide for non-habitable farm buildings, artificial crop protection structures.
- Require resource consents for activities within identified hazard areas (above permitted activity thresholds).
- Have more stringent consent activity status in higher risk hazard areas (for example the 1 in 10 year flood hazard area and the 50 year coastal erosion and coastal flood hazard areas), reflecting the greater risk of hazards in these areas;
- Have more stringent consent activity status for more vulnerable activities, including changes in land use to more vulnerable activities, reflecting that such activities are more susceptible, and less resilient, to the effects of natural hazards;
- Have more stringent consent activity status for subdivision in hazard areas, to carefully manage the creation of new lots in areas affected by natural hazards;

- Provide for activities in flood hazard areas as restricted discretionary if the building/structure or new lots are located outside the hazard area and risks are adequately mitigated; and
- Adopt performance standards for development in flood and coastal hazard areas as directed by the RPS, utilising the most up to date information that is available.

4.5.4 New definitions

236. The PC1 proposes a number of new definitions which are outlined in Table 16 below:

Table 16: New definitions

Term	Definition
Vulnerable Activity	means residential activities, care facilities (including day care centres), retirement villages, visitor accommodation, marae and medical facilities with overnight stay facilities.
Hard Protection Structure	means a seawall, rock revetment, groyne, breakwater, stop-bank, retaining wall or comparable structure that has the primary purpose of protecting an activity from a coastal hazard, including erosion.
Areas susceptible to land instability	<p>Area of High Susceptibility to Land Instability Hazards means land which appears to be either subject to erosion or slippage or is likely to be subject to erosion or slippage within the next 100 years, based on geomorphic evidence and/or the combination of geology and slope angle. These areas are identified in an overlay to the Planning Maps.</p> <p>Area of Moderate Susceptibility to Land Instability Hazards means land which exhibits evidence of past slippage or erosion and could be subject to inundation from landslide debris and slope deformation. These areas are identified in an overlay to the Planning Maps.</p>
Geotechnical Professional	A chartered professional engineer (CPEng) with a practice field in geotechnical engineering or an engineering geologist (PEngGeol), with recognised qualifications and experience in geotechnical engineering, and land development.
Suitably Qualified and Experienced Person	A professional who is working within their level of competency and whose level of competency and qualifications corresponds with the scale and type of the project and the overall risk.
Instability Hazard Mitigation Works	means engineering works to prevent and control existing land instability hazards and includes the building of rockfall protection structures, the mechanical fixing of rocks in-situ, the re-contouring of slopes and/or land and any necessary on-site geotechnical investigations required as part of the works. Retaining walls, other structures and re-contouring that are associated with a proposed development and are not required to mitigate an existing instability hazard are excluded from this definition.
Non-habitable	means structures that are not designed or used for human occupancy. Examples of such structures include garden sheds, bulk storage silos, water tanks, plant rooms and electricity substations.
Coastal Hazard Areas	means an area that is, or likely to be, subject to the effect of coastal erosion or coastal flooding hazards.
Coastal Erosion Hazard Area 0	means areas currently susceptible to coastal erosion following the failure of an erosion protection structure, with no allowance for sea level rise, this area is only mapped where erosion protection structures are in place.

Term	Definition
Coastal Erosion Hazard Area 1	means areas likely at risk of coastal erosion over the next 50 years, with a projected sea-level rise of 0.6m by 2080.
Coastal Erosion Hazard Area 2	means areas potentially at risk of coastal erosion over the next 100 years, with a projected medium sea-level rise of 1.2m by 2130
Coastal Erosion Hazard Area 3	means areas potentially at risk of coastal erosion over the next 100 years, with a projected high sea-level rise of 1.5m by 2130
Coastal Flooding Hazard Area 0	means areas currently susceptible to coastal flooding in a 1-in-100-year storm event with no allowance for sea level rise.
Coastal Flooding Hazard Area 1	means areas susceptible to coastal flooding in a 1-in-50-year storm event, with a projected sea-level rise of 0.6m by 2080.
Coastal Flooding Hazard Area 2	means areas susceptible to coastal flooding in a 1-in-100-year storm event, with a projected medium sea-level rise of 1.2m by 2130.
Coastal Flood Hazard Area 3	means areas susceptible to coastal flooding in a 1-in-100-year storm event, with a projected high sea-level rise of 1.5m by 2130.
Hard Protection Structure	means a seawall, rock revetment, groyne, breakwater, stop-bank, retaining wall or comparable structure that has the primary purpose of protecting an activity from a coastal hazard, including erosion.
Functional need: *	means the need for a proposal or activity to traverse, locate or operate in a particular environment because the activity can only occur in that environment.
Flood Hazard Area	means areas of river flooding mapped by the Northland Regional Council and included in the District Plan maps as follows: <ul style="list-style-type: none"> • 1 in 10 Year River Flood Hazard Area – the area potentially susceptible to river flooding in a 10% Annual Exceedance Probability (AEP) / 10Yr Average Return Interval (ARI) storm event. • 1 in 100 Year River Flood Hazard Area – the area potentially susceptible to river flooding in a 1% AEP / 100Yr ARI storm event plus climate change.
Operational need: *	means the need for a proposal or activity to traverse, locate or operate in a particular environment because of technical, logistical or operational characteristics or constraints.

* Refers to National Planning Standards definition.

4.5.5 New information requirements rules

237. In order to implement the proposed objectives and policies requiring risk assessment, the proposed Natural Hazards chapter sets out detailed information requirements rules for site specific hazard assessments for flooding, coastal, land instability and mining subsidence hazards.
238. The information requirements rules for coastal hazards will be included in the Coastal Environment Chapter. The proposed new rules in the Earthworks chapter refer to information requirements rules contained in the proposed new Natural Hazards chapter.

4.6 Responses to advice from iwi and hapu

239. The matters covered in iwi and hapu management plans relate more broadly to impacts of climate change and the protection and use of natural resources rather than specifically considering natural hazards. Council recognises escalation of natural hazards risk driven by climate change may have significant impacts on iwi and hapū. It is considered that PC1 addresses these concerns by including objectives and policies on climate change adaptation and by requiring that the effects of climate change are considered in the resource consenting process.

240. Specific natural hazards advice received through iwi/hapu feedback during the early engagement has been considered in further development of the plan change. These include:

a) Add effects on cultural values/cultural landscapes as a matter of discretion in the provisions relating to new Infrastructure and hard protection structures.

In response to the feedback, the proposed plan change now includes the following matter of discretion in the coastal hazard rule for new infrastructure (CH-R6): “impacts on landscape and cultural values, and on public access”.

New hard protection structures are proposed to require a Discretionary Activity consent.

Consideration of a discretionary activity resource consent requires consideration of the relevant objectives and policies and the proposed policies in the Natural Hazards chapter refer to the impact effects on cultural values.

b) Impacts on papakāinga provisions

Both the Papakāinga chapter and the proposed Natural Hazards chapter (PC1) are located in Part 2 of WDP and apply to district wide matters. In accordance with the RMA, council is required to recognise and provide for the management of significant risks from natural hazards. Likewise, the NRPS is directive in how activities in some areas subject to natural hazards should be managed at the District Plan level and requires a risk-based approach.

The Papakāinga provisions (PKA) of the WDP provide a permitted activity status for papakāinga developments on Māori Freehold Land. These enabling provisions relate to the activity status for papakāinga housing, as well as community, education facilities and recreational facilities, places of assembly, industrial activities, and commercial activities that are associated with the communal nature and function of the papakāinga. The focus of the PKA chapter is on reducing the need for land use resource consents for the aforementioned activities. It is recognised that in those cases where natural hazards impact Māori land the proposed provisions may impact on papakāinga. However, the focus of PC1 is not to stop development outright, instead it is intended to focus on directing development and vulnerable activities to locations outside of land subject to high-risk natural hazards. Not applying natural hazards provisions to Māori land would lead to increased risks of losses and damage to papakāinga developments from future natural hazards events. This would lead to increased vulnerability and worse social outcomes in the long term.

c) Exposure of hazardous substances to natural hazards

This feedback has been noted and the extent to which hazardous substances will be impacted by a natural hazard is retained as a matter of discretion and added to other provisions e.g. land instability.

d) Māori land disproportionately affected by land instability

GIS analysis identified the proportion of Maori Land among areas of high susceptibility to land instability is at 41.9%. This is comparable to that for general land at 43.2%. This reflects the wide-spread nature of land instability hazards across the District. Due to the unique geological profile of Northland and worsening climate-change induced rainfall trends (refer to section 7.5) PC1 requires geotechnical investigations and risk identification prior to subdivision and development. PC1 proposes a pragmatic approach to land instability hazards recognising that unlike more dynamic hazards such as flooding, mitigation measures for land instability can often be designed to allow for the development to proceed.

e) Impacts on ability to use and occupy whenua Māori

The RPS is very directive regarding activities within flood plains and areas affected by coastal hazards. WDC is required to give effect to the RPS. The proposed rules for land instability and mining subsidence all provide the ability to develop land if hazards can be mitigated. The rule framework does not introduce a Prohibited Activity status for subdivision and development within any of the of the mapped natural hazard areas. The rules only apply to new subdivision and development, and hence will only apply where additional or new development is proposed. The plan change does not propose to extinguish existing use rights in any of the natural hazard areas.

f) Refinement of the tsunami hazard policy

The feedback requested a clarification of the policy on tsunami risk areas in relation to ensuring adequate evacuation capability. The wording of the policy has been refined to provide more clarity.

g) Protection of wahi tapu and taonga

Many wahi tapu and taonga are located in areas close to waterways and the coast because of the spiritual and cultural connection mana whenua have to water. Where areas of wāhi tapu are located on coastal sand dunes, these areas are within the scope of PC1 due to the potential for coastal hazards in those areas. Where there are additional areas of wāhi tapu these can be identified and protected through a future plan change.

h) Tikanga guidance in relation to development in hazard areas.

While the draft plan change is based on western science and maps, it is essential to recognise that Māori tikanga and matauranga have long recognised the importance of the natural environment and the need to protect it. Coastal areas and historic pa sites are often seen as taonga, or treasures, that hold significant cultural and historical value for Māori. In addition, the risks associated with landslides in certain areas have been well understood by Māori communities for generations, for example knowledge of places that should not be cleared or grazed. Although there is a difference in the knowledge systems used to identify and articulate natural hazards, there is alignment in the underlying values which emphasize caution against development in areas exposed to natural hazard risk.

i) Liquefaction and acid sulphate soils

Council has adequate mechanisms to address liquefaction and acid sulphate soils even if these are not managed directly in the district plan. There are sufficient mechanisms through the building consent, and resource consent processes and through WDC Engineering Standards, as discussed in sections 3.1.5 and 3.1.6 of this report.

j) Role of wetlands in mitigating impacts of flooding

Wetlands hold significant cultural value for Māori as they are associated with wai, which is considered a taonga. In addition to their cultural importance, wetlands also play a crucial role in the management of natural hazards such as flooding by absorbing excess water during heavy rain events. Degradation of wetlands through land use change reduces their ability to store water and exacerbates the impacts of flooding. The protection of wetlands falls under the jurisdiction of both the regional council and the district council. The NRPS includes provisions for the protection of wetlands within Northland. The NRPS requires that wetlands are identified, protected, and managed in a way that ensures their long-term sustainability. Specifically, the NRPS requires that significant wetlands are identified and included in the council's planning documents and that they are managed in a way that maintains their ecological function and cultural values. The Ecosystems and Indigenous Biodiversity chapter of the WDP includes policies for the protection of indigenous vegetation and habitats of indigenous fauna, including indigenous wetlands.

k) Engagement with the wider whanau and hapū

On the 27th of January 2022 the district plan department met with Te Huinga²⁵ to provide them with information on the draft plan changes and sought input on any cultural matters that might relate to this plan change package before WDC released the draft to the public.

An overview of the plan change package, with a description of the intent of the plan changes was provided. A table of marae within the district and whether they were affected by the hazard mapping was also provided (see Table 16). At the meeting WDC sought feedback on the draft plan changes but also highlighted that the ability to influence certain aspects of the plan change was somewhat constrained due to the directives of higher order policy documents, such as the NRPS which require district councils to include the coastal hazard and flood hazard maps into the district plan.

The initial discussion was high level, with the main next step identified from the meeting to arrange further hui and a process for engagement with hapū where the plan changes could be discussed in greater detail.

A further meeting was held with Te Huinga on 13 December 2022. This meeting focused on discussing the written feedback received by council from hapu, and how the draft plan change has been changed in response to feedback.

l) High level matters

²⁵ Te Huinga is a group made up of the advocates of the hapū of Whāngarei. In 2012, Te Kārearea Strategic Partnership Forum was formed between Te Huinga and Whangārei District Council.

These include the feedback regarding the implications for the Marine and Coastal Area (Takutai Moana) Act 2011, **stronger** policy direction for considering the effects of climate change, mitigation measures for undeveloped Māori land, logistics of retreat and land availability, concerns of environmental degradation and loss of kāinga.

It is intended the high-level matters would be more appropriately addressed through the climate adaptation work led by the WDC Strategy Department. The specialised tools developed through that process closely with iwi/hapū can be more effectively used outside the district plan. Climate change work is led by the Northland Regional Council and direction is set in the NRPS. PC1 is consistent with the RPS, the NRP and NAP. The proposed plan change considered the priority actions in Te Tai Tokerau Climate Adaptation Strategy as discussed in section 2.3.5 of this report. It has been foreshadowed the forthcoming resource management reform (i.e. the intended Climate Change Adaptation Act) will address managed retreat mechanisms.

5. Approach to Evaluation

5.1 Introduction

241. In accordance with section 32 of the RMA, the Council is required to prepare an evaluation report considering the objectives and any other provisions proposed to be included within the district plan. The section 32 evaluation report provides the reasoning and rationale for the proposed provisions and should be read in conjunction with those provisions.
242. The evaluation is structured in two parts:
- To examine whether the objectives in the proposal are the most appropriate to achieve the purpose of the RMA.
 - To examine whether the provisions are the most appropriate way to achieve the objectives through identifying reasonably practicable options and assessing the efficiency and effectiveness of the provisions, including an assessment of environmental, economic, social and cultural benefits and costs

5.2 Evaluation of scale and significance

243. Section 32(1)(c) of the RMA requires that evaluation reports contain a level of detail that corresponds with the scale and significance of the environmental, economic, social and cultural effects that are anticipated from the implementation of this proposal. This step is important as it determines the level of detail required in the evaluation of objectives and provisions so that it is focused on key changes from the status quo. The scale and significance of the environmental, economic, social and cultural effects of the provisions in PC1 are evaluated in Table 17 below.

Table 17: Scale and significance

Criteria	Comment	Assessment
Raises any principles of the Treaty of Waitangi	<p>Principles that are of relevance to this plan change are partnership and participation. In developing the plan change consultation and engagement with iwi and hapū of the district has been undertaken, with direction on both the draft plan change and the pre engagement process being sought.</p> <p>The plan change does not seek to diminish Māori ability to exercise Tino Rangatiratanga over their lands but to ensure that people and property are protected.</p> <p>Although the proposed provision may place additional requirements on developments, the focus of this plan change is not to stop development outright, instead it is intended to focus on either directing development and vulnerable activities to locations outside of land subject to high-risk natural hazards or ensuring that development is designed in a way which mitigates the natural hazard risks.</p> <p>Iwi Management Plans of iwi within the district have also been considered in the preparation of the plan change to ensure that any matters that may impact or influence the content of the plan change were considered (refer to section 2.5.1).</p> <p>Managed retreat from areas impacted by climate change has a high scale of effect however this remains outside the scope of PC1 and is better suited to be addressed outside the district plan such as through adaptation planning by the Strategy Department, where bespoke solutions at community level is enabled.</p>	Low

Criteria	Comment	Assessment
Degree of change from the Operative Plan	<p>The current WDP includes provisions to manage natural hazard risk (coastal hazard, flooding, mining subsidence). However, these do not reflect the direction of higher order documents (RMA s6(h), NZCPS and Northland RPS) that have come into force since the current provisions were incorporated into the WDP.</p> <p>PC1 proposes to include new coastal hazard, flooding maps and updated mine subsidence maps. These will be accompanied by provisions which seek to address the varying level of risk associated with land use.</p> <p>PC1 also seeks to implement new provisions to manage land instability.</p>	Medium
Effects on matters of national importance	The provisions specifically seek to address a matter of national importance – section 6(h) the management of significant risks from natural hazards.	Medium
Scale of effects – geographically (local, district wide, regional, national)	<p>The natural hazard provisions will affect a significant number of properties and buildings in the district. However, the rules only apply to new subdivision and development, and hence will only apply where additional or new development is proposed.</p> <p>Section 4.4. provides estimates of the area of land and existing buildings contained within the mapped flood hazard and coastal erosion and inundation zones. However, the hazard maps are already being included on LIMs and used for building consents are therefore are not new to the public.</p>	Medium
Scale of people affected – current and future generations including number of people that will be affected	<p>District Plan regulations to manage risks from natural hazards impose additional costs on individuals and communities to carry out development by way of additional compliance and construction costs and may negatively impact development patterns, development opportunities and potentially land values. Conversely, as the natural hazard provisions manage risks they will provide for community safety, protection of economic activity and protection of buildings during hazard events, which results in cost savings over the longer term.</p> <p>If the risks of natural hazards are not identified and planned for, this is likely to limit options for, and increase costs to, future generations who will be left try to manage development in increasingly hazardous areas. This is particularly the case if the current generation continues to develop land (including constructing infrastructure) on land that is currently at high risk of being affect by natural hazards or if development occurs in areas that are not adaptable to future hazards as a result of sea level rise.</p>	High ²⁶
Scale of effects on those with a specific interest eg iwi/ hapū	GIS analysis shows 13% of Māori Land is affected by high-risk natural hazards (refer Table xx in section 5.2.1), compared to 9% of general land. This figure does not include general land owned by Māori landowners. Restrictions on development on land subject to high-risk natural hazards could impact the development of Māori land, including the potential for papakainga developments. Advice from iwi/hapu in relation to these matters is discussed in section 4.6 of this report.	Medium

²⁶ This factor is considered of high significance, with a scale which is more than local, but will not affect the entire district.)

Criteria	Comment	Assessment
	Infrastructure providers will be impacted by the proposed plan change where there is a functional need or operational need to locate infrastructure in areas that may be susceptible to natural hazards. Consideration of long-term effects of climate change and associated hazards on such infrastructure is needed to address the vulnerability of the affected communities.	
Degree of policy risk- does it involve effects that have been considered implicitly or explicitly by higher order documents? Does it involve effects addressed by other standards/commonly accepted best practice	<p>There is a clear direction in the RMA, NZCPS and RPS to manage natural hazard risk.</p> <p>A risk-based approach (qualitative) and precautionary approach is proposed which is consistent with best practice through New Zealand. The approach takes into account adopted estimates for Sea Level Rise, also consistent with best practice.</p> <p>The recently released National Adaptation Plan explicitly indicates that new and existing places should be planned and managed to avoid development in places that may be more exposed to climate hazards.</p>	Medium

244. In summary, the overall scale and significance of the plan change is evaluated as **medium**. The proposed provisions seek to address a matter of national importance under section 6(h) RMA – the management of significant risks from natural hazards and implement a risk-based approach to natural hazards in accordance with higher order policy requirements. The changes will affect current and future generations and entire communities as well as the interests of iwi/hapu. The spatial impact of the hazard maps will be extensive, as the map models cover the whole district. However, this is tempered by the fact that none of the proposed maps are new to the community, although some maps have been updated and refined. Council is already required by the legislation to include all of the hazard maps on the LIMs. The natural hazard maps are also used in decision making on subdivision consents and building consents. Furthermore, the Operative District Plan already includes rules to manage coastal erosion, river flooding and mining subsidence, which will be refined through the plan change to align them with higher order policy direction. Although the ODP does not currently have rules to manage the risks from land instability, this hazard is currently assessed as part of the subdivision consent process in accordance with s106 RMA.

5.2.1 Potential impacts on Māori

245. It has been highlighted in feedback received from iwi/hapū that Māori are disproportionately affected by natural hazards and climate change. This has been also identified through Te Tai Tokerau Climate Adaptation Strategy which finds coastal hazards in particular posing risks of damage and loss of sites of significance, loss of taonga and whakapapa to whenua, impacts on kaimoana gathering, as well as unequal impact of rules restricting development. Conversely, a risk-based approach to locating infrastructure and new subdivisions can provide the ability to protect land from increasing risk by requiring that subdivision, use and development are located so that hazard risk is not transferred to, or increased for other properties. This can be significant for protecting sites of significance and taonga from exacerbation of hazard risk.
246. Table 18 was provided to a Te Huinga meeting. The meeting indicated that prior to notification of the proposed plan change they would like a workshop to go through maps and how they affect whenua. The meeting also indicated that WDC Marae maps needed to be updated but this a project that sits outside the scope of this plan change.

Table 18: Marae affected by natural hazards

Marae	Land Instability	Flooding	Coastal Hazards	Mining Subsidence
Takahiwai	Low	NO	NO	NO
Toetoe	High	NO	NO	NO
Te Puna O Te Mataruanga Marae (Northland Polytechnic)	Low	10- and 100-year flood hazard area	NO	NO
Korokota	Low	NO	NO	NO
Maungārongo	Low	NO	NO	NO
Waimarie	Low	NO	NO	NO
Te Aroha	Low	Less than 10% of property	NO	NO
Te Tārai o Rāhiri	Half low, half high	NO	NO	NO
Te Oruoru	Low	NO	NO	NO
Parahaki	Low	NO	NO	NO
Tau Henare	Mostly low, some moderate	Land partially 100-year flood hazard area	NO	NO
Ngāraratunua	Low	NO	NO	NO
Terenga Parāoa	Low	Less than 10% covered by 100-year flood hazard	NO	NO
Te Kotahitanga Marae o Otangarei	Low	NO	NO	NO
Pehiaweri	Low	Partially affected 10 & 100 flood hazard area	NO	NO
Whakapara	Mostly low, small part high	Partially 10- & 100-year flood hazard area	NO	NO
Te Maruata	Low	NO	NO	NO
Taihuru Marae	Some low, some moderate	NO	NO	NO
Pātaua	Mostly low, some high	100-year flood hazard area	CFH1	NO
Ngunguru	Mostly low, some moderate	NO	NO	NO
Matapōuri	Low	NO	CFHA3	NO
Whananāki	Mostly low, some moderate	Partially 100-year flood hazard area	Partially CFHA2, CFHA3	NO
Mōkau	Low	Partially 100-year flood hazard area	NO	NO
Ōākura	Low and moderate	NO	NO	NO
Punaruku	Low and moderate	NO	NO	NO
Ōtetao Reti	Low	Small portion 10- & 100-year flood hazard area	NO	NO
Tuparehuia	Low	Small portion 100-year flood hazard area	Small portion of land CFHA1,2,3	NO

247. Table 19 shows the proportion of Maori land among areas at high risk from natural hazards. Land instability is the most widespread hazard in the district. GIS data shows 41.9% of Maori Land is within indicative areas of high susceptibility to land instability. This proportion is comparable to that for general land, of which 43.2% is potentially susceptible to land instability. Notably, the proportion of Māori land affected by higher-risk coastal flooding (CFA0 and CFA1) is 5.8% compared to only 1.8% of general land. Therefore, coastal hazards provisions may have greater impacts on Maori, including in relation to development opportunities in the affected areas, and potential effects on cultural and landscape values if hard protection structures occur.

Table 19: Area of Māori and General land affected by natural hazards

	Area of Māori Land* (ha)	Area of General Land (ha)	Proportion of Māori Land	Proportion of General Land
	within Hazard	within Hazard	within Hazard	within Hazard
High risk hazards				
CEHA0		3.45		0.001%
CEHA1	6.69	130.18	0.06%	0.05%
CFHA0	357.19	2,198.85	3.34%	0.71%
CFHA1	269.59	3,018.39	2.52%	1.06%
10yr Flood Hazard	779.55	21,749.88	7.29%	8.09%
Mining Subsidence Hazard Area 1	-	113.19	-	0.04%
Other hazards				
High Land Instability	4,480.63	116,496.81	41.89%	43.22%
Moderate Land Instability	2,704.36	69,423.34	25.28%	26.78%
CEHA2	11.62	156.25	0.11%	0.06%
CFHA2	461.12	18,788.82	4.31%	7.07%
Mine Subsidence Hazard Area 2	-	161.59	-	0.06%
Mine Subsidence Hazard Area 3	-	311.14	-	0.12%

* Māori Land is sourced from MLC Māori Land Blocks** Total land area: Māori Land = 10,697ha, General Land = 259,190ha (WDC mainland area minus Māori land area)

248. The impacts of PC1 on iwi/hapu interests relate to the proposed controls on development in high risk hazard areas and may include:
- Increased costs for some developments due to needing site specific geotechnical investigations and the potential costs of mitigation.
 - Opportunity costs due to reduced development potential.
 - Changes in amenity and infrastructure demand in hazard-free coastal areas due to development being pushed more landward.
 - Combined with other WDP rules (eg Outstanding Natural Landscapes) minimal land available for buildings.
249. However, despite the economic implications outlined above, it would be inappropriate not to manage the risk of natural hazards on Māori owned land. Escalating risk could have negative impacts such as marae and Papakāinga being damaged by flooding or landslides which leads to not only economic but also cultural and social well-being impacts. Compliance with a risk-avoidance approach for new development can reduce damage to buildings and associated costs in the future. The proposed plan change does not affect the ability for continued use of existing buildings and minor maintenance. It is also important to note PC1 does not propose controls on primary rural production activities in natural hazard areas. Accordingly, a permitted activity status is proposed for non-habitable farm buildings to recognise a lower level of social vulnerability associated with primary rural production.

6. Evaluation of Objectives

250. Section 32(1)(a) of the RMA requires that the evaluation report examine the extent to which the objectives of the proposal are the most appropriate way to achieve the purpose of the RMA.

6.1 Evaluation of Existing Objectives

251. Table 20 provides a discussion of the existing objectives in WDP to manage natural hazards. It considers whether the existing objectives achieve the purpose of the Act, and makes recommendations whether to retain or change the objectives.

Table 20: Appropriateness of existing objectives

Existing Objectives	Appropriateness to achieve purpose of the Act
<p>Objective 19.3.1</p> <p>The adverse effects of natural hazards on people, property and the environment are avoided, as far as practicable, or otherwise remedied or mitigated</p>	<p>While management of the adverse effects of natural hazards is still relevant, this objective lacks reference to risk. Councils are now obligated to recognize and provide for the management of the significant risks of natural hazards under s6(h) of the RMA. The proposed objectives will adopt a risk-based approach. This objective needs to be replaced with a risk-based objective.</p>
<p>Objective 19.3.2</p> <p>Existing natural buffers against natural hazard effects are protected, maintained and enhanced.</p>	<p>The intent the objective is still appropriate. This objective will be incorporated into an expanded new objective “<i>NH-05 – Natural Buffers and Defences</i>” which is aligned with the NRPS direction. The NRPS Policy 7.2.1 emphasizes the importance of natural features in contributing to the reduction of the impacts of natural hazard events on the built environment.</p>
<p>Objective EARTH-O1</p> <p>Minimise the risk of land instability when undertaking earthworks associated with subdivision.</p>	<p>The intent of this objective is still appropriate. It is located in the recently reviewed Earthworks chapter and reflects the risk-based approach required by s 6(h) RMA. The objective is proposed to be retained, reflecting the fact that management of earthworks associated with subdivision is still required and a specific and clear objective in this regard is beneficial. A new objective is proposed to be added with a broader scope to cover other types of hazards and additionally types of activities.</p>
<p>Objective DGD-O10 – Hazards</p> <p>Minimise the risks and impacts of natural hazard events, including the influence of climate change, on people, property and infrastructure.</p>	<p>This objective adopts a risk-based approach and provides for the matter of national importance in s 6(h) RMA in relation to the management of significant risks from natural hazards. However, the existing objective does not enable a precautionary approach as it does not direct avoidance of unacceptable increase in risk. This objective is proposed to be updated to better reflect the management approach of the proposed plan change.</p>
<p>Objective CE-07– Coastal Hazards</p> <p>Avoid increasing the risk of social, environmental and economic harm from coastal hazards.</p>	<p>This objective is too high level to identify the outcomes being sought and only focuses on not increasing risk of harm rather than managing land use and development to avoid the risk in the first place. This objective -is proposed to be refined to provide greater clarity over the management approaches of the proposed plan change.</p>
<p>Objective CE-08-Natural Defences</p> <p>Protect and enhance natural defences against coastal hazards.</p>	<p>This objective is still valid in relation to how the proposed plan change seeks to manage natural defences but is proposed to be amended to enable maintenance and restoration of existing natural buffers and natural defences, and to indicate that new development should not compromise any existing natural buffers or natural defences.</p>

6.2 Evaluation of Proposed Objectives

252. The assessment of the appropriateness of the proposed objectives for natural hazards is against four criteria to test different aspects of 'appropriateness' as outlined below. Table 21 provides a description of the assessment criteria for the evaluation of objectives. Tables 22 - 30 then provide assessment of the proposed objectives against the evaluation criteria as defined.

Table 21: Evaluation criteria

Criteria	Assessment
Relevance	<ul style="list-style-type: none"> Is the objective directly related to a resource management issue? Is the objective focused on achieving the purpose of the RMA?
Usefulness	<ul style="list-style-type: none"> Will the objective help Council carry out its RMA functions? Does the objective provide clear direction to decision-makers?
Reasonableness	<ul style="list-style-type: none"> Can the objective be achieved without imposing unjustified high costs on Council, tangata whenua, stakeholders and the wider community?
Achievability	<ul style="list-style-type: none"> Can the objective be achieved by those responsible for implementation?

Table 22: Evaluation of proposed Objective NH-O1

Objective: NH-O1 – Hazard Risk	
The risks associated with natural hazards and their impacts on people, property, infrastructure and the environment are appropriately assessed and managed.	
Relevance	The proposed objective meets section 5 of the RMA as it promotes sustainable management of areas that are susceptible to natural hazards, while providing for appropriate use and development to continue relative to the level of risk. This objective is directly related to the matter of national importance under s 6(h) RMA. Managing the risk from natural hazards gives effect to the NZCPS and Northland Regional Policy Statement (NRPS).
Usefulness	The objective assists council to carry out its RMA functions in relation to the control of any actual or potential effects of the use, development, or protection of land, including for the purpose of the avoidance or mitigation of natural hazards as per s 31(1)(b)(i) RMA. The objective is useful as it provides a clear direction to assess risks associated with natural hazards. The objective guides focus on four distinct aspects of natural hazards impacts – being on people, property, infrastructure and the environment. Focus on these four aspects opens up scope for consideration of social vulnerability, resilience (especially infrastructure resilience), and holistic recognition of the value of the environment and interconnectedness of its processes.
Reasonableness	<p>The proposed objective will impose additional costs by requiring assessment of natural hazards and associated risks. Appropriate assessment of risks associated with natural hazards is essential for appropriate management of such hazards. The risk-based approach is justified considering the extremely high economic and social costs of natural disasters and the deep uncertainty associated with climate-change related natural hazards. Management of risks and impacts from natural hazards can be carried out in a variety of ways, as appropriate to the particular land use case and dynamic changes in natural hazards.</p> <p>Under the umbrella objective of managing risks, there is the ability for policies and rules to contain a more nuanced approach. In this context, managing risks requires both avoiding creating new risks where possible, as well as mitigating risks that cannot be avoided. Risk reduction is also an important component of this i.e. a reduction of the adverse effect of a risk event if it does occur. A broad objective of managing the risk of adverse effects from natural hazards is therefore considered to encompass and give effect to the NZCPS policy framework as well as the NRPS. This in turn ensures that the</p>

Objective: NH-O1 – Hazard Risk

The risks associated with natural hazards and their impacts on people, property, infrastructure and the environment are appropriately assessed and managed.

objective is also the most appropriate way to achieve the purpose of the RMA.

Achievability

The requirement to manage the risks associated with natural hazards and their impacts on people, property, infrastructure and the environment is consistent with WDC long-term strategic vision of an inclusive, resilient and sustainable District. Achieving appropriate management of natural hazard risk will contribute to achieving the community outcomes identified through the LTP, including:

- the District is well prepared for growth and can adapt to change
- communities work to keep the environment clean and healthy
- the District is positively adapting to climate change.

Some of the upfront work on natural hazard risk assessment has already been done at a district level. In the case of flooding and coastal hazards large scale assessments have already been carried out by the regional council. The WDP contains statutory Mining Subsidence Hazard maps. High-level mapping of land instability is also available to guide site-specific assessments to be carried by persons undertaking land use and development. WDC Engineering Standards provide specific requirements to geotechnical assessment reports and these are required for building consent applications.

The PDP approach based on requiring site-specific assessments is realistically able to be achieved within the Council's powers, skills and resources and established development processes.

Overall evaluation:

This objective seeks to ensure natural hazard risk is appropriately managed. It provides for assessment of the risks associated with natural hazards. Considerations of natural hazards impacts are guided specifically in relation to people, property, infrastructure and the environment. The objective is considered to be the most appropriate way of achieving the purpose of the Act

Table 23: Evaluation of proposed Objective NH-O2

Objective : NH-O2 – New development.

Avoid inappropriate new subdivision, land use and development in areas subject to natural hazard risk.

Relevance

This objective is directly related to the matter of national importance under s 6(h) RMA and gives effect to higher level policy statements (NZCPS and Northland RPS). Residential development has strong preferences for elevated views and coastal foreshore. Exposure to natural hazard risks in these areas is also high. Urban intensification is driving more infill subdivision in areas of traditional residential development around alluvial plains that are at risk of flooding, as well as elevated areas subject to land instability. Flooding and coastal inundation risks and risks of landslides due to prolonged rainfall are increasing at a faster pace due to climate change.

Despite the increase in natural hazards, there is still the desire to locate new development in areas potentially at high risk. It is therefore relevant to have a specific objective addressing "new development" to prevent significant increase in risk and to become more resilient to natural hazard in the future by locating new development away from areas that have a high level of risk.

Usefulness	S 31(2) RMA provides that methods used to carry out any functions under subsection (1) may include the control of subdivision. This includes control of subdivision for the avoidance or mitigation of natural hazards. Section 106 of the RMA requires council to consider land stability and access when determining subdivision applications. The proposed objective provides a clear avoidance direction, tempered by recognition that appropriateness of new subdivision, land use and development will differ depending on various circumstances, including mitigation measures.
Reasonableness	PC1 includes directive language in particular the requirement to ‘avoid’ inappropriate new subdivision and development in areas where there is a natural hazard risk. This wording is considered appropriate as subdivision marks the beginning of new land use and development. At subdivision stage there is an opportunity to avoid locating inappropriate land uses in areas at high risk from natural hazards. This objective seeks to guide consideration at subdivision stage to avoid exposing people, property and infrastructure to unacceptable levels of risk. The proposed objective will impose some costs on individual property owners due to the possible loss of development potential in some areas. However, the precautionary approach provides net benefit to the community by reducing new exposure to natural hazard risks and associated social and economic impacts on communities. The objective is balanced and allows for consideration of appropriateness of subdivision, land use and development.
Achievability	There is increasing community understanding of the increasing natural hazard risk. Recent events, such as land slipping at Manuka Place (2019) and the July 2020 flooding in Whangarei contributed to raising awareness of these issues. Under the Building Act, a section 72/73 notice can be recorded as an entry on the record of title to the land subject to natural hazards. In some cases, this notice may lead to inability to build on the land and to obtain insurance and finance. In general, land is subdivided with the intention to build, so Council has a responsibility to ensure that a building can be subsequently built on the land after subdivision. The proposed objective will provide the necessary ability to avoid inappropriate new subdivision, land use and development in relation to actual natural hazard risk on the site.
<p>Overall evaluation:</p> <p>The objective provides a clear direction to decision makers that inappropriate new subdivision, land use and development in areas subject to natural hazard risk must be avoided. This will involve determining the actual natural hazard risk on the site in relation to the proposed development or land use. The precautionary approach will provide certainty that sites created after subdivision can be built on. The objective will provide net benefit to community by reducing new exposure to natural hazard risks. The objective is considered to be the most appropriate way of achieving the purpose of the Act</p>	

Table 24: Evaluation of proposed Objective NH-O3

Objective: NH-O3 – Existing Development	
In existing developed areas, build resilience to potential impacts from natural hazards and avoid locating vulnerable activities in areas of high hazard risk.	
Relevance	This objective is directly related to the matter of national importance under s 6(h) RMA and gives effect to higher level policy statements (NZCPS and Northland RPS).

	<p>Urban intensification is driving more infill subdivision in areas of traditional residential development around alluvial plains that are at risk of flooding and on sites that are at risk from land instability.</p> <p>The NRPS provides specific policy direction for existing development in known hazard-prone areas. This policy acknowledges that existing development has already occurred within known hazard-prone areas and that the risk to people and property from natural hazard events should be reduced to provide for community safety and wellbeing.</p> <p>It also encourages re-development or changes in land use that would reduce the risk of adverse effects from coastal hazards, including managed retreat and designing for relocation from hazard events.</p> <p>The proposed objective provides a sustainable management approach to natural hazard risk in existing developed areas while enabling people and communities to provide for their social, economic, and cultural well-being and for their health and safety.</p>
Usefulness	<p>The objective assists council to carry out its RMA functions in relation to the control of any actual or potential effects of the use, development, or protection of land, including for the purpose of the avoidance or mitigation of natural hazards as per s 31(1)(b)(i) RMA. The objective clearly outlines the outcomes sought for existing developed areas, being building resilience and decreasing vulnerability.</p>
Reasonableness	<p>The objective avoids imposing unjustified high costs on council, tangata whenua, stakeholders and the wider community by recognizing the pragmatic need to allow existing development and land uses to continue in areas of natural hazard risk. At the same time, the proposed objective directly addresses the issue of risk exposure by clearly requiring the avoidance of locating new vulnerable activities in areas of high hazard risk. Risk associated with existing land uses is to be managed by building resilience to potential impacts from natural hazards.</p>
Achievability	<p>Achievability of the proposed objective is ensured by providing a definition of vulnerable activities along with policies and rules to control the location of such activities in relation to natural hazard risk. Resilience is not defined in the proposed plan change, leaving open broad options to achieve it. A national-level definition of disaster resilience is provided in the National Disaster Resilience Strategy 2019. Resilience is conceptualized as "the ability to anticipate and resist the effects of a disruptive event, minimise adverse impacts, respond effectively, maintain or recover functionality, and adapt in a way that allows for learning and thriving"²⁷. The components of the Strategy's conceptualisation of resilience include resilience of the built and natural environment, which is to be promoted through land-use planning and risk governance. In the proposed plan change, resilience building is supported by the proposed general policy NH-P4 - Risk Reduction and specific policies in relation to land instability, mining subsidence, flooding and coastal hazards.</p>
<p>Overall evaluation:</p> <p>The proposed objective is considered to be the most appropriate method of achieving the purpose of the Act as it provides a sustainable management approach to natural hazard risk . It enables a pragmatic approach in in areas of high hazard risk.</p>	

²⁷ National Emergency Management Agency. (2019). National Disaster Resilience Strategy. <https://www.civildefence.govt.nz/cdem-sector/plans-and-strategies/national-disaster-resilience-strategy/>

Table 25: Evaluation of proposed Objective NH-O4

Objective: NH-O4 –Regionally Significant Infrastructure and Critical Infrastructure Infrastructure, particularly regionally significant infrastructure and critical infrastructure, is provided for in areas that may be susceptible to natural hazards where there is a functional need and operational need to locate in the area and where risks to people, property and the environment are mitigated as far as practicable.	
Relevance	As sea level is rising due to climate change, infrastructure is at risk of significant damage by coastal erosion and inundation. High intensity rainfall increases the risk of flooding and landslides and damage to roads, bridges and pipelines. Management of significant risks from natural hazards, including their impacts on infrastructure, is directly related to the matter of national importance under s 6(h) RMA.
Usefulness	Provision of infrastructure is essential to use and development of land. Control of the effects of the location and design of infrastructure is within council's functions under the RMA. The objective recognises the need to provide for infrastructure where there is an operational or functional need to locate in areas that may be susceptible to natural hazards where there are no other practical alternative sites. This enables people and communities to provide for their social and economic well-being, and for their health and safety.
Reasonableness	The proposed objective provides a basis for decision-makers to strike a balance between locating infrastructure away from high-risk areas and providing for regionally significant and critical infrastructure in areas that may be susceptible to natural hazards where there is a functional need and operational need to locate in the area. Societal costs of damage or disruption to critical infrastructure can be very high, thus requiring a resilience approach.
Achievability	The proposed chapter includes specific policies on managing infrastructure in identified natural hazard areas. The proposed approach based on requiring a report by a suitably qualified and experienced person provides an enabling regime for infrastructure with due consideration of resilience.
Overall evaluation: The proposed objective is enabling and provides for infrastructure in areas that may be susceptible to natural hazards where there is a functional and operational need to locate in the area provided appropriate consideration is given to mitigation for risk. The objective is considered to be the most appropriate way of achieving the purpose of the Act	

Table 26: Evaluation of proposed Objective NH-O5

Objective: NH-O5 – Natural Buffers and Defences Existing natural buffers and natural defences against natural hazards are maintained, protected, restored and enhanced, and new development does not compromise existing natural buffers and natural defences.	
Relevance	This policy acknowledges that existing development has already occurred within known hazard-prone areas and that the risk to people and property from natural hazard events should be reduced to provide for community safety and wellbeing. Natural features (like sand dunes, beaches, riparian vegetation, floodplains and wetlands) help to avoid and lessen the effects of natural hazard events. This objective also gives effect to Policy 26 of the New Zealand Coastal Policy Statement 2010 – Natural defences against coastal hazards. It requires councils to provide (where appropriate) for the protection of natural features that protect coastal land uses from coastal hazards. This objective is directly linked to a territorial authority function and appropriately gives effect to higher level documents (RMA, NZCPS and Northland RPS).

Usefulness	<p>Protecting or restoring natural features often tends to be more economically viable than building and subsequently relying on hard protection structures.</p> <p>Promotes the sustainable management of natural resources such as beaches, estuaries, coastal vegetation, dunes etc that act as natural defences against coastal hazards while enabling people and communities to provide for their well-being, and their health and safety.</p>
Reasonableness	<p>The focus on maintaining, restoring, protecting and enhancing existing natural buffers and natural defences is practical and fair as it builds on what exists in nature rather than promoting man-made structures, and recognizes the important function such features play in managing natural erosion processes along the coast.</p> <p>Protecting or restoring natural features often tends to be more economically viable than building and subsequently relying on hard protection structures. This is because engineered approaches have a limited design life and adopting these 'structural' assets can lock in future generations to continued expenditure to maintain, upgrade or replace such protection.</p>
Achievability	The objective is also considered achievable, taking into account Council's functions, powers and resources.
Overall evaluation:	
<p>This objective recognises the importance of natural systems and features which act as natural defence to natural hazards, and that priority will be given to the ongoing maintenance and use of non-structural measures over the use / construction of hard protection structures when managing hazard risk.</p> <p>The objective provides a clear directive and will not result in unjustifiably high cost on the community / parts of the community, as alternative methods are not precluded. It is also considered that this objective is able to be achieved within the Council's functions, powers, and resources. As such, this objective is considered to be the most appropriate way of achieving the purpose of the Act.</p>	

Table 27: Evaluation of proposed Objective NH-O6

Objective: NH-O6– Climate Change	
The potential effects, including long-term effects, of climate change are taken into account when managing subdivision, land use and development.	
Relevance	<p>The impacts of natural hazards are likely to increase due to climate change. Climate change and sea level rise will exacerbate coastal erosion and inundation along many parts of the District's coastline, further increasing the impacts of coastal hazards on coastal development. Inundation and an increase in high intensity short duration rainfall events could lead to more flash floods and land slips.</p> <p>Although climate change effects are gradual, the permanency of many structures and buildings means that land-use planning decisions made now have long-term implications. As best available guidance confirms that the sea level will continue to rise, recognition of climate change and the effects of rising sea levels on future land use and subdivision activities in the coastal environment is therefore a necessary consideration in land use planning.</p> <p>Climate change is explicitly included within this objective because under section 7 of the RMA, councils must have particular regard to the effects of a changing climate on their communities.</p>
Usefulness	Preparing for climate change now and recognising its potential influence on natural hazard events will help ensure that our communities can continue to provide for their social, cultural and economic wellbeing and become more resilient to the effects of a changing climate. Adapting now will help ensure our economy and infrastructure remains viable and that Whangarei is less

	vulnerable to the costs and adverse impacts of a changing climate. This objective will assist Council to meet the requirement of s74(2)(e) RMA to have regard to the National Adaptation Plan, and the requirement of s75 RMA to give effect to the NZPCS, the NPS-UD and the RPS which all require taking account of climate change.
Reasonableness	<p>The risks of not acting are that these adverse effects become more recurrent and/or severe over time, impact on a greater number of properties, and that available mitigation options and other responses become more constrained due to the nature and level of development (i.e. only hard protection structures or managed retreat and abandonment of buildings remain as viable options).</p> <p>Factoring in climate change 'upfront' is easier than retrofitting development or having to 'mitigate' the effects of events after they have occurred.</p> <p>Consideration of climate change would be implemented through the proposed policies and rules that will guide decisions on resource consent applications. While there will be costs involved in consenting and in mitigation requirements on consents, the costs of upfront consideration of climate change will be lower than any future costs on ratepayers and future generations to fund hard protection structures or managed retreat.</p> <p>Identification of areas at risk of climate hazards such as coastal erosion, coastal flooding and river flooding, will be done through the hazard mapping and site assessments. As these NRC hazard maps are already developed, there is no cost to Council.</p> <p>Certain areas at high risk from climate hazards might experience a loss of development potential. However not considering the effects of climate change could lead to future subdivisions and developments becoming uninsurable which would carry significant financial repercussions for homeowners, business and communities.</p>
Achievability	The requirement to take into account national guidance and the best available information on the likely effects of climate change on the region or district will ensure that when national guidance is updated / modified, this information will be used rather than relying on a specific requirement / figure that could quickly become out-dated. A number of guidance manuals published by the Ministry for the Environment address natural hazard management have provided guidance in the development of this plan change.
Overall evaluation:	This objective seeks to ensure natural hazard risk is appropriately managed while recognising that long term climate change may affect the occurrence and risk posed by natural hazards. The objective is considered to be the most appropriate way of achieving the purpose of the RMA

Table 28: Evaluation of proposed Objective SUB-O6

Objective: SUB-O6 – Natural Hazards	
Avoid inappropriate new subdivision in areas subject to natural hazard risk.	
Relevance	This objective provides for the matter of national importance under s 6(h) RMA and gives effect to higher level policy statements (NZCPS and Northland RPS). Subdivision creates new land use and must take into account natural hazard risk.
Usefulness	National Planning standards require subdivision provisions to be located in the Subdivision chapter. This objective connects the subdivision provisions to main Objective NH-02 in the Natural Hazards chapter.
Reasonableness	At subdivision stage there is an opportunity to avoid locating inappropriate land uses in areas at high risk from natural hazards. The proposed objective

	will impose some costs on individual property owners due to the possible loss of development potential in some areas. However, the precautionary approach provides net benefit to community by avoiding enabling new exposure to significant risk. The objective is balanced and allows for consideration of appropriateness of subdivision.
Achievability	As in the vast majority of cases land is subdivided with the intention to build, Council has a responsibility to ensure that a building can be subsequently built on the land after subdivision. Natural hazards risk assessment prior to subdivision is achievable through the consenting process.
Overall evaluation:	The objective requires a precautionary approach to new subdivision in areas subject to natural hazards. It is consistent with the objectives proposed for the Natural Hazards chapter. The objective is considered to be the most appropriate way of achieving the purpose of the RMA

Table 29: Evaluation of proposed Objective EARTH-O3

Objective : EARTH-O3 – Earthworks in areas subject to natural hazards	
Manage the risks associated with earthworks in areas subject to natural hazards to achieve the objectives and policies in the Natural Hazards chapter.	
Relevance	This objective is related to the management of significant risks from natural hazards and gives effect to higher order instruments and Part 2 of the RMA. The majority of the Whangarei District is underlain by the Northland Allochthon geological unit is well known for being highly unstable and contain large areas of deep seated, slow moving creep landslides ²⁸ . Other high risk areas include reclaimed land and steep slopes. Even small quantities of earthworks in such areas can trigger wider instability, especially where ground is saturated after heavy rain. Unsupported cuts can fail and pose risk to life and property if done in the wrong place and without guidance from a geotechnical engineer.
Usefulness	The objective assists council to carry out its RMA functions in relation to the control of any actual or potential effects of the use, development, or protection of land, including for the purpose of the avoidance or mitigation of natural hazards as per s 31(1)(b)(i) RMA. National Planning standards require earthworks provisions to be located in the Earthworks chapter. The proposed objective connects the earthworks provisions to the core Natural Hazards chapter and provides a basis for requiring risk identification and risk assessment.
Reasonableness	The Earthworks chapter already contains an objective to minimise the risk of land instability when undertaking earthworks associated with subdivision. The proposed objective extends the risk management to cover land-use activities as well as subdivision. The approach to risk management is pragmatic and recognizes that the RMA is not a no-risk statute. Some level of risk will be deemed tolerable but needs to be managed.
Achievability	The objective is realistically able to be achieved through Council's existing powers, skills and resources and is consistent with the identified outcomes.
Overall evaluation:	The proposed objective provides a basis for managing earthworks in areas subject to natural hazards through rules in the Earthworks chapter. The proposed objective connects the provisions to the Natural Hazards chapter without unnecessary repetition. The objective is considered to be the most appropriate way of achieving the purpose of the RMA

²⁸ Tonkin and Taylor. (2020). Landslide Susceptibility Technical Report.

<https://www.wdc.govt.nz/files/assets/public/documents/council/reports/hazard-reports/land-stability/landslide-susceptibility-technical-report.pdf>

Table 30: Evaluation of proposed Objective DGD-O10

Objective: DGD-O10 – Natural Hazards	
<i>Avoid inappropriate subdivision, use and development in areas at high risk from natural hazards, and minimise the risks and impacts of natural hazard events, including the influence of climate change, on people, property and infrastructure.</i>	
Relevance	The proposed objective meets section 5 of the RMA as it promotes sustainable management of areas that are susceptible to natural hazards, while providing for appropriate use and development to continue relative to the level of risk. This objective is directly related to the matter of national importance under s 6(h) RMA and gives particular regard to climate change under s 7(i) RMA. The proposed objective gives effect to the NZCPS and Northland Regional Policy Statement (NRPS).
Usefulness	This objective is located in the overarching District Growth and Development chapter and summarizes the approach to natural hazards across the entire district plan. The proposed change adds direction to implement a precautionary approach to new subdivision and development, and a risk-based approach to existing developed areas.
Reasonableness	The proposed objective does not impose unjustified high costs to Council, tangata whenua and the wider community. While a precautionary approach is proposed for subdivision, use and development in areas at high risk from natural hazards this is directly in response to higher order direction of the RMA, NZCPS and NRPS. This is balanced by employing a risk-based approach to existing developed areas where the objective is seeking to minimise the risks.
Achievability	The DGD chapter does not contain rules. The proposed objective is achieved by incorporating relevant objectives and policies into the Natural Hazards chapter, the Subdivision chapter and the Earthworks chapter.
Overall evaluation:	
The proposed objective amends an existing objective in the DGD chapter. It adds direction to enable a precautionary approach for the avoidance of unacceptable increase in risk in relation to inappropriate subdivision, use and development in areas at high risk from natural hazards. The objective is considered to be the most appropriate way of achieving the purpose of the RMA	

6.3 Overall evaluation of objectives statement

253. The current WDP natural hazard related objectives have very limited direction or guidance as to how proposed subdivision and land use is to consider or respond to natural hazards, and does not implement the higher level direction set by the RMA, NZCPS and NRPS. The higher order instruments require a risk-based approach to the management of natural hazard risk. The proposed objectives give effect to s6(h), s7(i), s8 and s106 of the RMA. Having assessed the proposed objectives against Part 2 of the RMA it is considered that they achieve the purpose of the RMA and promote sustainable management.
254. The proposed objectives are considered appropriate in terms of s5 of the RMA, as they strike a balance between allowing development and use to provide for the economic and social wellbeing and the health and safety needs of people and communities where the level of risk is acceptable, but avoiding new development where the risk is unacceptable.
255. The proposed provisions get more restrictive as the risk from natural hazards increases, thereby ensuring that a nuanced approach to the management of natural hazard risk occurs. This framework has a number of economic and social benefits which are considered to outweigh the resulting costs.
256. Overall, the proposed objectives support a risk-based approach which is consistent with higher order policy direction and are considered the most appropriate to achieve the purpose of the RMA.

7. Evaluation of Provisions to Achieve Objectives

7.1 Introduction

257. Section 32(1)(b) of the RMA requires the evaluation report to examine whether the provisions are the most appropriate way to achieve the objectives by:
- i. identifying other reasonably practicable options for achieving the objectives; and*
 - ii. assessing the efficiency and effectiveness of the provisions in achieving the objectives; and*
 - iii. summarising the reasons for deciding on the provisions.*
258. When assessing the efficiency and effectiveness of the provisions in achieving the objectives, section 32(2) of the RMA requires that the assessment:
- (a) identify and assess the benefits and costs of the environmental, economic, social, and cultural effects that are anticipated from the implementation of the provisions, including the opportunities for -
 - (i) economic growth that are anticipated to be provided or reduced; and
 - (ii) employment that are anticipated to be provided or reduced; and
 - (b) if practicable, quantify the benefits and costs referred to in paragraph (a); and
 - (c) assess the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the provisions.
259. This section provides an assessment of reasonably practicable options and associated provisions (policies, rules and standards) for achieving the objectives in accordance with these requirements.
260. Each option is assessed in terms of the benefits, costs, and effectiveness and efficiency of the provisions, along with the risks of not acting or acting when information is uncertain or insufficient.
- For the purposes of this assessment:
- **effectiveness** assesses how successful the provisions are likely to be in achieving the objectives and addressing the identified issues.
 - **efficiency** measures whether the provisions will be likely to achieve the objectives at the least cost or highest net benefit to society.
261. The sections below provide an assessment of options (and associated provisions) for achieving the objectives in accordance with sections 32(1)(b) and 32(2) of the RMA.

7.2 Reasonably practicable options

262. A range of potential provisions could be used to achieve the proposed objectives. These have been grouped into three package options based on a common strategic approach to balancing risk tolerance and level of restrictions require to achieve specific outcomes. The level of detail undertaken for the evaluation of the proposed policies and methods has been determined by the scale and significance assessment (section 5.2 of this report), assessed as medium. Section 8 of this report evaluates the reasonably practicable options for policies and rules to achieve the proposed objectives.
263. In addition to policies and rules, coastal hazard and flood mapping has been developed by NRC. The NRPS requires WDC to incorporate these maps and provisions relating to them into the district plan. Due to the higher order instrument direction to incorporate maps, no other reasonably practicable options are available to Council for coastal hazard and flood mapping.
264. Land Instability and Mining Hazards mapping have been developed for WDC by Tonkin and Taylor. Reasonably practicable options in regard to this mapping are discussed in Section 7.4.

265. Dynamic adaptive pathways planning (DAPP) is recognised as the most up-to date approach for resilience planning in the context of climate change to address uncertainty and change than typical static planning approaches²⁹. DAPP is based on flexible planning that avoids locking in path dependency for new and existing development. DAPP has been implemented in several New Zealand contexts including in Hawkes Bay, Whanganui, and Wellington Region on application to coastal retreat, stormwater management and agriculture in the context of climate change^{30, 31, 32, 33, 34}. MfE have issued guidance³⁵ on DAPP and it is acknowledged that DAPP is increasingly being used and referred to. The option analysis below considers whether the proposed plan provision should implement a DAPP approach.
266. Territorial authorities are required to have regard to the National Adaptation Plan, which directs councils to have regard to climate change scenarios, including Shared Socioeconomic Pathways, and reinforces the basis for the use dynamic adaptive pathways planning (DAPP). Therefore, adaptive pathways planning is included in the options analysis. One of the significant advantages of DAPP is avoiding premature and overly onerous actions such as retreat of services from hazard-prone areas, while at the same time keeping the options open for adaptation actions in the future. When certain pre-defined triggers are reached, such as rainfall, drought or sea level rise triggers, an adaptive adaptation plan kicks in and more restrictive planning rules are implemented. A significant limitation to developing and implementing DAPP stems from limited resources available to territorial authorities to carry out complex analysis and engagement for the development of the triggers and flexible land-use pathways.

7.3 Options Analysis

267. This section of the report evaluates the reasonably practicable options for policies and rules to achieve the proposed objectives. These broad options are:

Option 1: **Status quo – effects-based management**

- Objectives and policies are effects based, and the rules do not distinguish between areas with different levels of risk.
- Development in areas identified with a hazard (mining, flooding, coastal hazard) triggers a site specific investigation to show that the site is suitable for development.
- Areas of land instability are not defined in the plan and the existing mapping remains non-statutory.

Option 2: **Dual risk-based and activity-based approach** (recommended option)

- A dual risk-based approach to natural hazards, with avoidance of inappropriate new development and risk management for existing development.
- An activity-based approach with control of location of vulnerable activities and specific performance standards for other land-use activities.
- A higher level of scrutiny where activities and development are proposed to be located on land subject to high-risk natural hazards.

Option 3: **Adaptive pathways approach with quantitative risk management**

- Quantification of acceptable levels of risk to determine activity status.
- Avoidance of locking-in development patterns in areas subject to high-risk natural hazards
- Development of dynamic adaptation pathways that preserve options for managed retreat.

²⁹ Lawrence, J., Haasnoot, M., McKim, L., Atapattu, D., Campbell, G., & Stroombergen, A. (2019). Dynamic adaptive policy pathways (DAPP): From theory to practice. In *Decision Making under Deep Uncertainty* (pp. 187-199). Springer, Cham

³⁰ Cradock-Henry, N. A., Blackett, P., Hall, M., Johnstone, P., Teixeira, E., & Wreford, A. (2020). Climate adaptation pathways for agriculture: insights from a participatory process. *Environmental Science & Policy*, 107, 66-79.

³¹ Kool, R., Lawrence, J., Drews, M., & Bell, R. (2020). Preparing for sea-level rise through adaptive managed retreat of a New Zealand stormwater and wastewater network. *Infrastructures*, 5(11), 92.

³² Lawrence, J., Bell, R., Blackett, P., Stephens, S., & Allan, S. (2018). Environmental science & policy, National guidance for adapting to coastal hazards and sea-level rise: Anticipating change, when and how to change pathway. 82, 100-107.

³³ Lawrence, J., Bell, R., Blackett, P., Stephens, S., Collins, D., Cradock-Henry, N., & Hardcastle, M. (2020). Supporting decision making through adaptive tools in a changing climate.

³⁴ Stephens, S. A., Bell, R. G., & Lawrence, J. (2018). Developing signals to trigger adaptation to sea-level rise. *Environmental Research Letters*, 13(10), 104004.

³⁵ MfE. (2017). *Coastal Hazards and Climate Change*. <https://environment.govt.nz/assets/Publications/Files/coastal-hazards-guide-final.pdf>

- Identification of adaptation trigger points which lead to a change to a more restrictive activity status.

Table 31 below provides analysis of these options.

Table 31: Analysis of reasonably practicable options

	Option 1 – Status Quo – effects-based management	Option 2: Dual risk-based and activity-based approach	Option 3: Adaptive pathways approach with quantitative risk management
Costs			As Option 3 represents a more stringent approach to risk compared to Option 2, it also integrates similar costs and benefits consideration to those listed under Option 2.
<i>Environmental</i>	<ul style="list-style-type: none"> Missed opportunities to prevent exacerbation of natural hazard risks, in particular through vegetation removal and earthworks. 	<ul style="list-style-type: none"> None identified 	<ul style="list-style-type: none"> None identified
<i>Economic</i>	<ul style="list-style-type: none"> Minimal costs implementing the status quo as the provisions are in WDP. Greater risk of future development being affected by natural hazards, coupled with significant risk of loss of insurance cover in known high risk natural hazard areas. Lower consenting and assessment costs for applicants. Likely greater costs associated with engineering solutions to erosion and flooding. Potential costs as rates increase to fund projects. Rate increases arising out of public pressure to fund engineered mitigation measures, such as erosion-protection if further development or intensification is allowed in high-risk areas. If a s.72 notice is placed on the title under the Building Act, this may lead in some cases to not being able to build on the land due to inability to obtain finance or 	<ul style="list-style-type: none"> Increased consenting costs as more activities are regulated. Increased costs to applicants to obtain site suitability reports and geotechnical assessments. Increased costs to development to implement hazard mitigation measures. In some cases these costs may not be significant, for example setting buildings back or raising floor levels does not add a considerable cost compared to the value of a whole build. Increased construction costs to comply with mitigation requirements. Some costs to maintain and repair council infrastructure that has an operational and functional need to locate in high-risk hazard areas. 	<p>In addition to costs identified under Option 2, further costs associated with Option 3 could include:</p> <ul style="list-style-type: none"> Council and the community would have to bear the upfront cost of risk investigation and assessment. Development of adaptation pathways would involve significant time and expertise costs. A quantified risk assessment across the district would be required, and the methodology would need to be developed to determine acceptable levels of risk and the levels of triggers for adaptation. These present a considerable cost to the ratepayers.

	Option 1 – Status Quo – effects-based management	Option 2: Dual risk-based and activity-based approach	Option 3: Adaptive pathways approach with quantitative risk management
	<p>insurance. This represents potential large losses to landowners in terms of sunk costs of subdivision and consenting if they are unable to build and fully realise the value of the land.</p> <ul style="list-style-type: none"> • Potential greater hearing costs if NRPS is not given effect to. • Greater cost to Council to provide infrastructure solutions to address hazard effects in future. • Reduced productivity arising from disruptions to businesses following extreme natural hazards events such as severe flooding (e.g. July 2020 floods). 		
<i>Social</i>	<ul style="list-style-type: none"> • Potential high social costs from the loss of homes, communities and livelihoods due to the impacts of natural hazards. • More individual property owners being impacted by natural hazard events and families having to bear the costs and stress of recovery and repair. • Potential social impact on low-medium income families as rates increase to fund projects. need to increase rates arising out of public pressure to fund engineered mitigation measures, such as erosion-protection if further development or intensification is allowed in high-risk areas. • Potential reduction in time of house prices as a result of inability to obtain insurance or insurance premiums being too high. • “Urban blight” could affect impacted communities as people and businesses 	<ul style="list-style-type: none"> • While more restrictive provisions could somewhat reduce the housing capacity, other projects are underway at council to address housing at a strategic level. Specifically, work is underway on the Future Development Capacity Assessment, which will include modelling of available land taking into account natural hazards. 	<ul style="list-style-type: none"> • Similar to Option 2 • Quantification of risk creates a false impression of certainty, when natural hazard risks and climate change are characterised by dynamic change and uncertainty. • Complicated scientific models can be opaque to the general public and may lack community buy-in as a result. • Creates a perception of precision, when in fact models are based on generalisation and pre-defined assumptions. • Potential inconsistent outcomes could mean that risks to life are not reduced in all instances.

	Option 1 – Status Quo – effects-based management	Option 2: Dual risk-based and activity-based approach	Option 3: Adaptive pathways approach with quantitative risk management
	move out following damage from significant natural hazard events.		
<i>Cultural</i>	<ul style="list-style-type: none"> Increased incidences of significant natural hazards events on Māori owned land resulting in damage, including potential flooding or inundation of papakainga housing or marae. 	<ul style="list-style-type: none"> Additional requirements for site assessment and hazard mitigation will mean there is increased cost for tangata whenua to develop their land. Relocation of cultural buildings to land with lesser natural hazard risk may be prohibitive due to costs or unavailability of suitable land in the area. 	<ul style="list-style-type: none"> Similar to Option 2
Benefits			
<i>Environmental</i>	<ul style="list-style-type: none"> Management of some natural hazard effects. Consideration of climate change and sea level rise, protection of natural buffers. 	<ul style="list-style-type: none"> Increased protection and enhancement of natural defence systems Less reliance on hard protection structures in the future to mitigate natural hazard risk due to avoidance of inappropriate new subdivision on high-risk hazard areas. A more thorough identification of high-risk natural hazard areas will provide for better preservation of hazard-protective natural features such as vegetation cover. 	<ul style="list-style-type: none"> Similar to Option 2
<i>Economic</i>	<ul style="list-style-type: none"> Would likely allow more intensification of development and therefore higher property values in areas not affected by natural hazards. Minimal costs associated with mitigation of natural hazards. 	<ul style="list-style-type: none"> The proposed provisions recognise different approaches are needed for different hazards. While intensification would be avoided in areas at high hazard risk, activities in areas of lesser risk will benefit from more enabling regulatory settings. Provides greater certainty that subdivided lots can be built on. This helps avoid situations where a notice placed under s.72 of the Building Act due to natural hazards could lead to inability to secure insurance and finance to build. 	<p>In addition to benefits identified under Option 2, further benefits associated with Option 3 could include:</p> <ul style="list-style-type: none"> A greater degree of flexibility to address dynamic natural hazards in the future as more information becomes available. Avoids over-capitalising on mitigation measures in the short-term by defining triggers for requiring more advanced mitigation in the medium to long term. Avoids locking in path dependency from location and design of existing

	Option 1 – Status Quo – effects-based management	Option 2: Dual risk-based and activity-based approach	Option 3: Adaptive pathways approach with quantitative risk management
		<ul style="list-style-type: none"> • Provides a signal to the market to re-direct investment to areas with lesser levels of risk. • Supports more resilient economic growth and employment outside of areas known as high risk from natural hazards. • Limiting location of infrastructure in areas that may be susceptible to natural hazards only to cases where there is a functional need and operational need to locate there will limit the extent of damage to infrastructure during natural hazard events and reduce repair costs. • Takes a precautionary approach to avoid inappropriate new subdivision in areas subject to natural hazard risk, while relying on pragmatic risk management in existing developed areas. Property owners in existing developed areas are able to continue land-use as this option does not suggest abandonment of existing developed areas. • Council and community investment in infrastructure in existing developed areas at risk from natural hazards is recognised by allowing continued land-use in these areas while managing risks pragmatically. 	<p>development by designing for the ability to accommodate further mitigation when trigger points are reached.</p> <ul style="list-style-type: none"> • Quantifying risk could remove the blanket approach to the management of hazard risk.
<i>Social</i>	<ul style="list-style-type: none"> • None identified 	<ul style="list-style-type: none"> • More detailed identification of natural hazards will provide more accurate information for housing capacity modelling as part of the Future Development Capacity Assessment. • More long-term security for communities through increased resilience to natural hazards and climate change. 	<ul style="list-style-type: none"> • Similar to Option 2

	Option 1 – Status Quo – effects-based management	Option 2: Dual risk-based and activity-based approach	Option 3: Adaptive pathways approach with quantitative risk management
		<ul style="list-style-type: none"> • Concepts of resilience and vulnerability are recognised according to best practice. 	
<i>Cultural</i>	<ul style="list-style-type: none"> • None identified 	<ul style="list-style-type: none"> • Clarity over the level of natural hazard risk will enable tangata whenua to consider impact and identify development options • Mitigation measures can protect future development, such as papakainga, and reduce future costs of repair, redevelopment and insurance. 	<ul style="list-style-type: none"> • Adaptive pathways approach fits best with giving the power to tangata whenua to develop adaptation pathways and trigger points which can best provide for their own wellbeing.
Effectiveness	<p>The status quo option is considered ineffective for achieving the proposed objectives for the following reasons:</p> <ul style="list-style-type: none"> • Current provisions are not risk-based and therefore not effective to achieve the proposed objectives. • The coastal and flooding maps undertaken by NRC and the updated land instability maps by Tonkin and Taylor show that large parts of Whangarei District are susceptible to natural hazards. In some cases, there are multiple overlapping hazards present on land. The WDP provisions do not address a number of these natural hazards and landuse could still occur in these areas with little or no regard to the natural hazard risk, unless identified through a resource consent process. • Current provisions do not address all relevant activities in natural hazard areas. • WDP is not effective to promote avoidance of inappropriate new subdivision, land use and development in 	<p>Option 2 is considered the most effective to achieve the proposed objectives considering that:</p> <ul style="list-style-type: none"> • The proposed option meets legal requirements by giving effect to the NZCPS and NRPS. • A risk-based approach will assist preventing further escalation of risk and exacerbation of the impacts of natural hazards. • An activity-based approach allows for more precise management of vulnerable activities without the need for costly quantification of risk. It also allows a more enabling approach to low-risk activities such as farming sheds. • The technical report requirement for certain permitted activities enables the latest information to be used for natural hazard assessment purposes. • While risk-based management is an improvement on the status quo and gives effect to the RMA, it falls short of the needs of dynamic adaptation to climate 	<p>While Option 3 can deliver more bespoke solutions for climate change related hazards, it focuses on community wide responses. Such an extensive approach is not considered appropriate for individual sites potentially affected by natural hazards. Option 3 is considered to be less effective than Option 2 on the balance of costs and benefits in the short to medium term.</p> <p>Further considerations in relation to Option 3 include:</p> <ul style="list-style-type: none"> • Agreement on the specific quantified level of tolerable risk may be hard to reach. • Delays in implementing a risk-based approach mean in the meantime that further development will be able to be established on land subject to high risk natural hazards without proper assessments. • Flexibility to deal with deep uncertainty stemming from climate change by delaying decision making to a time when

	Option 1 – Status Quo – effects-based management	Option 2: Dual risk-based and activity-based approach	Option 3: Adaptive pathways approach with quantitative risk management
	<p>areas subject to natural hazard risk.</p> <ul style="list-style-type: none"> The current provisions are not effective at preventing vulnerable uses from establishing in natural hazard risk areas. A significant amount of development can occur in areas prone to natural hazards without the need for resource consent. Due to this the overall risk from natural hazards in the District is increasing overtime. Council is having to rely on the Building Act 2004 and s106 RMA to address the risks associated with natural hazards. Historically the lack of rules in WDP resulted in subdivision of lots that cannot be built on. This is less effective than requiring natural hazard risk to be specifically considered and addressed at resource consent stage. The existing District Plan provisions are resulting in an increase in risk with time as they currently have little consideration of natural hazards. 	<p>change when compared with the adaptive pathways method in Option 3. Nevertheless, a risk-reduction approach keeps more options open for future generations.</p> <ul style="list-style-type: none"> The proposed option requires consideration of long-term effects of climate change, which enables consideration of other strategic council documents and national instruments that provide guidance on climate change adaptation. Identification and assessment of risk prior to development will provide a higher level of clarity and certainty for applicants and Council about areas where natural hazards occur and their management. 	<p>more information becomes available.</p>
Efficiency	<ul style="list-style-type: none"> Current provisions are not efficient at reducing natural hazard risk. The status quo options are not the most efficient way to achieve natural hazard risk reduction as it enables the transfer of the economic costs of disruption from developers onto future property owners and the wider community. These costs can be significant and would outweigh the economic benefits derived. Continued development in natural hazard areas without consideration of risk can lead to intergenerational injustice. 	<ul style="list-style-type: none"> This is the most efficient option to avoid increasing natural hazard risk within the resources and capabilities available to council. Assessments and investigations will focus in areas where risks are highest More stringent management at subdivision stage ensures the assessments happen at the beginning of land-use and the creation of inappropriate activities is avoided. While mostly focused on risk assessment and avoiding inappropriate increase in risk, the proposed option also provides 	<ul style="list-style-type: none"> Consideration of adaptive pathways is required by the National Adaptation Plan. However, adaptive pathways are not fully developed yet. Their implementation has not been tested in a district plan context. Strategic work on adaptation planning is currently underway outside of District plan. Given the context of the RMA reform and timeframes of this work the implementation of adaptation plans will be managed in a holistic way under the Climate Change Adaptation Act which is part of the resource management reform.

	Option 1 – Status Quo – effects-based management	Option 2: Dual risk-based and activity-based approach	Option 3: Adaptive pathways approach with quantitative risk management
	<p>Allowing hazard risks to increase unchecked in the context of climate change can lead to unacceptable net costs to society in situations where future generations of ratepayers have to fund engineered natural hazard protection works.</p> <ul style="list-style-type: none"> • Non-compliance with higher-order policy direction leads to lack of clarity for applicants and developers. 	<p>for some risk reduction through a requirement that new land use and development does not lead to an unacceptable increase in onsite risk and the risk to adjacent properties.</p> <ul style="list-style-type: none"> • Inclusion of a policy on tsunami hazards provides guidance to consider this hazard in resource consenting in relation to evacuation. The inclusion of specific rules is not proposed due to the nature of tsunami hazards which are better managed through civil defence. This is considered the most efficient approach to managing tsunami hazards. 	<ul style="list-style-type: none"> • Any quantified risk approach and adaptation pathways would need to be developed in a way that gives effect to the NRPS. Option 3 measures are very costly, but not necessary to give effect to higher order instruments. • Option 3 is less efficient than Option 2 due to anticipated delays in the plan development process to carry out quantitative risk assessment. • Substantial community engagement is needed to develop adaptation pathways, and this work is currently underway in the strategic planning space. It is more efficient to allow the strategic planning process to run its course. • Technical and complex numerical approach is less likely to be efficient.
Risk of acting or not acting	<p>There are significant risks in not acting on natural hazards and retaining the status quo:</p> <ul style="list-style-type: none"> • Potential for significant adverse effects through not appropriately managing natural hazard risk. • The risk within areas susceptible to natural hazards is increasing with time as development continues in the context of climate change. • Greater exposure to risk will lead to greater impacts on communities when a natural hazard event occurs. • Likely risk of loss of insurance cover for new development at high risk of climate change related natural hazards, in particular sea level rise. • Liability risks to council if not managing natural hazards in accordance with higher-order instruments. 	<p>The risks of not acting on Option 2 include:</p> <ul style="list-style-type: none"> • Failure to follow national direction and give effect to Part 2 of the RMA • Unacceptable escalation of risk in the District if development is allowed to continue without considerations of natural hazards as the growing population is exposed to more high-risk areas. • Increased risks of economic and social damage following a natural disaster event. • Reliance on ineffective natural hazards provisions in the WDP. <p>The risks of acting on Option 2 include:</p> <ul style="list-style-type: none"> • Parts of the community may not accept the need to manage the risk from natural hazards. This is particularly so for slow-onset and long-arrival natural hazards such as coastal erosion and sea level 	<p>The risks of acting on Option 3 relate to uncertainty of the outcomes when undertaking the exercise to quantify risk and set adaptation triggers. The outcomes could end up being more or less restrictive than Option 2. The costs are also difficult to estimate, but would be substantially higher than Option 2, considering:</p> <ul style="list-style-type: none"> • Identification of adaptation triggers would require extensive and costly community education and workshops. While this lengthy process is carried out, the risk across district would remain high under WDP provisions. • Direct implementation of dynamic adaptive pathways planning (DAPP) through a district plan process has not yet been done in New Zealand. Uncertainties and risks associated with

	Option 1 – Status Quo – effects-based management	Option 2: Dual risk-based and activity-based approach	Option 3: Adaptive pathways approach with quantitative risk management
	<ul style="list-style-type: none"> Liability risks to council if not providing accurate information about known natural hazard risk. In particular, the WDP does not address land instability. Risks of “stranded development” if new subdivision and development is allowed to begin in high risk areas that might in the future require managed retreat. 	<p>rise.</p> <ul style="list-style-type: none"> Perception of the risk from natural hazards varies, with some parts of the community urging for greater regulation, while other parts of the community may have higher tolerance of risk. Public view becomes especially polarised in a situation where under the status quo developers are generally able to transfer future costs from natural hazards onto homebuyers. More precise natural hazard information may become available after the plan change process is completed and regulation is locked in. If any changes to the district plan are required at that stage due to new information on climate change, then a formal plan change would be required to amend the district plan. 	<p>trailing a new approach are recognised. It is noted however, DAPP is supported by NAP and by the MfE guidance³⁶ and there is positive practice of DAPP implementation at a regional planning level in New Zealand³⁷.</p> <ul style="list-style-type: none"> It is not known if adaptation triggers would be effective.
Overall evaluation	<p>The RMA and higher-order instruments directly require Council to manage significant risk of natural hazards. Climate change is now an accepted reality and Council is required by s7(i) RMA to have particular regard to the effects of climate change. The science is overwhelmingly showing that that natural disaster risks are escalating in New Zealand³⁸ and delayed consideration of adaptation is</p>	<p>Option 2 is the preferred option. It introduces a risk-based approach to managing natural hazards in the district, which gives effect to the RMA, NZCPS and NRPS. The recommended package of policies and rules provides for avoidance of inappropriate risks for new subdivision and development, while pragmatically requiring management of risks in existing developed areas. This approach provides for sustainable management of natural hazard risk in existing developed areas</p>	<p>Consideration of Option 3 revealed prohibitive costs as a disproportionate barrier:</p> <ul style="list-style-type: none"> High up front cost to ratepayers for quantified risk assessment across the district Significant time required for development of adaptation pathways, while risk remains high under current WDP provisions. Complicated risk models may lack buy-in

³⁶ MfE. (2017). *Coastal Hazards and Climate Change*. <https://environment.govt.nz/assets/Publications/Files/coastal-hazards-guide-final.pdf>

³⁷ Lawrence, J., Bell, R., Blackett, P., Stephens, S., Collins, D., Cradock-Henry, N., & Hardcastle, M. (2020). Supporting decision making through adaptive tools in a changing climate.

³⁸ Hanna, C., White, I., & Glavovic, B. C. (2021). Managed retreats by whom and how? Identifying and delineating governance modalities. *Climate Risk Management*, 31, 100278.

	Option 1 – Status Quo – effects-based management	Option 2: Dual risk-based and activity-based approach	Option 3: Adaptive pathways approach with quantitative risk management
	<p>likely to lead to significant future costs³⁹.</p> <p>The status quo provisions in WDP do not meet the requirements of the RMA, NZCPS and NRPS. The status quo option is inadequate for managing escalating natural hazard risks as the WDP does not provide for avoiding inappropriate new subdivision and development and does not manage vulnerable activities.</p> <p>The status quo option carries potentially significant future costs and risks that significantly outweigh the benefits identified in relation to this option.</p>	<p>while enabling people and communities to provide for their social, economic, and cultural well-being and for their health and safety.</p> <p>Option 2 will require clear communication to the public on the quality of the natural hazards information and science as some land owners are concerned over the implications for future development and use aspirations.</p> <p>Other councils in New Zealand have moved away from the effects-based management of natural hazards (as in the current WDP/option 1) and implemented a risk-based approach in accordance with the RMA. These include Auckland Council, Porirua City Council, Selwyn District Council, Waimakariri District Council, Tauranga City Council, New Plymouth District Council, Kaikoura District Council and a number of others). The Far North District Council is in the process of a district plan review, which includes a new natural hazards chapter to incorporate a risk-based approach.</p>	<p>from the general public and create a false perception of certainty.</p> <p>While DAPP combined with quantified risk management could provide for a more precise regulatory scheme, this is not the most reasonably practicable option given the costs and the resources available to Council at this time. Significant risk is associated with delaying the implementation of the risk-based approach into the district plan.</p>

³⁹ Lawrence, J., Bell, R., Blackett, P., Stephens, S., & Allan, S. (2018). National guidance for adapting to coastal hazards and sea-level rise: Anticipating change, when and how to change pathway. *Environmental science & policy*, 82, 100-107.

7.4 Mapping Options

268. The proposed plan objectives and policies require identification of whether land is subject to natural hazard risk. Identification of areas of land that may be subject to hazards could be achieved through mapping or by applying a criteria-based definition. These options are considered, along with the status quo option, for the identification of areas susceptible to land instability and mining subsidence hazards.

7.4.1 Coastal Hazards and Flooding maps

269. Mapping of coastal and flooding hazards is required by NRPS. Method 7.1.7 - Statutory plans and strategies states that:

“(1) The district councils shall notify a plan change to incorporate finalised flood hazard maps into district plans in the first relevant plan change following the operative date of the Regional Policy Statement or within two years of the Regional Policy Statement becoming operative, whichever is earlier. Additionally, the district councils shall incorporate new flood and coastal hazard maps into district plans as soon as practicable after such areas have been investigated, defined and mapped by the regional council. “

270. Due to higher order direction, evaluation of alternative options for those maps is not required.

271. Due to the ever-changing science and information on climate change, sea level rise and adverse weather events, the mapping of coastal hazards and flooding maps can only be seen as representing the potential impact of those hazards at a point in time.

272. The NRC maps that have been used in PC1 and which are proposed to be inserted into the district plan are those that existed on the NRC’s website as of April 2023. If the NRC changes the content of those maps at a later date in response to more up to date information about river flooding, coastal hazards and climate change impacts, then a plan change to amend the relevant district plan natural hazard overlay maps would need to occur as soon as practicable.

7.4.2 Land instability maps

273. Table 32 discusses options for identification of land instability hazards:

- **Option 1 – Status Quo.**
WDP does not provide for identification of areas susceptible to land instability risk. Maps of land instability are provided separately in Council’s GIS database.
- **Option 2: Include within the district plan maps of areas susceptible to land instability risk.**
Areas of High and Moderate susceptibility to land instability identified on maps as part of the District Plan.
- **Option 3: Criteria-based hazard identification.**
Do not map land instability areas and instead develop a criteria-based definition to determine the level of susceptibility present within sites. The definition then triggers a requirement for site geotechnical assessment. A non-statutory GIS map layer can be used as general guidance.
- The preferred option is **Option 2: Include within the district plan maps of areas susceptible to land instability risk.**

Table 32: Land Instability mapping options

	Option 1 – Status Quo	Option 2: Areas susceptible to land instability risk maps included within the district plan	Option 3: Criteria based hazard identification
Costs			
<i>Environmental</i>	<ul style="list-style-type: none"> None identified 	<ul style="list-style-type: none"> None identified 	<ul style="list-style-type: none"> None identified
<i>Economic</i>	<ul style="list-style-type: none"> Mapping would be non-statutory and subject to debate which could increase costs of the consenting process compared to Options 2 and 3. 	<ul style="list-style-type: none"> Higher upfront costs compared to Option 1 to make the maps operative through the Schedule 1 plan change process. Future amendments to maps would require a plan change with associated costs. There may be less development opportunities in areas with high susceptibility to land instability when compared to Option 1. 	<ul style="list-style-type: none"> Similar to Option 2 but with additional consenting costs as the criteria would require technical advice to assess. Due to the very technical nature of a definition, more site specific assessments would be required, the cost of which would fall on applicants.
<i>Social</i>	<ul style="list-style-type: none"> Mapping would not be in the public eye and could lead to confusion and inefficiencies for applicants. 	<ul style="list-style-type: none"> None identified 	<ul style="list-style-type: none"> Criteria would be relatively technical and difficult for members of the public to interpret. However, this can be off-set by providing non-statutory informational maps of land instability risk on council's GIS.
<i>Cultural</i>	<ul style="list-style-type: none"> None identified 	<ul style="list-style-type: none"> None identified 	<ul style="list-style-type: none"> None identified
Benefits			
<i>Environmental</i>	<ul style="list-style-type: none"> None identified 	<ul style="list-style-type: none"> Clearly identifying areas susceptible to land instability allows rules to be tailored for those locations and effectively manages the risk of hazards. 	<ul style="list-style-type: none"> Similar to Option 2
<i>Economic</i>	<ul style="list-style-type: none"> Reduced upfront costs compared to 	<ul style="list-style-type: none"> Mapping would be statutory and enforceable and not 	<ul style="list-style-type: none"> Similar to Option 2; however, costs would still be

	Option 1 – Status Quo	Option 2: Areas susceptible to land instability risk maps included within the district plan	Option 3: Criteria based hazard identification
	<p>Options 2 and 3 as mapping would not have to go through the Schedule 1 RMA process.</p> <ul style="list-style-type: none"> • There would be no need to go through future plan change processes to update mapping. 	<p>subject to debate once operative.</p> <ul style="list-style-type: none"> • Lower costs to applicants compared to Options 1 and 3 as the initial hazard susceptibility assessment has been done across the District. 	<p>required to interpret and assess the criteria.</p> <ul style="list-style-type: none"> • A definition can be applied to any newly identified areas of high or moderate susceptibility to land instability. This avoids the cost of having to update statutory maps through a Schedule 1 process. The statutory definition would only need to be updated if the scientific methodology for land instability was to change.
<i>Social</i>	<ul style="list-style-type: none"> • None identified 	<ul style="list-style-type: none"> • Clear link between the mapping, the rules and the information requirements which makes it easier for the public to access, understand, and interpret information. 	<ul style="list-style-type: none"> • None identified
<i>Cultural</i>	<ul style="list-style-type: none"> • None identified 	<ul style="list-style-type: none"> • None identified 	<ul style="list-style-type: none"> • None identified
Effectiveness	<ul style="list-style-type: none"> • Option 1 would not be effective in managing land instability hazard risks because rules could not be specifically applied based on the susceptibility of an area and instead would have to be more general, and likely more permissive. • Areas with high susceptibility to land instability hazards may not be appropriately assessed because they would not be identified as such. 	<ul style="list-style-type: none"> • Option 2 would effectively identify the susceptibility to land instability hazards throughout the District and would enable provisions to be based on the level of susceptibility. • Mapping would be clear and transparent to the public allowing for easier interpretation and assessment. • Because changes to the maps would require a Schedule 1 plan change, they could not be easily amended if there 	<ul style="list-style-type: none"> • Option 3 would provide for a flexible and adaptive approach to identification of land instability risk without locking in static maps that could quickly become outdated. • Depending on drafting, able to reflect the most up to date/accurate hazard risk analysis. • Less user friendly – Potential uncertainty in applying definition for plan users.

	Option 1 – Status Quo	Option 2: Areas susceptible to land instability risk maps included within the district plan	Option 3: Criteria based hazard identification
	<ul style="list-style-type: none"> Without statutory identification through maps or a definition the rules are difficult to apply to activities like vegetation clearance and earthworks and these activities therefore may not be appropriately managed. 	<p>were newly identified areas of high or moderate susceptibility to land instability.</p>	
Efficiency	<ul style="list-style-type: none"> Option 1 would not be efficient in identifying hazard areas as every land owner may have to undertake an individual site assessment. The overall cost of this could be significantly higher than Options 2 or 3. 	<ul style="list-style-type: none"> Option 2 is considered to be efficient as statutory maps provide more certainty to applicants and to council officers processing resource consents. Development would still be able to take place in areas of land instability risk with appropriate geotechnical investigations and mitigation measures. Any changes to the mapping would require a Schedule 1 plan change. 	<ul style="list-style-type: none"> Option 3 is considered less efficient due to potential costs and time associated with every consent application (as technical expertise is required to understand whether a site is subject to a hazard)
Risk of acting or not acting	<ul style="list-style-type: none"> Option 1 presents the risk of not appropriately managing hazard risks if the rules cannot be tailored to susceptible areas. The rules would either need to be overly cautious and require geotechnical assessments for any activity or would need to be more permissive and only manage subdivision. The latter is considered to have a high level of risk and perpetuates the existing ineffectiveness of the WDP in managing 	<ul style="list-style-type: none"> Option 2 presents the risk of not being able to amend the maps if the level of susceptibility to land instability hazards changes within a site. Once a site is mapped as it cannot be changed without a Schedule 1 process and might have rules applied to it. The maps are based on 10m² cells. Due to this hazards identified may be within + or – 10 metres which may mean that the mapped hazard may not be in the exact location shown on 	<ul style="list-style-type: none"> Option 3 presents a risk that the definition criteria may not as clear or enforceable as statutory maps because of the challenges to the interpretation of the definition in processing resource consents. Some form of site investigation would need to be undertaken for all sites to determine whether the definition was met/the rule framework was triggered. Uncertainty with extrapolating

	Option 1 – Status Quo	Option 2: Areas susceptible to land instability risk maps included within the district plan	Option 3: Criteria based hazard identification
	land instability hazards.	<p>the maps</p> <ul style="list-style-type: none"> Some landowners may have to undertake geotechnical investigation to prove their site is not affected and then request a formal plan change process to amend the maps to remove their sites. Option 2 presents the additional risk of legal challenge to maps on site by site basis. 	information onto LIMS.
Overall evaluation	Option 1 is not appropriate as it does not provide any means of identification of areas susceptible to land instability risk. Without means of risk identification the proposed policies and rules cannot be applied to activities.	<p>Option 2 is the most appropriate as it would provide for statutory maps that would be clear and easy to interpret. While static maps can become outdated due to development impacts and climate change, a precautionary approach to subdivision can balance this risk by requiring a geotechnical investigation for all new subdivision.</p> <p>This is the recommended option.</p>	While a criteria-based approach provides for the use of the best available information with lower upfront costs to the ratepayers, the application of the rule framework to individual sites would be less certain. Geotechnical investigations to determine if the definition applies may lead to costs and time delays for resource consents.

7.4.3 Mining subsidence maps

274. Mining subsidence hazards are currently mapped in the WDP. There is no evidence of any difficulty with this approach due to the static nature of historic mining activities in Kamo and Hikurangi.
275. A review of the Hikurangi mapping was undertaken in 2001⁴⁰ and recommended minor amendments to the WDP mapping. The updated area covers approximately 47ha more than the operative WDP mapping and applies to 16 more allotments. However, many properties that are identified as mining subsidence hazard area 2 in the operative plan, are instead identified as mining subsidence hazard area 3 in the updated new mapping. The Proposed Updated Mining Subsidence Hazard Mapping in Hikurangi based on the 2001 T+T Report is provided Appendix 3
276. Spatial mapping is an appropriate method of achieving the objectives and policies in relation to mining subsidence. The option of not having any mapping within the Plan is not considered reasonably

⁴⁰ Tonkin + Taylor Ltd (2001): Mine Subsidence Hazard Hikurangi Area, Whangarei.

practicable because it could lead to less transparent provisions and could result in significant adverse effects. Including spatial mapping of the mining subsidence hazard areas within the Plan is considered a more appropriate method of achieving the proposed objectives and policies.

277. In order to assess the appropriateness of the proposed mining subsidence mapping in achieving the proposed plan objectives the following three options were evaluated:
- **Option 1:** Status quo: Retain the WDP mapping of mining subsidence hazard areas 1 – 3 within Kamo and Hikurangi with minor amendments to the Hikurangi map.
 - **Option 2:** Combine mapped categories 1 – 3: Retain the spatial extent of the WDP mapping of mining subsidence hazard areas but remove the differentiation of the Mining Subsidence Hazard Areas into categories 1 – 3. The level of risk would be identified through site assessments.
 - **Option 3:** A full review of mapping: Undertake a review of the mining subsidence hazard areas within Kamo and Hikurangi to reassess the spatial extent of the hazard areas and the level of risk within each area.
278. The overall practical implications of each of the above options is relatively similar as each would result in spatial mapping being included in the Plan with the mining subsidence provisions applying in mapped areas. Table 33 provides analysis of the three options.

Table 33: Options analysis for mining subsidence maps

	Option 1 – Status Quo	• Option 2 – Combine mapped categories 1 – 3	Option 3:
Costs			
Environmental	• None identified	• None identified	• None identified
Economic	• Potential reduction in the development potential for the 16 additional properties identified on the updated Hikurangi maps. This is tempered by the fact that the updated Hikurangi maps are already used for the LIMs, so the property values likely already reflect the presence of the mining subsidence hazard.	• Without distinguishing the differing levels of risk between areas 1 – 3 the landowners of properties in areas 2 and 3 would have to carry unnecessarily increased costs of physical investigations as part of site suitability assessments if mapping of areas of lower risk is not available (e.g. categories 2 and 3).	• Very high upfront costs to Council and ratepayers for physical investigations of mine workings. • Potential loss of development potential and reduction in property values for any properties that would be found to have a higher level of risk than currently mapped.
Social	• None identified	• None identified	• None identified
Cultural	• None identified	• None identified	• None identified
Benefits			
Environmental	• None identified	• None identified	• None identified
Economic	• Potential increases in the value perceptions	• None identified	• Increased certainty for landowners and

	Option 1 – Status Quo	• Option 2 – Combine mapped categories 1 – 3	Option 3:
	for the numerous properties that are identified as mining subsidence hazard area 2 in the operative plan, but are instead identified as the lower risk mining subsidence hazard area 3 in the updated new mapping.		<p>developers about the value and development potential of the land.</p> <ul style="list-style-type: none"> • Potentially lower costs to resource consent applicants if the updated investigation reports and maps were to remove the need for detailed physical site investigations at a resource consent stage.
Social	<ul style="list-style-type: none"> • Reassurance for the occupiers of the properties that have been found to be at lower risk (Mining subsidence area 3). 	<ul style="list-style-type: none"> • None identified 	<ul style="list-style-type: none"> • None identified
Cultural	<ul style="list-style-type: none"> • None identified 	<ul style="list-style-type: none"> • None identified 	<ul style="list-style-type: none"> • None identified
Effectiveness	<ul style="list-style-type: none"> • Option 1 is effective, because it would bring the existing best available information on the Hikurangi maps into the District Plan. As a result, the District Plan maps will match the maps that landowners/buyers are receiving on their LIM reports. • Retaining categories 1 – 3 to distinguish areas of mining subsidence by relative risk is more efficient, as it helps to identify where more scrutiny is required as part of site suitability investigations. 	<ul style="list-style-type: none"> • Using only one category for mining subsidence risk would reduce the complexity of the rules required for the District Plan. • However, Option 2 would be less effective at identifying areas where more scrutiny may be required as part of site suitability investigations. • Removing the existing risk-based map categories would be less effective at giving effect to the RMA requirement to implement a risk-based approach. 	<ul style="list-style-type: none"> • It is unlikely the new maps would be substantially more accurate compared to the ones currently available. The operative mapping has been assessed by multiple reports which considered it to be thorough and appropriate. There may be additional areas of mine workings that are unrecorded, but the information needed to identify those areas is no more readily available now than it was at the time of the original mapping.
Efficiency	<ul style="list-style-type: none"> • Option 1 is considered to be efficient because the proposed updated Hikurangi maps are already available and used for LIMs and building consents. 	<ul style="list-style-type: none"> • Option 2 is considered to be less efficient due to potential costs and time associated with every consent application if every site needs to be 	<ul style="list-style-type: none"> • Option 3 is considered less efficient due to a significant time delay to undertake extensive investigations. This would further delay

	Option 1 – Status Quo	<ul style="list-style-type: none"> Option 2 – Combine mapped categories 1 – 3 	Option 3:
	<ul style="list-style-type: none"> There is no evidence of any difficulty with the current approach and with current mapping in Kamo. The mining subsidence hazard categories 1 – 3 are well understood by the community and the construction sector in Whāngarei. 	investigated with the highest level of scrutiny due to a lack of risk-based mapping.	<p>the updating of the Hikurangi maps which have been on hold for a number of years.</p> <ul style="list-style-type: none"> The number of properties affected by the mapping, particularly the number of vacant properties, is relatively small. The costs to completely review the mining hazard mapping are not considered proportionate to the costs imposed on these landowners, particularly given the fact that it is unlikely that the mapping would significantly change through a review. This option carries unjustifiably high costs to Council, ratepayers and the community to undertake repeat investigations of the entirety of the mine workings and surrounds, given the static nature of this hazard.
Risk of acting or not acting	<ul style="list-style-type: none"> Not updating the maps for Hikurangi presents the risk of not using the best available information. The update to the Hikurangi maps has been available since 2001 as a non-statutory layer. 	<ul style="list-style-type: none"> Option 2 presents the risk of not providing the community and landowners with appropriate information about the higher level of risk in Mining Subsidence Area 1. 	<ul style="list-style-type: none"> The risk of not acting is considered to be low. The old coal mines have not changed in location or nature since the original mapping as no additional mining or remediation work has been undertaken.
Overall evaluation	Option 1 is the most appropriate as it would incorporate the best available information into WDP regarding Mining	Option 2 is not appropriate as it would impose disproportionate cost and delay for resource consent applicants if the risk	Option 3 has the potential to result in more accurate mapping of the mining subsidence hazard areas in Kamo and Hikurangi.

	Option 1 – Status Quo	• Option 2 – Combine mapped categories 1 – 3	Option 3:
	<p>Subsidence risk in Hikurangi. Retaining categories 1 – 3 helps distinguish areas where more scrutiny may be required as part of the risk assessment.</p> <p>This is the recommended option.</p>	<p>categories 1 – 3 are removed and all site investigations would have to carry out the highest level of physical investigations for a site suitability report.</p>	<p>However, reviewing the operative mapping would come at additional costs and is not considered necessary or efficient. Therefore, to manage risk this option is not considered to be appropriate.</p>

279. When weighing the appropriateness of Options 1 and 2 it is relevant to highlight that although the three mining subsidence hazard area categories are differentiated on the WDP District Plan maps, neither the policies nor the rules in the WDP differentiate between these three areas. It is considered that this creates confusion as to the significance of the different categories. PC1 proposes to include reference to the categories within the matters of control and matters of discretion to ensure that consideration is given to the existing degree of risk within the site and surrounding area. It is considered that Option 1 (in tandem with the proposed matters of control and discretion) is more effective than Option 2 because the mapping helps distinguish areas where more scrutiny may be required as part of the risk assessment. Option 3 is not considered appropriate or efficient due to unjustifiably high costs to Council, ratepayers and the community to undertake repeat investigations of the entirety of the mine workings and surrounds, given the static nature of this hazard.

280. A follow-up review of natural hazards in Whangārei by Institute of Geological & Nuclear Sciences (2003) further confirmed the appropriateness of the existing MHA mapping:

“Kelsey (1980), St George (1981), Tonkin & Taylor (1983, 1984, 1999) and several others in the 1980’s have assessed the subsidence hazard from the old coal mine at Kamo. The latest review by Tonkin & Taylor (1999) concludes that the past subsidence studies have been exhaustive and without any new information the current three hazard zones shown on the planning maps should remain unchanged.”⁴¹

281. Given the above it is considered that Option 1 is the most appropriate option and that the operative mapping should be retained with minor amendments to the Hikurangi mapping to reflect the most updated information for the proposed PC1 maps.

7.5 Quantification of costs and benefits

282. Section 32(2)(b) of the RMA requires Council to quantify the benefits and costs of the proposal where practicable. It is recognised that in some cases full quantification or monetised assessment may not be possible. As discussed in section 5.3, the scale and significance of the effects of proposed changes for natural hazards are assessed as being medium. Given the deep uncertainty associated with climate change and the diversity of societal risk preferences, detailed quantification of costs and benefits is not considered practicable or beneficial. Furthermore, the value of resilience and adaptation is difficult to capture within conventional cost-benefit analysis. *

⁴¹ Institute of Geological & Nuclear Sciences. 2003. A Review of Natural Hazards Information for Whangārei District. D Beetham, J Kerr, M McSaveney, N Perrin, M Rosenberg, & W Smith.

283. Some of the costs of past natural hazards in Whāngarei District have been identified where information is readily available. As a single example, the 15-19 July 2020 storm was as a ~1:100 year rainfall event⁴² and caused over \$6.2 million of damage to council infrastructure. Further details are included in Appendix 4.
284. Insurance Council of NZ data recorded \$44 million in claims following July 2020 Upper North Island Flooding.⁴³ Of those claims \$27 million were for house and contents, however not all these claims would have been in Whangarei District. More detailed insurance information is difficult to obtain due to commercial sensitivity. Coastal flooding impacts on rural production activities would fall under commercial insurance, the figures for which are not available. Due to this, it is not feasible or practicable to quantify in this report all of the damage to Council infrastructure and to private individuals.
285. Natural hazards damage in the coastal area is not readily measurable in financial terms, as the majority of land in those areas is zoned for low-intensity uses. Over 50% CEHA-0 and CEHA-1 is zoned Natural Open Space Zone, while over 70% of CFHA-0 and CFHA-1 are in the Rural Production Zone. Given the inevitable reality of climate change, it is timely and appropriate to implement planning measures to preserve the low-intensity status of these areas to avoid exposing people and assets to escalating natural hazard risk.
286. Reporting included in Appendix 4 provides snapshots of damage from natural hazards in the District drawn from operational reporting. It shows a trend of more extreme storm and rainfall events leading to escalating damage, particularly when soils become saturated from prolonged and heavy rainfall over weeks and months. In this context, the overall benefits of risk avoidance and risk reduction are evident.

7.6 Quantification of spatial impacts through GIS

287. GIS analysis has been carried out to quantify some of the potential impacts of the proposed provisions. Analysis specifically considered current zoning and impacts on Māori Land. The risk-based approach proposed by PC1 recognises that hazard-specific levels of risk will determine appropriate levels of planning controls. For the purposes of this analysis, areas at high risk from natural hazards are considered to include:
- Coastal erosion areas 0 and 1 (CEHA-0 and CEHA-1)
 - Coastal flooding 0 and 1 (CFHA-0 and CFHA-1)
 - High-risk Flood Hazard mapped as susceptible to flooding in a 1 in 10-year flood event
 - Mining subsidence hazard area 1
288. The coastal and flood hazard mapping included in this analysis was developed by NRC. The proposed plan change would incorporate these maps into WDP as per the requirement of NRPS. The mining hazard maps used for the analysis are WDC maps and are already included in the WDP as a statutory layer. The updated land instability susceptibility maps are currently available to the public on council's GIS as an educational and informational map and are included on LIM reports.
289. Analysis of zoning that currently applies to land at high risk from natural hazards revealed that substantial proportions of land at high risk from natural hazards fall to non-residential zones:
- 89.1% of land susceptible to high land instability is zoned as Rural Production Zone.
 - 89.2% of land susceptible to 10-year flooding hazard is in the Rural Production Zone.
 - 55.5% of CEHA-0 and 66.2% of CEHA-1 are in the Natural Open Space Zone.
 - 74.8% of CFHA-0 and 72.8% of CFHA-1 are in the Rural Production Zone.
 - 59.1% of land in Mining Subsidence Hazard Area 1 is in the Rural Production Zone.
290. These findings suggest that impacts of the proposed provisions on subdivision potential and growth and development would be smaller than they may initially seem looking at the extent of the hazard

⁴² Northland Regional Council. (2020). July 2020 climate report.

<https://www.nrc.govt.nz/environment/environmental-data/hydrology-climate-report/2020/august/july-2020-climate-report/>

⁴³ Insurance Councils of NZ. (n.d.). Cost of natural disasters. <https://www.icnz.org.nz/natural-disasters/cost-of-natural-disasters>

mapping. Subdivision and residential development in the Rural Production Zone are already limited by the objectives of the zone. The proposed natural hazards provisions provide allowances for farming structures and for plantation forestry in natural hazard areas. Likewise, the purpose of the Natural Open Space Zone does not include subdivision and development.

291. Calculations of areas affected by land instability risk are provided in Table – provided in Section 4.4.3. Approximately 181,401.85 hectares of land (across 32,454 different parcels) are identified as land with high or moderate susceptibility to land instability.
292. Analysis of vacant land parcels affected by mining subsidence risk is provided in Table 15 provided in Section 4.4.4 and is discussed in section 4.4 of this report.

7.7 The Housing Capacity and Feasibility Tool

293. The Housing Capacity and Feasibility Tool was developed to assess the capacity for housing development in Whangārei that is:
 - Plan-enabled (i.e. enabled based on Whangārei’s planning zones and rules).
 - Supported by development infrastructure (water supply, wastewater, stormwater and land transport).
 - Feasible to develop (commercially viable given the costs and revenues of developing).
294. The tool combines geospatial parcel data, district plan zoning rules, building costs, building durations, and building sale prices to compute plan-enabled and feasible capacity for both infill and demolition development. In 2022 WDC worked with MR Cagney to update the model to add hazard information. This addition enables analysis of the potential impact that restricting development in hazard areas will have on capacity predictions.
295. The updates to the Housing Capacity tool involved adding two scenarios. These hazard scenarios used NRC coastal hazard and river flood maps. The “risk” was based upon the PNRP definition of hazard risk. The “high risk” scenario included areas identified by NRC as at risk in the planning horizon of 0-50years. The second scenario of “hazard areas” includes less immediate threats that likely to worsen in the long term (i.e. 100 year hazard events). The hazard layers used for each scenario are listed in Table 34.

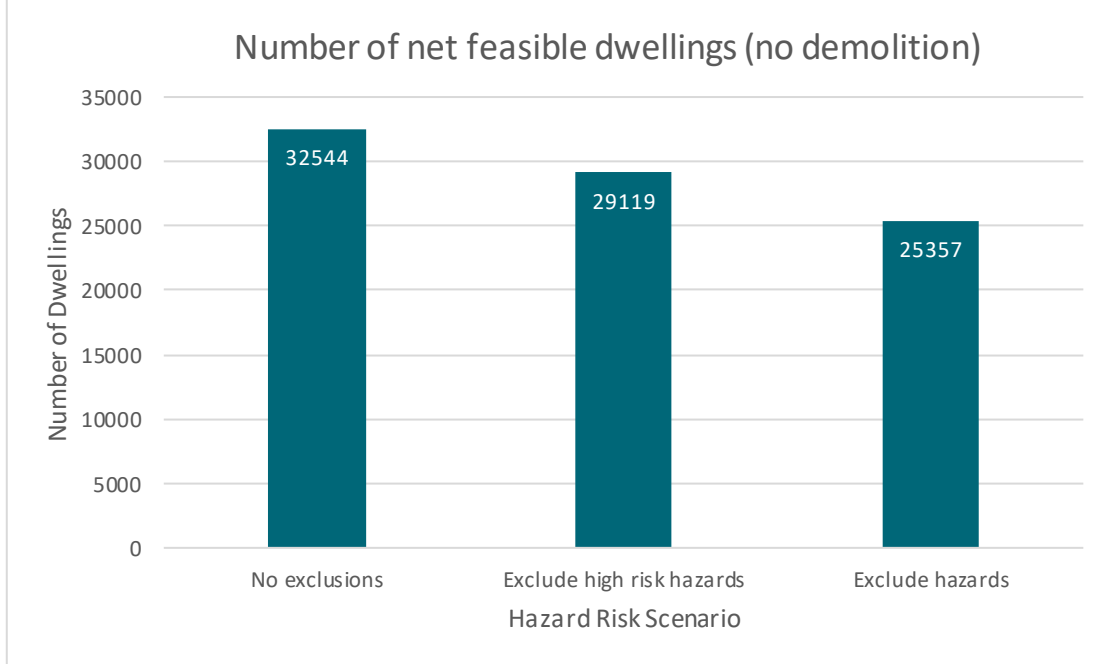
Table 34: Hazard Scenarios

High Risk Hazard Areas	Hazard Areas
<ul style="list-style-type: none"> • 10 year flood area • Coastal Erosion 0 • Coastal Flood hazard 0 • Coastal Erosion Hazard 1 • Coastal Flood Hazard 1 • Mine Zone 1 	<ul style="list-style-type: none"> • 100 year flood event • Coastal Erosion Hazard 2 • Coastal Flood Hazard 2 • Coastal Erosion Hazard 3 • Coastal Flood Hazard 3

296. At the time of updating the Housing Capacity model the decision was made not to include the land instability mapping, that is now proposed to be included in the district plan as part of PC1, in the Housing Capacity tool. This decision was made as the risk of land instability is different in nature to coastal and flood hazard and can often be addressed by engineering solutions.
297. The housing demand assessment projects demand for 20,100 additional dwellings by 2051 (against the 2020 baseline). Figure 1 demonstrates that even if development is heavily restricted in hazard areas, there is sufficient capacity in other areas to meet demand projections. This means that there is no shortfall in capacity that would call into question the cost impacts of PC1.

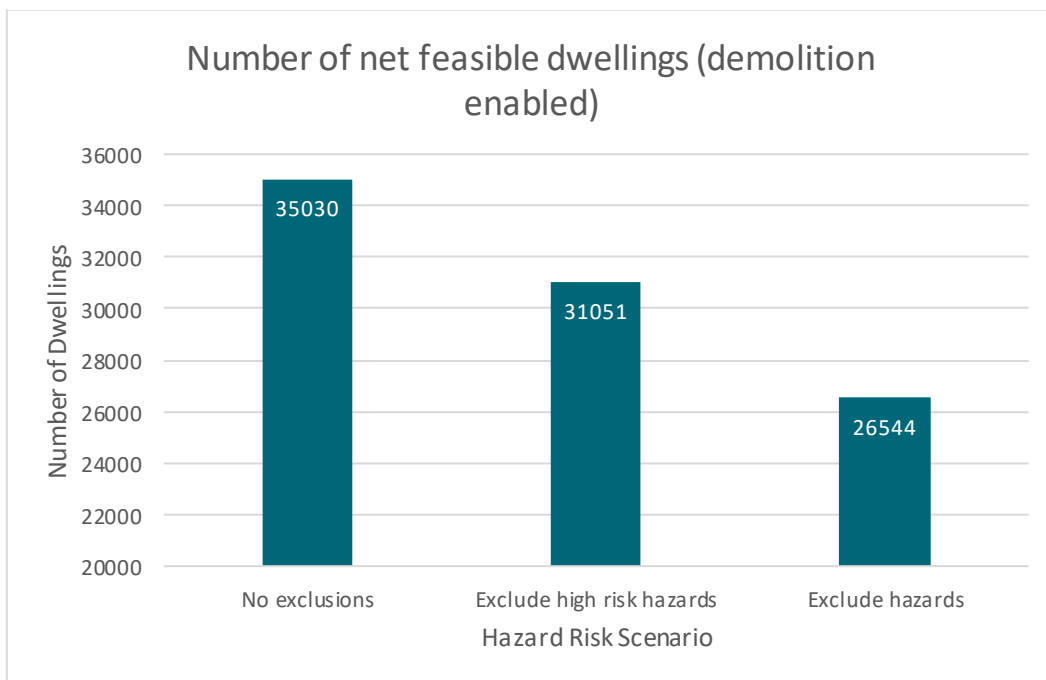
298. Figure 1 shows capacity with no demolition enabled, meaning infill development capacity is calculated on the assumption that existing buildings will remain.

Figure 1: Capacity to meet demand projections



299. Figure 2 shows the capacity with demolition enabled, calculating the maximum capacity if the site was redeveloped.

Figure 2: Capacity to meet demand projections (demolition enabled)



8. Evaluation of Specific Provisions in proposed Plan Change

300. For each option, an evaluation has been undertaken in section 7.2 relating to the costs, benefits and risk in order to determine the effectiveness and efficiency of the approach, and whether it is the most appropriate way to achieve the relevant objective(s).
301. The following tables demonstrate the linking of the proposed rules and policies to objectives, with discussion to demonstrate how the proposed provision implement the objectives in accordance with the recommended option identified in section 7.2.

8.1 Discussion of proposed policies

302. Table 35 below demonstrates how proposed policies implement the proposed objectives.

Table 35: Linking of proposed provisions

Proposed Objective	Proposed Policies	Comment
<p>NH-O1 – Hazard Risk</p> <p>The risks associated with natural hazards and their impacts on people, property, infrastructure and the environment are appropriately assessed and managed.</p> <p>DGD-O1 – Natural Hazards</p> <p>Avoid inappropriate subdivision, use and development in areas at high risk from natural hazards, and minimise the risks and impacts of natural hazard events, including the influence of climate change, on people, property and infrastructure.</p>	<p>NH-P1 – Risk Identification</p> <p>NH-P2 – Risk Management</p> <p>NH-P3 – Risk Assessment</p> <p>NH-P6 – Tsunami Hazards</p> <p>NH-P11 – Vulnerability</p> <p>NH-P15 Vulnerability</p> <p>NH-P20 – Mapping</p> <p>NH-P21 – Remediation and Mitigation Works</p> <p>NH-P22 – Mapping of Mining Subsidence Hazard Areas</p> <p>DGD-P2.5 – Natural Hazards</p>	<p>In order to manage significant risk from natural hazards, land that may be subject to hazards must be identified, including by way of mapping hazard areas. The proposed policies allow flexibility for different methods of managing risk depending on the specific characteristics of the site, the proposed development, intended use and the natural hazards present within the site. The policies recognise that some land uses and development, such as non-habitable buildings and rural land uses, are resilient to the adverse effects of natural hazards. Requiring risk assessment prior to subdivision, use and development of land gives effect to the proposed objectives so that risk can be appropriately managed and any inappropriate subdivision, use and development in areas at high risk from natural hazards is avoided.</p>
<p>NH-O2 – New development.</p> <p>Avoid inappropriate new subdivision, land use and development in areas subject to natural hazard risk.</p> <p>SUB-O6 – Natural Hazards</p>	<p>NH-P4 - Risk Reduction</p> <p>EARTH-P4 Risk reduction</p> <p>SUB-P6 – Natural Hazards</p> <p>NH-P9 – New Subdivision Land Use and Development</p> <p>NH-P13 – New Subdivision, Land Use and Development</p>	<p>The most efficient opportunities for considering reduction of natural hazard risk are when land use is initially proposed and ideally are considered at the subdivision stage. The proposed objectives set a clear direction for avoidance of inappropriate subdivision and land use. The proposed policies give effect to the objectives by setting</p>

<p>Avoid inappropriate new subdivision in areas subject to natural hazard risk.</p> <p>EARTH-03 Earthworks in areas subject to land instability and mine subsidence Manage the risks associated with earthworks in areas subject to land instability and mine subsidence to achieve the objectives and policies in the Natural Hazards chapter.</p>	<p>NH-P23 – Buildings and structures</p>	<p>out the means to ensure that new land use and development does not lead to an unacceptable increase in risk. They inform what is considered to be appropriate or inappropriate.</p> <p>The proposed natural hazard policies will assist with the consideration of subdivision applications against Section 106 as they will provide guidance around what is considered to be acceptable risk.</p>
<p>NH-O3 – Existing Development</p> <p>In existing developed areas, build resilience to potential impacts from natural hazards and avoid locating vulnerable activities in areas of high hazard risk.</p>	<p>NH-P4 - Risk Reduction</p> <p>NH-P10 – Existing Development</p> <p>NH-P14 – Existing Development</p> <p>NH-P21 – Remediation and Mitigation Works</p> <p>NH-P23 – Buildings and structures</p>	<p>The proposed policies implement the approach to continue to provide for infill development in the existing developed areas and managing natural hazard risk through building resilience and decreasing vulnerability.</p> <p>In areas of mining subsidence hazard the proposed policy provides clear guidance for decision making about risk of any further development in these areas.</p>
<p>NH-O4 –Regionally Significant Infrastructure and Critical Infrastructure</p> <p>Infrastructure, particularly regionally significant infrastructure and critical infrastructure, is provided for in areas that may be susceptible to natural hazards where there is a functional need and operational need to locate in the area and where risks to people, property and the environment are mitigated as far as practicable.</p>	<p>NH-P7 –Infrastructure</p> <p>NH-P23 – Buildings and structures</p>	<p>The proposed policies give effect to the proposed objective by listing specific considerations when locating infrastructure. The proposed policies also tie in with objective NH-O1 – Hazard Risk and NH-O6– Climate Change.</p>
<p>NH-O5 – Natural Buffers and Defences</p> <p>Existing natural buffers and natural defences against natural hazards are maintained, protected, restored and enhanced, and new development does not compromise existing natural buffers and natural defences.</p>	<p>NH-P12 – Defences</p> <p>NH-P16 Natural Defences</p> <p>NH-P17 – Hard Protection Structures</p> <p>NH-P18 – Appropriate Hard Protection Structures</p> <p>NH-P19 – Hard Protection Structures Location and Design</p>	<p>Natural features play an important role in reducing the impacts from natural hazards. For example, dune systems reduce the impacts of flooding and, coastal inundation. A number of natural features that protect people and property from damage from natural hazards have either been removed or degraded. These objectives seek to maintain these natural features, where they remain, and allow for them to be enhanced.</p>

<p>NH-O6– Climate Change</p> <p>The potential effects, including long-term effects, of climate change are taken into account when managing subdivision, land use and development.</p>	<p>NH-P5 – Climate Change NH-P8 – Adaptive planning SUB-P6 – Natural Hazards</p>	<p>Strong provisions on climate change align with national level instruments and with the Te Tai Tokerau Climate Adaptation Strategy. The proposed policy NH-P5 provides a clear way to give effect to the proposed objective by means of considering the effects of climate change when assessing natural hazard risks. The proposed policy NH-P7 provides a way to give effect to Action 28 on the Te Taitokerau Climate Adaptation Strategy priority actions list which directs councils to embed adaptation plans in regulatory instruments, including using environmental cues to trigger changes to planning rules. The proposed requirement in policy NH-P6 that that strategic direction on climate change adaptation is considered at the resource consenting stage provides a way to embed strategic direction into decision making at the time resource consent applications are considered.</p>
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8.2 Discussion of proposed rules

Tables 36-45 that follow provide evaluation of the proposed provisions grouped by the type of activity and hazard severity.

8.2.1 Minor, non-habitable and farming buildings and structures

Table 36: Evaluation of provisions to related to minor, non-habitable and farming buildings and structures.

<p>Objectives:</p> <p>NH-O1 – Hazard Risk. <i>The risks associated with natural hazards and their impacts on people, property, infrastructure and the environment are appropriately identified, assessed and managed.</i></p> <p>NH-O2 – New development. <i>Avoid inappropriate subdivision, land use and development, particularly vulnerable activities, in areas subject to natural hazard risk.</i></p>	
Relevant provisions	Assessment
<p>Policies: NH-P3 NH-P11 NH-P15</p> <p>Rules: NH-R3 - Minor buildings and general public amenities. NH-R5 - Non-habitable rural buildings and major structures. NH-R9 - Fences and walls in flood hazard areas. NH-R14 - Non-habitable buildings and major structures in areas of moderate or high instability CH-R3 - Minor buildings and general public amenities CH-R5 - Non habitable buildings and major structures</p>	<p>General Intent To provide a permitted pathway for low-scale, low-risk activities in the context of managing the risks from natural hazards.</p> <p>Costs Potential risk for Council if building consents are granted for uninhabited farm buildings in floodable areas and those buildings are damaged.</p> <p>Rural buildings may at be higher risk of damage from natural hazard events, such as flooding and land slippage if appropriate site investigations are not carried out by landowners before their construction. This is balanced with the cost and time delay of consenting for simple structures, such as artificial crop protection structures.</p> <p>Benefits Lower consenting costs for landowners where permitted activity criteria are met.</p> <p>The risk from natural hazard events will not increase significantly when compared to the existing situation.</p> <p>These provisions do not allow for vulnerable activities to establish as a permitted activity, therefore the risks to human life are not increased significantly.</p> <p>Farming activities occur on larger properties in rural areas and hence any changes in natural hazard risk are more likely able to be internalised to the subject property and less likely to extend off site.</p> <p>Enables uninhabited farm buildings without the need for resource consent and reduces time delays and additional costs associated with the preparation and processing of resource consent applications.</p> <p>Supports farming activities.</p> <p>Provides a permitted pathway for general public amenities (such as picnic tables, rubbish bins and bicycle stands) to reduce the associated costs and recognise their low-risk profile.</p> <p>Risk of Acting / Not Acting if there is uncertain or insufficient information about the subject matter of the provisions</p>

Objectives:

NH-O1 – Hazard Risk. *The risks associated with natural hazards and their impacts on people, property, infrastructure and the environment are appropriately identified, assessed and managed.*

NH-O2 – New development. *Avoid inappropriate subdivision, land use and development, particularly vulnerable activities, in areas subject to natural hazard risk.*

Relevant provisions	Assessment
	<p>Risks relate to unidentified areas affected by natural hazards where construction of minor and non-habitable buildings and major structures and the associated earthworks and removal of vegetation can exacerbate the hazards. However, as the RMA is not a no-risk statute, it is considered the level of risk is tolerable for these specified cases.</p> <p>A significant amount of the flood hazard areas affect rural production land. To ensure that the ability of farming activities to effectively function is not compromised, the exclusion allows for low-risk buildings such as farm sheds to be built without requiring an engineer’s assessment.</p> <p>Effectiveness and efficiency</p> <p>These provisions support NH-O1 and NH-O2 by considering the risks associated with natural hazards and their impacts on minor and non-habitable buildings and major structures. While other provisions in the proposed plan change require high levels of scrutiny for more substantial assets such as homes, rules NH-R3, 5, 9 and 14 and CH-R5 adopt a pragmatic approach.</p> <p>Minor buildings, as well a general public amenities are defined terms in the plan and it is considered the risks associated with exposure of such buildings structures to natural hazards are more tolerable. The proposed rules do not allow vulnerable activities to establish as a permitted activity in areas subject to natural hazard risk, while identifying appropriate types of land use that can be carried out without a resource consent (and without the checks of a site specific investigation) in hazard areas.</p> <p>It is considered efficient to provide permitted activity options for such minor and non-habitable buildings and major structures because:</p> <ul style="list-style-type: none">• Due to light loading they are less likely to impact on slope stability• Due to small investment the impacts of damage to the minor buildings or structures would be less severe• Non-habitable buildings, such as barns or milking sheds, that are part of a rural activity may need to locate in on land subject to natural hazards for operational reason. The risk to people is limited due to the non-habitable nature of such buildings and can be managed by farm safety plans.• Practicality of constructing fences, particularly in rural areas where fencing is required to separate stock from rivers and coastal areas.• The 30m² threshold is consistent with the Building Act provisions for buildings that do not require a building consent.• Aligns with building consent exemptions, where single-storey pole sheds and hay barns up to 110m² can be exempt from requiring a building consent. <p>The requirement to identify, assess and manage natural hazards set out in Objective NH-O1 is implemented through specifying a Restricted Discretionary activity status where permitted activity standards are not met.</p>

8.2.2 Slope stability

Table 37: Evaluation of provisions related to protecting slope stability

Objectives:	
<p>NH-O1 – Hazard Risk. <i>The risks associated with natural hazards and their impacts on people, property, infrastructure and the environment are appropriately identified, assessed and managed.</i></p> <p>EARTH-03 – Earthworks in areas subject to natural hazards. <i>Earthworks do not create, contribute to or exacerbate land instability or mining subsidence risk onsite or on other property.</i></p>	
Relevant provisions	Assessment
<p>Policies: NH-P4 NH-P20 NH-P21 EARTH-P4</p> <p>Rules: NH-R12 - Clearance of Exotic and Indigenous Vegetation (excluding pasture) in Areas Of Moderate Or High Susceptibility To Land Instability Hazards.</p> <p>EARTH-R3 - Earthworks (other than earthworks associated with subdivision) in areas of moderate or high susceptibility to land instability hazards.</p>	<p>General intent</p> <p>Often vegetation clearance and earthworks precede the application for a resource consent. However, even small changes to slopes can trigger instability given Northland’s unstable soils and the increased frequency of intense rainfall events. Likewise, vegetation takes up soil moisture and stabilizes slopes. Thereby removing of significant areas of vegetation can increase the potential for instability to occur in a similar way to earthworks activities.</p> <p>While the existing operative plan rule EARTH-R1 requires consideration of land instability for earthworks associated with subdivision, the operative WDP does not contain an equivalent rule for earthworks associated with (or preceding) other land uses, for example construction of buildings. The operative WDP also does not regulate general vegetation removal from a natural hazard risk perspective. The operative WDP protects only indigenous vegetation for biodiversity purposes, rather than all established vegetation on slopes.</p> <p>The intent of the rule is to allow minor earthworks on a site, while managing the risks of larger-scale activity. Examples of permitted activities include minor additions to a dwelling permitted under the plan (e.g. 30m²), landscaping/gardening, formation of driveways and footpaths.</p> <p>Earthworks rules in relation to mining subsidence are not part of this table, as the risk mechanism is different.</p> <p>Costs</p> <p>Increased consenting costs where the proposed activity exceeds permitted standards. However, costs are tempered by the fact that notification would not be required under the restricted discretionary activity status.</p> <p>Costs to applicants to obtain geotechnical site suitability reports.</p> <p>Benefits</p> <p>The proposed permitted activity thresholds can accommodate most of the minor developments a landowner might reasonably want to undertake for a single residential site, without additional consenting costs.</p> <p>Neighbouring properties will be protected from potential damage due to land slide triggered by inappropriate earthworks.</p> <p>Preserving established vegetation, such as trees, would assist with absorption of soil moisture and retaining of slopes.</p> <p>Risk of Acting / Not Acting if there is uncertain or insufficient information about the subject matter of the provisions</p>

Objectives:

NH-O1 – Hazard Risk. *The risks associated with natural hazards and their impacts on people, property, infrastructure and the environment are appropriately identified, assessed and managed.*

EARTH-03 – Earthworks in areas subject to natural hazards. *Earthworks do not create, contribute to or exacerbate land instability or mining subsidence risk onsite or on other property.*

Relevant provisions	Assessment
	<p>While there is some degree of uncertainty associated with setting a specific threshold value, the chosen thresholds were developed with geotechnical input balancing risk and practicality. More stringent thresholds were initially proposed in the draft released of public feedback and were adjusted following feedback to reflect a more pragmatic approach.</p> <p>There is insufficient information about the type and density of vegetation between different sites. This variation will also change how removal of vegetation impacts on land stability: denser, deeper rooting vegetation being cleared from slopes will have more of a significant impact than sparse, shallow-rooted plants in equivalent areas. To reduce uncertainty to applicants, the proposed rule specifically excludes pasture, as the shallow-rooted nature of these plants offer negligible support to slopes. Removal of pasture, however, may have other considerations such as erosion and must comply with regional plan rules.</p> <p>As mapping of land instability has a +/-10m margin of error, there might be some situations where partial areas that are not at risk of land instability would be caught by the rule. However, this is contrasted with the fact that in many cases earthworks are associated with other activities that require a resource consent or a building consent where geotechnical assessment is required in any case.</p> <p>On balance, it is considered not managing earthworks and vegetation removal through the district plan carries significant risks. Not acting would mean the exposure of people and property to the risk of land instability would continue to increase without any ability to require mitigation.</p> <p>Effectiveness and efficiency</p> <p>The rules discussed in this table support the proposed objectives in relation to earthworks and vegetation clearance. The ODP does not contain rules to manage earthworks in areas susceptible to land instability, which has been identified as a significant issue by council's engineers and compliance officers. The proposed earthworks provisions also provide as a permitted activity for earthworks associated with dune restoration projects, which contributes to Objective NH-P5 (Natural Defences).</p> <p>The proposed permitted standard for and vegetation clearance provides a large permitted thresholds of 150m² (which is considered ample for the purposes of possible associated permitted activities such as decks, sheds and landscaping). The rule also includes exemptions for various lawfully established activities, maintenance, gardening, and biosecurity and conservation work. This solution affords efficiency, by reducing the need for a resource consent where the risk is considered tolerable. For clearance of an area larger than 150m² requiring a resource consent is still considered efficient, as such large works would normally be associated with other consent applications (e.g. land use consent or building consent) and can be dealt with together.</p> <p>Likewise, the proposed earthworks rule sets the permitted activity thresholds at 150m² and 30m³. It is assessed these are appropriate scales for vegetation</p>

Objectives:	
NH-O1 – Hazard Risk. <i>The risks associated with natural hazards and their impacts on people, property, infrastructure and the environment are appropriately identified, assessed and managed.</i>	
EARTH-03 – Earthworks in areas subject to natural hazards. <i>Earthworks do not create, contribute to or exacerbate land instability or mining subsidence risk onsite or on other property.</i>	
Relevant provisions	Assessment
	<p>removal and earthworks. Given the typical building platform for a developing site is 100m², a 150m² area threshold enables minor earthworks over such an area with an additional margin of a few metres (e.g. 2.5m on each side for a square area). If a residential owner wanted to do extensive landscaping, or install a patio, then 150m² area is expected to be ample. An area of 150m² and depth of 30m³ gives an average depth of excavation of 0.2m, which is assessed to carry minor risk for land instability.</p> <p>On the other hand, over 200m² of earthworks, even shallow earthworks, could result in smaller sites having earthworks covering more than half of the entire site (considering that the General Residential zone allows residential plots of 400m²). This could then have more significant impacts on land stability and on slippage risks to neighbouring property owners.</p> <p>The proposed 0.5m face height for any cut and/or fill is assessed as optimal in the context of minor earthworks. Higher cuts carry higher risk of triggering land instability and require geotechnical engineer input, as even small changes can have dramatic impacts on slopes susceptible to land instability.</p> <p>The Restricted Discretionary activity status is considered appropriate as discretion is limited to only matters related to land stability and notification is not required.</p>

8.2.3 Earthworks in areas of mining subsidence

Table 38: Evaluation of provisions related to earthworks in areas of mining subsidence

Objectives:	
NH-O1 – Hazard Risk. <i>The risks associated with natural hazards and their impacts on people, property, infrastructure and the environment are appropriately identified, assessed and managed.</i>	
EARTH-03 – Earthworks in areas subject to natural hazards. <i>Earthworks do not create, contribute to or exacerbate land instability or mining subsidence risk onsite or on other property.</i>	
Relevant provisions	Assessment
Policies: NH-P4 NH-P23 EARTH-P4	General Intent The ODP contains earthworks provisions in areas of mining subsidence, however internal and external engineering feedback has been received that

Rules:

EARTH-R4 - Earthworks in Mining Subsidence Hazard Areas 2 and 3.

EARTH-R5 - Earthworks in Mining Subsidence Hazard Area 1.

these are ineffective because the existing rules do not distinguish between the varying levels or risk in Mining subsidence areas 1, 2 and 3. The proposed rules expand the matters of discretion to provide for a more thorough assessment of matters related to mining subsidence.

Following technical feedback received during engagement on the draft plan change the earthworks rule for Mining Subsidence Hazard Area 1 has been elevated to a restricted discretionary activity status due to high risk. The updated proposed rule EARTH-R5 removes the permitted activity option and sets a clear expectation that site specific investigation prior to earthworks must be carried out. The resource consent process will provide for full evaluation of risk and ensure the geotechnical report complies with information requirements

Costs

Costs related to the resource consent process.
Cost to applicants to obtain a geotechnical report.

Benefits

Protection of the stability of existing mine workings from impacts of large scale excavations.

Risk of Acting / Not Acting if there is uncertain or insufficient information about the subject matter of the provisions

Uncertainty relates to the stability of mine workings, which were surveyed in the 1980s. The risks are only qualitative in nature, as no probability of occurrence was assigned to either crown-hole or trough subsidence and no annualised loss of life or property loss risks were calculated. The technical reports on mining subsidence have noted it is undetermined whether the current level of risk can be considered acceptable, tolerable.

The latest Tonkin and Taylor Mining Subsidence report also finds in section 8.3.5.2:

"It is doubtful that any meaningful assessment of mine stability could be achieved through even an extensive geotechnical investigation... The stress imposed on the ground by earthworks is typically many times that of a comparable structure. Significant earthworks above shallow mine workings should be viewed with caution"

Due to the significant level of uncertainty, a cautious approach to earthworks in these areas is necessary. Not acting risks exposing more people and property to risk, especially in the context of infill development and densification of Kamo.

Effectiveness and efficiency

The proposed rules clearly signal to the applicants that a geotechnical site suitability report will be required. Therefore the costs of the required investigations are visible to district plan users from the outset.

Earthworks is already a defined term in ODP, and means:

the alteration or disturbance of land, including by moving, removing, placing, blading, cutting, contouring, filling or excavation of earth (or any matter constituting the land including soil, clay, sand and rock); but excludes gardening, cultivation, and disturbance of land for the installation of fence posts.

As shown, the definition provides the exclusions for gardening, cultivation and installation of fence posts, which will not require site suitability assessment. The proposed rule EARTH-R4 provides further exclusions for minor works related to driveways, footpaths, repair, maintenance, and infrastructure.

Overall, this is considered an effective and efficient approach that implements the objective NH-O1 to assess and manage risk, without being too onerous.

8.2.4 Infrastructure

Table 39: Evaluation of provisions related to infrastructure

<p>Objectives:</p> <p>NH-O4 - Regionally Significant Infrastructure and Critical Infrastructure. <i>Infrastructure, particularly regionally significant infrastructure and critical infrastructure, is only provided for in areas that may be susceptible to natural hazards where there is a functional need or operational need to locate in the area and where risks to people, property and the environment are mitigated as far as practicable.</i></p> <p>NH-O6– Climate Change. <i>The potential effects, including long-term effects, of climate change are taken into account when managing subdivision, land use and development.</i></p>	
Relevant provisions	Assessment
<p>Policies: NH-P7 –Infrastructure NH-P5 – Climate Change NH-P8 – Adaptive planning</p> <p>Rules: NH-R4 - Operation, Maintenance, and Minor Upgrading of Existing Infrastructure. NH-R6 – New Infrastructure. CH-R4 - Operation, Maintenance, and Minor Upgrading of Existing Infrastructure CH-R6 – New Infrastructure</p>	<p>General Intent These rules seek to promote resilience of infrastructure, and communities that rely on the infrastructure, against natural hazard risk. New infrastructure is a restricted discretionary activity if a report is provided to certify that the infrastructure will maintain its integrity in the event of a natural hazard and the development will not exacerbate natural hazards on another site. The permitted approach to existing infrastructure is based on the recognition of the need to continue providing services to existing developed areas.</p> <p>Costs The costs associated with the resource consent process. Ongoing maintenance costs to existing infrastructure exposed to natural hazards, such as roads in coastal erosion areas.</p> <p>Benefits Acknowledges that there will be instances where infrastructure will need to be located on land subject to natural hazard risk. Ensures an assessment is made to identify the potential for the development to exacerbate hazard risk on neighbouring properties. Infrastructure may have a need to locate in hazard areas to support activities that have a significant economic, cultural and well-being benefits to local residents e.g., port. This infrastructure cannot be relocated and there is still a need for subdivision, use, and development to occur within this area to ensure the economic, cultural and well-being benefits. Reduces vulnerability of new communities by requiring consideration of resilience of the infrastructure serving them. Potential for fewer costs to respond to future natural hazard events as they have been planned for. New infrastructure will still need to be designed to take into account the risks from the natural hazard. This will ensure the long-term resilience of future infrastructure and means there will be less down time and recovery following a natural hazard event.</p> <p>Risk of Acting / Not Acting if there is uncertain or insufficient information about the subject matter of the provisions There is existing development and infrastructure located within areas that are at risk from natural hazards however new infrastructure should be assessed to</p>

	<p>ensure that it has a functional or operational need to be located in hazard areas so that more assets are not put at risk.</p> <p>This policy and rule framework seeks to ensure that new infrastructure, and in particular regionally significant infrastructure and critical infrastructure, is designed to maintain its integrity and function during a natural hazard event. This is because this type of infrastructure is often essential to the social and economic wellbeing of communities and so its ability to service communities should not be compromised.</p> <p>It may not possible be for some infrastructure to be relocated away from the areas impacted by the natural hazards. If a specific framework is not provided for this infrastructure, there is a significant risk that future development opportunities would be lost.</p> <p>The proposed provisions provide a balance between recognising the natural hazard risk, while also allowing for the continued operation of this significant infrastructure. This assists with ensuring that the risks of acting and providing a specific framework are less than the risks of not acting.</p> <p>Effectiveness and efficiency</p> <p>The provisions ensure that there is a consenting pathway for the consideration of future development associated with the activities that are important for the long term economic and social well being of Northland (e.g Port).</p> <p>Future development will still need to be designed to recognise the risks associated with the relevant natural hazards, thereby ensuring there is improved resilience for this infrastructure.</p> <p>Restricted discretionary activity status means there is a clear and transparent framework as the matters that council will consider in determining an application are evident.</p>
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8.2.5 Building rules in flood hazard areas

Table 40: Evaluation of provisions related to buildings, alterations and modifications in flood hazard areas

<p>Objectives: NH-O2 – New development. <i>Avoid inappropriate subdivision, land use and development, particularly vulnerable activities, in areas subject to natural hazard risk.</i></p> <p>NH-O3 – Existing Developed Areas. <i>In existing developed areas, build resilience to potential impacts from natural hazards and avoid locating vulnerable activities in areas of high hazard risk.</i></p>	
Relevant provisions	Assessment
<p>Policies: NH-P9 – New Subdivision, Land Use and Development</p> <p>NH-P10– Existing Developed Areas</p> <p>NH-P11– Vulnerability</p> <p>Rules:</p>	<p>General Intent NH-R8 provides a permitted activity pathway for alterations and modifications that do not increase the gross floor area.</p> <p>NH- R10 New buildings are an RDA as they have the potential to place more people at risk. However, it may be considered appropriate for new development to occur in the 100-year flood hazard area, provided an appropriate level of mitigation is achieved (i.e., demonstrating that minimum freeboard requirements for vulnerable activities are met and there is safe access/egress from the building to land that is clear of the flood hazard).</p>

Objectives:

NH-O2 – New development. *Avoid inappropriate subdivision, land use and development, particularly vulnerable activities, in areas subject to natural hazard risk.*

NH-O3 – Existing Developed Areas. *In existing developed areas, build resilience to potential impacts from natural hazards and avoid locating vulnerable activities in areas of high hazard risk.*

Relevant provisions	Assessment
<p>NH-R8 - Alterations and Modification of Buildings and Major Structures within 100-year Flood Hazard Area</p> <p>NH – R10 - New Buildings or Major Structures and extensions or alterations that increase the GFA of existing buildings in 100-year Flood Hazard Area.</p> <p>NH-R11 - New Buildings or Major Structures and extensions or alterations that increase the GFA of existing buildings in 10 year Flood Hazard Area.</p>	<p>If the activity is not a vulnerable activity, then it must not be subject to material damage. This recognizes that other activity types may wish to locate in the flood hazard area and may be of a type that is more resilient to flood effects and a minimum floor level may not be required or other mitigation measures may be more appropriate.</p> <p>NH – R11 applies a more restrictive approach for development in the 10 year flood hazard, as flood depths in 100-year events can be very deep with significant flow velocity, meaning the risks are very high. Most types of built development in the 10-year flood hazard areas are therefore not sustainable due to repeated risk to life, health and property from both floodwater and debris. This is why new built development is required to be of a type that will not be subject to material damage in a 100-year flood event and the rule specifically requires that it is not a vulnerable activity.</p> <p>In some places subdivision may have occurred in the past without full consideration of natural hazards. The building control rules are intended to close this loophole and require natural hazard risk assessment before any further development can take place.</p> <p>Costs Potential that development permitted under NH-R8 is still subject to risk (even if the risk has not increased as a result of the alteration/modification) and may be damaged in the event of a natural hazard which may cost the property owner.</p> <p>Site suitability reports required under NH-R10 and NH-R11 may mean high costs for property owners and resource consent fees.</p> <p>Reduced development potential of land in flood hazard areas. May temporarily reduce property values of land in flood hazard areas, but will reflect the true value of land over time.</p> <p>Benefits Recognises that there is existing development located in areas identified as at risk and allows these properties to undertake alterations as a permitted activity if they are minor and unlikely to result in an increase in risk. No costly resource consent process for minor alterations/modifications that do not increase GFA.</p> <p>Development is still enabled, provided the risks from natural hazards are minimised and mitigated to acceptable levels. Manages risk which is not currently assessed by the Building Act (regarding access and egress) which only considers the building as opposed to the land around it.</p> <p>Reduces the risk of damage to future developments from flood events as a result of incorporating mitigation measures (such as minimum floor levels). Health and well-being of communities will be enhanced as new development will be directed away from high flood hazard areas and designed appropriately in 100 year flood hazard areas helping to ensure that people will be kept safe.</p> <p>Risk of Acting / Not Acting if there is uncertain or insufficient information about the subject matter of the provisions</p>

Objectives:

NH-O2 – New development. *Avoid inappropriate subdivision, land use and development, particularly vulnerable activities, in areas subject to natural hazard risk.*

NH-O3 – Existing Developed Areas. *In existing developed areas, build resilience to potential impacts from natural hazards and avoid locating vulnerable activities in areas of high hazard risk.*

Relevant provisions	Assessment
	<p>If council do not act there is potential for significant adverse effects through not appropriately managing flood hazard risk. This could include possible loss of life, injury and damage to property.</p> <p>There is also the risk of legal challenge as current provisions do not give effect to higher order policy documents.</p> <p>There may be resistance from the community regarding the use of a precautionary regulatory approach – may be viewed as too conservative and costly. However, it is considered that there is sufficient information on which to base the proposed policies and methods – this has been assessed through a review of many new plans, national guidance and higher order policy documents.</p> <p>Effectiveness and efficiency Saves unnecessary consenting cost for activities which are unlikely to result in an increase in risk. Clear criteria and requirements increase efficiency and effectiveness of managing flood hazard risks.</p> <p>The restrictiveness of the rules corresponds with the level of potential risk associated with the development. This approach is effective and efficient in achieving the objectives as it aims to ensure the that low risk activities are not subject to a unnecessary and costly process but that development where the risk are high, are subject to an thorough assessment to enable determination of whether it is appropriate.</p> <p>Efficient to put assessment costs 'up-front' to avoid more expensive investigations and response after a flood hazard event.</p> <p>Uses most up to date mapping information, gives effect to the changes in national and regional direction through the NZCPS and RPS and hence gives effect to RMA.</p>

8.2.6 Building rules in areas susceptible to land instability

Table 41: Evaluation of provisions related to buildings, alterations and modifications in areas susceptible to land instability

Objectives:	
<p>NH-O1 – Hazard Risk. <i>The risks associated with natural hazards and their impacts on people, property, infrastructure and the environment are appropriately identified, assessed and managed</i></p> <p>NH-O2 – New Development. <i>Avoid inappropriate subdivision, land use and development, particularly vulnerable activities, in areas subject to natural hazard risk.</i></p> <p>NH-O3 – Existing Developed Areas. <i>In existing developed areas, build resilience to potential impacts from natural hazards and avoid locating vulnerable activities in areas of high hazard risk.</i></p>	
Relevant provisions	Assessment
<p>Policies: NH-P1 NH-P2 NH-P3 NH-P4 NH-P20 NH-P21</p> <p>Rules: NH-R13 – Extensions and Alterations to Buildings and Major Structures in areas of moderate or high susceptibility to land instability hazards.</p> <p>NH-R15 – New habitable buildings in areas of moderate or high susceptibility to land instability hazards.</p>	<p>General Intent With the land instability hazard widespread throughout the region, much of the built form is historically located in areas of land instability. The proposed new provisions cover new habitable buildings, extensions and alterations. The rules provide a way to enable development in these areas to still proceed, while ensuring that the land instability hazards are identified, assessed and managed to meet the proposed objectives. A restricted discretionary activity status is intended to be the most practical way to ensure the geotechnical reports are appropriately assessed early in the process, with the ability to decline resource consent where the geotechnical report is inadequate.</p> <p>In some places subdivision may have occurred in the past without full consideration of natural hazards. The building control rules are intended to close this loophole and require natural hazard risk assessment before any further development can take place.</p> <p>Costs Limitations on available building platforms, or increased building/engineering costs to mitigate potential effect of the risk.</p> <p>Costs associated with obtaining geotechnical site suitability reports. However, these reports are already required as part of a building consent.</p> <p>Benefits</p> <p>Better protection for neighbouring properties from no further exacerbation of land instability hazards, particularly for properties located down slope.</p> <p>Clear visibility for applicants of the requirement for the geotechnical site suitability report.</p> <p>Early indication of any land instability issues before committing to the more expensive costs associated with a Building Consent (e.g. design of buildings, structural engineering calculations)</p> <p>Reduced delays and more certainty for small scale extensions and alterations through specifying permitted activity status. Setting the threshold at 30m2 allows alignment with the Building Code.</p> <p>Mitigation of land instability risk associated with construction of buildings</p>

Objectives:

NH-O1 – Hazard Risk. *The risks associated with natural hazards and their impacts on people, property, infrastructure and the environment are appropriately identified, assessed and managed*

NH-O2 – New Development. *Avoid inappropriate subdivision, land use and development, particularly vulnerable activities, in areas subject to natural hazard risk.*

NH-O3 – Existing Developed Areas. *In existing developed areas, build resilience to potential impacts from natural hazards and avoid locating vulnerable activities in areas of high hazard risk.*

Relevant provisions	Assessment
	<p>will improve the safety of the occupants onsite and occupants of buildings up and down slope, thus reducing the social impacts that come from natural hazard events.</p> <p>Risk of Acting / Not Acting if there is uncertain or insufficient information about the subject matter of the provisions</p> <p>A substantial proportion of residentially zoned land for urban intensification is affected by land instability hazards, where subdivision has already occurred. Where land instability has not been properly considered at subdivision stage in the past, council has responsibility to ensure that the latest natural hazards information is considered before new dwellings are built. Furthermore, with increased incidence of prolonged heavy rainfall the risk for land slippage increases in waterlogged soils. Significant financial risks for homeowners and council could arise if land instability is not assessed using the latest available information on natural hazards.</p> <p>As mapping of land instability has a +/-10m margin of error, there might be some situations where partial areas that are not at risk of land instability would be caught by the rule. However, as a building consent already requires a site suitability report, the proposed rule will not be more onerous from the status quo. Extensions and alterations up to 30m², and non-habitable buildings such as garages up to 30m², which do not require a building consent, are not caught by this rule.</p> <p>Effectiveness and efficiency</p> <p>The proposed provisions will ensure effective implementation of NH-01, 02 and 03 by providing clarity and visibility of the requirement for a geotechnical site suitability report. The proposed information requirements have been developed with geotechnical feedback and provide specific and objective criteria for assessing the adequacy of the site suitability report. Having the criteria clearly spelled out will provide clarity for applicants and council officers.</p> <p>Although the Building Act 2004 and the building consent process regulate building on land subject to natural hazards, the proposed district plan rules are not a duplication of building rules. The proposed rules are aimed wider, requiring consideration of the effects of land instability on the wider area and whole slope, as well as the vulnerability of the occupants of the proposed buildings.</p> <p>A permitted activity pathway is proposed for lower risk small scale extensions and alterations as a matter of efficiency.</p> <p>Setting a restricted discretionary activity status provides an efficient solution as matters of discretion are limited to those related to land instability. Public notification or limited notification of an application is precluded by rule NH-R2, unless Council decides that special circumstances exist under section 95A(4) of the Resource Management Act 1991.</p>

Objectives:	
NH-O1 – Hazard Risk. <i>The risks associated with natural hazards and their impacts on people, property, infrastructure and the environment are appropriately identified, assessed and managed</i>	
NH-O2 – New Development. <i>Avoid inappropriate subdivision, land use and development, particularly vulnerable activities, in areas subject to natural hazard risk.</i>	
NH-O3 – Existing Developed Areas. <i>In existing developed areas, build resilience to potential impacts from natural hazards and avoid locating vulnerable activities in areas of high hazard risk.</i>	
Relevant provisions	Assessment
	The activity status of the rules align with the policy direction.

8.2.7 Building rules in mining subsidence areas

Table 42: Evaluation of provisions related to buildings, alterations and modifications in mining subsidence areas

Objectives:	
NH-O1 – Hazard Risk. <i>The risks associated with natural hazards and their impacts on people, property, infrastructure and the environment are appropriately identified, assessed and managed.</i>	
NH-O2 – New development. <i>Avoid inappropriate subdivision, land use and development, particularly vulnerable activities, in areas subject to natural hazard risk.</i>	
NH-O3 – Existing Developed Areas. <i>In existing developed areas, build resilience to potential impacts from natural hazards and avoid locating vulnerable activities in areas of high hazard risk.</i>	
Relevant provisions	Assessment
Policies: NH-P4 NH-P22 NH-P23 EARTH-P4 Rules: NH-16 Extensions and Alterations to Existing Buildings and Major Structures in Mining Subsidence Hazard Areas 1-3 NH-17 New Buildings and Major Structures in Mining Subsidence Hazard Areas 2 and 3 NH-18 New Buildings and Major Structures in Mining Subsidence Hazard Area 1	General Intent The proposed provisions are intended to recognise the differing levels of risk between the more risky mining subsidence area 1, and areas 2 &3. The rules apply to new habitable buildings, extensions and alterations. The effect of the proposed rules compared to the operative version will be the tightening of permitted activity criteria for extensions and alterations, and elevating of the activity status for new buildings to restricted discretionary. Building work that increases the gross floor area (or construction of a new building) will require a full geotechnical assessment. The restricted discretionary activity status is intended to ensure that the geotechnical reports are quality-checked and allows council ability to decline resource consent where the reports are inadequate. The matters of discretion are focussed on matters related to mitigation of mining subsidence risk and notification is not required. In some places subdivision may have occurred in the past without full consideration of natural hazards. The building control rules are intended to close this loophole and require natural hazard risk assessment before any further development can take place. Costs Applicants will bear the financial and time delay costs of geotechnical site suitability investigations.

Objectives:

NH-O1 – Hazard Risk. *The risks associated with natural hazards and their impacts on people, property, infrastructure and the environment are appropriately identified, assessed and managed.*

NH-O2 – New development. *Avoid inappropriate subdivision, land use and development, particularly vulnerable activities, in areas subject to natural hazard risk.*

NH-O3 – Existing Developed Areas. *In existing developed areas, build resilience to potential impacts from natural hazards and avoid locating vulnerable activities in areas of high hazard risk.*

Relevant provisions	Assessment
	<p>Potentially increased construction costs due to the need for special foundations.</p> <p>Benefits Prevent exacerbation of mining subsidence risk to existing dwellings in mining subsidence areas that could be caused by excessive loading from new buildings if they are not constructed with consideration of the mining subsidence hazard.</p> <p>Build resilience by requiring full investigations for larger extensions and alterations. This helps to protect existing buildings from structural damage if underlying mine workings were to be compromised as a result of earthworks and construction.</p> <p>Provides a permitted pathway for internal alterations that do not increase the gross floor area.</p> <p>Risk of Acting / Not Acting if there is uncertain or insufficient information about the subject matter of the provisions The level of risk associated with each of the mining zones has not been quantitatively assessed. The thresholds of risk that can be considered acceptable, tolerable or unacceptable is also currently undetermined. However, regardless of specific thresholds, continued residential intensification of the mining subsidence hazard areas will result in a corresponding increase in risk as more buildings/structures will be exposed to the hazard. Therefore, the risk of not acting is high.</p> <p>Effectiveness and efficiency Differentiating the rules between the higher risk area 1 and the lower risk areas 2 and 3 implements Policies NH-P22 and NH-P23. Differentiation of these areas by risk of subsidence is well established, therefore formalisation of consideration of risk through a rule in the plan will be more effective than the status quo.</p> <p>Offering a permitted pathway for internal alterations that do not increase the gross floor area provides an efficient solution for most types of work residential owners tend to carry out on their properties.</p> <p>Requiring a restricted discretionary consent for buildings and major structures, including those under 30m² aims to capture work that does not require a building consent to ensure assessment of the risks of subsidence and ground settlement as well as risks to existing buildings onsite and on neighbouring sites.</p> <p>The operative district plan also requires a geotechnical “certificate” as permitted activity criteria for construction or alteration of buildings. However, there is no mechanism for checking that the investigation and certificates are adequate. Furthermore, requiring a certificate to be issued by a third party and approved by council is not appropriate for a permitted activity status. A</p>

Objectives:	
NH-O1 – Hazard Risk. <i>The risks associated with natural hazards and their impacts on people, property, infrastructure and the environment are appropriately identified, assessed and managed.</i>	
NH-O2 – New development. <i>Avoid inappropriate subdivision, land use and development, particularly vulnerable activities, in areas subject to natural hazard risk.</i>	
NH-O3 – Existing Developed Areas. <i>In existing developed areas, build resilience to potential impacts from natural hazards and avoid locating vulnerable activities in areas of high hazard risk.</i>	
Relevant provisions	Assessment
	<p>restricted discretionary status is more appropriate in these circumstances and sets a fair expectation that the site suitability report will be evaluated in full.</p> <p>Setting a restricted discretionary activity status provides an efficient solution as matters of discretion are limited to those related to mining subsidence. Public notification or limited notification of an application is precluded by rule NH-R2, unless Council decides that special circumstances exist under section 95A(4) of the Resource Management Act 1991.</p>

8.2.8 Building rules in coastal hazard areas

Table 43: Evaluation of provisions related to buildings, alterations and modifications in coastal hazard areas

NH-O2 – New development. <i>Avoid inappropriate subdivision, land use and development, particularly vulnerable activities, in areas subject to natural hazard risk.</i>	
NH-O3 – Existing Developed Areas. <i>In existing developed areas, build resilience to potential impacts from natural hazards and avoid locating vulnerable activities in areas of high hazard risk.</i>	
NH-O6– Climate Change. <i>The potential effects, including long-term effects, of climate change are taken into account when managing subdivision, land use and development.</i>	
Relevant provisions	Assessment
<p>Policies:</p> <p>NH- P3 Risk Assessment</p> <p>NH-P4 Risk Reduction</p> <p>NH-P5 Climate Change</p> <p>NH-P8 Adaptive Planning</p> <p>NH-P13 New Subdivision, Landuse and Development</p> <p>NH-P14 Existing Developed Areas</p> <p>CH-R8 - Alterations and Modifications to Existing Buildings and Major Structures in the CEHA1</p> <p>CH-R9 - New Buildings and Major Structures,</p>	<p>General Intent</p> <p>The proposed provisions related to coastal hazard are largely driven by the NZCPS and RPS which are provide clear direction ion how coastal hazards are to be managed. The proposed rules implement the objectives through avoidance of inappropriate development on land subject to high risk natural hazards. Activity statuses in the proposed rules relate to the level of risk in each of the identified hazards areas (CEHA0,1,2 and CFHA0,1,2) and the scale of the development (whether a full new habitable building, or an extension under 30m2).</p> <p>The rules for buildings, alterations and extensions in coastal hazard areas offer a permitted pathway for small-scale work where permitted activity performance criteria can be complied with. For coastal erosion hazards, a minimal increase to buildings (30m2) is permitted provided it is not located further seaward. For coastal flooding areas, minimum floor levels apply. These rules allow for activities that are unlikely to increase the level of risk. Larger projects, such as new homes will require resource consent as a restricted discretionary activity with a need for a detailed site suitability report.</p>

NH-O2 – New development. *Avoid inappropriate subdivision, land use and development, particularly vulnerable activities, in areas subject to natural hazard risk.*

NH-O3 – Existing Developed Areas. *In existing developed areas, build resilience to potential impacts from natural hazards and avoid locating vulnerable activities in areas of high hazard risk.*

NH-O6– Climate Change. *The potential effects, including long-term effects, of climate change are taken into account when managing subdivision, land use and development.*

Relevant provisions	Assessment
<p>and Alterations and Modifications to Existing Buildings and major Structures in the CEHA2</p> <p>CH-R10 - New Buildings and Major Structures in the CFHA0 and CFHA1</p> <p>CH-R11 - Alterations or Modifications to Existing Buildings and Major Structures in the CFHA0, CFHA1, CFHA2</p> <p>CH-R12 - New Buildings and Major Structures in the CFHA2</p> <p>CH-R13 - New Buildings and Major Structures and Additions to Existing Buildings and major Structures in CEHA0</p>	<p>A more stringent, precautionary approach is adopted in the areas of highest risk that are currently already experiencing coastal erosion and/or flooding (CEHA0 and CFHA0). In these areas any new buildings, extensions and alterations are a discretionary activity. This is driven by the need to implement a precautionary approach in these high risk areas.</p> <p>In some places subdivision may have occurred in the past without full consideration of natural hazards. The building control rules are intended to close this loophole and require natural hazard risk assessment before any further development can take place.</p> <p>Costs Applicants will bear the financial and time delay costs of geotechnical site suitability investigations.</p> <p>Potentially increased construction costs due to the need for raised floor levels.</p> <p>For some property owners there will be a lost opportunity cost from not being able to develop their property due the natural hazards present on the site. However, in the context of climate change, the risk to future owners of properties becoming uninsurable in the future due to being located on land subject to high-risk natural hazards outweighs those potential lost opportunity costs.</p> <p>It is recognised that the proposed provisions would impact on tangata whenua aspirations to further develop their land. Where development is possible, increased costs are expected.</p> <p>Benefits For coastal erosion hazards, rules encourage retreat as any alterations or minor extension can't be located further seaward.</p> <p>Saves unnecessary consenting cost for activities which are unlikely to result in an increase in risk.</p> <p>The provisions provide a clear signal to the market of the risks associated with inappropriate development in coastal hazards areas and that investment is better directed to other areas unless hazard risks can be appropriately managed and mitigated.</p> <p>Risk of Acting / Not Acting if there is uncertain or insufficient information about the subject matter of the provisions The risk of not acting is related to the obligation under s.73 RMA to give effect to the RPS. Not acting and not regulating building activities also carries the risk of continued exacerbation of coastal hazard risk through allowing more new development to be exposed to the risk.</p>

<p>NH-O2 – New development. <i>Avoid inappropriate subdivision, land use and development, particularly vulnerable activities, in areas subject to natural hazard risk.</i></p> <p>NH-O3 – Existing Developed Areas. <i>In existing developed areas, build resilience to potential impacts from natural hazards and avoid locating vulnerable activities in areas of high hazard risk.</i></p> <p>NH-O6– Climate Change. <i>The potential effects, including long-term effects, of climate change are taken into account when managing subdivision, land use and development.</i></p>	
Relevant provisions	Assessment
	<p>Effectiveness and efficiency</p> <p>The rules seeks to both, protect land owner from increasing risk to their property by investing more money into a development that could potentially suffer future damage and also adjoining property owners by not enabling development that may alter or divert flood waters onto another property.</p> <p>If permitted standards of this rule are not met, then it triggers an RDA to ensure that potential risk are assessed. This is the most efficient way to implement the proposed objectives and policies in a cost-effective way.</p>

8.2.9 Buffers and defences against natural hazards

Table 44: Evaluation of provisions related to buffers and defences against natural hazards

<p>NH-O2 – New development. <i>Avoid inappropriate subdivision, land use and development, particularly vulnerable activities, in areas subject to natural hazard risk.</i></p> <p>NH-O5 – Natural Buffers and Defences. <i>Existing natural buffers and natural defences against natural hazards are maintained, protected, restored and enhanced, and new development does not compromise existing natural buffers and natural defences.</i></p> <p>NH-O6 – Climate Change. <i>The potential effects, including long-term effects, of climate change are taken into account when managing subdivision, land use and development.</i></p>	
Relevant provisions	Assessment
<p>Policies: NH-P4 - Risk Reduction NH-P12– Defences NH-P16 Natural Defences NH-P17– Hard Protection Structures NH-P18– Appropriate Hard Protection Structures NH-P19– Hard Protection Structures Location and Design</p> <p>Rules: CH-R14</p>	<p>General Intent</p> <p>The proposed provisions implement the precautionary and avoidance objectives in relation to new development and climate change. The intent of the provisions is to avoid the need to implement hazard protection works when locating new subdivision, use and development in the coastal environment. There is now wide acceptance at the national level that hard defences are inadequate for long-term resilience. Climate adaptation goals dictate that it would be inappropriate to enable new development on land subject to high risk natural hazards.</p> <p>In accordance with Objective 5 of the NZCPS emphasis is given to protecting or restoring natural defences to coastal hazards. NH-P16 also promotes planting and dune restoration, and beach replenishment and nourishment which increase capability for future responses to climate change, including enabling managed retreat.</p>

NH-O2 – New development. *Avoid inappropriate subdivision, land use and development, particularly vulnerable activities, in areas subject to natural hazard risk.*

NH-O5 – Natural Buffers and Defences. *Existing natural buffers and natural defences against natural hazards are maintained, protected, restored and enhanced, and new development does not compromise existing natural buffers and natural defences.*

NH-O6 – Climate Change. *The potential effects, including long-term effects, of climate change are taken into account when managing subdivision, land use and development.*

Relevant provisions	Assessment
<p>New Hard Protection Structures</p>	<p>Costs Natural defences and buffers are the least costly options for coastal protections.</p> <p>There would be resource consenting and compliance costs where hard protection structures are desired. However, these costs are smaller in comparison to the overall costs of engineering and building such structures.</p> <p>Benefits Reduced cost to council and the community to fund hard protection structures, which tend to be large infrastructure projects on public land.</p> <p>Social and cultural benefits of resilience and reduction of the risk of future disruptions to people’s lives, home and businesses.</p> <p>Risk of Acting / Not Acting if there is uncertain or insufficient information about the subject matter of the provisions NRC developed robust models and mapping of coastal erosion and coastal flooding for Northland, therefore areas at risk are clearly identified. While the dynamic nature of climate change does not allow to predict when changes, such as sea level rise, will happen, there is clear national policy direction to seek adaptation to climate change. Not acting carries the risk of perpetuating the “safe development paradox” whereby construction of hard protection structures encourages development, intensification and investment in areas that are inherently at very high risk from natural hazards.</p> <p>Effectiveness and efficiency The stance on hard protection structures is similar to that in the operative plan which requires in Policy 19.4.5. to “avoid the need to implement hazard protection works when locating new subdivision, use and development in the coastal environment.” The proposed plan change introduces a rule for hard protection structures which sets a discretionary activity status where hard protection structures are required to protect subdivision or development existing on the date the plan change becomes operative. In all other cases hard protection structures are a non-complying activity. The chosen activity status allows for full consideration of the relevant policies at resource consenting stage. The rule sets a clear turning point that new subdivision and development must not be created in high risk areas and that hard protection structures for any such risk activity are not to be expected. This stance is aligned with Policy 25 of NZCPS which requires the Council to “avoid increasing the risk of social, environmental and economic harm from coastal hazards”. Having a rule in addition to policies is more effective and efficient and provides clarity to applicants and to the community overall.</p>

8.2.10 Subdivision rules

Table 45: Evaluation of provisions related to subdivision

<p>NH-O2 – New Development. <i>Avoid inappropriate subdivision, land use and development, particularly vulnerable activities, in areas subject to natural hazard risk.</i></p> <p>NH- SUB-O6 – Natural Hazards. <i>Avoid inappropriate new subdivision in areas subject to natural hazard risk.</i></p>	
Relevant provisions	Assessment
<p>Policies: SUB-P6 – Natural Hazards</p> <p>Rules: SUB-Rx1 SUB-Rx2 SUB-Rx3 SUB-Rx4 SUB-Rx5 SUB-Rx6</p>	<p>General Intent The operative district plan does not have subdivision rules in relation to natural hazards. The proposed plan change introduces a precautionary approach to subdivision, being the beginning of land use. Subdivision involves the creation of new lots, which in turn are able to be used for future development. The precautionary approach to subdivision seeks to prevent situations where land is provided for development without adequate natural hazard management and mitigation.</p> <p>Costs The proposed approach may result in greater controls on subdivision and development, which may have a short term impact on growth and employment.</p> <p>Individual property owners may experience costs from:</p> <ul style="list-style-type: none"> • loss of development potential of their land, where policies require avoidance; or • Increased cost of developing land where increased or unexpected mitigation is required. <p>For some property owners there will be a lost opportunity cost from not being able to develop their property due the natural hazards present on the site. However, in the context of climate change, the risk to future owners of properties becoming uninsurable in the future due to being located on land subject to high-risk natural hazards outweighs those potential lost opportunity costs.</p> <p>It is recognised that the proposed provisions would impact on tangata whenua aspirations to further develop their land. Where development is possible, increased costs are expected.</p> <p>While the proposed provisions will result in some additional economic costs, it is considered that the resulting benefits to future occupants and the recovery of the district following a natural hazard event outweigh these costs.</p> <p>Benefits The primary benefit will be a reduction in the increase of risk over time due to better management of risks at subdivision and development stage.</p> <p>The provisions provide a clear signal to the market of the risks associated with inappropriate subdivision and development in known natural hazards areas and that investment is better directed to other areas unless hazard risks can be appropriately managed and mitigated.</p> <p>Long term benefits of reduced hazard risk (than would occur under the status quo) may provide more certainty for investment and better long-term security for communities.</p>

<p>NH-O2 – New Development. <i>Avoid inappropriate subdivision, land use and development, particularly vulnerable activities, in areas subject to natural hazard risk.</i></p> <p>NH- SUB-O6 – Natural Hazards. <i>Avoid inappropriate new subdivision in areas subject to natural hazard risk.</i></p>	
Relevant provisions	Assessment
	<p>The proposed provisions would assist with the transfer of costs for addressing natural hazard risk from future property owners and local and central government onto developers at the time the developments are undertaken.</p> <p>Risk of Acting / Not Acting if there is uncertain or insufficient information about the subject matter of the provisions</p> <p>The mapping of natural hazards undertaken by experts in their respective fields, show that there are a number of natural hazards that affect the district and that some of the potential impacts represent a significant risk to life and property.</p> <p>Potential for significant adverse effects through not appropriately managing natural hazard risk could include possible loss of life, injury and damage to property and infrastructure if natural hazard risk is not reduced</p> <p>The proposed subdivision provisions speak directly to Section 106(1) and (1a) of the RMA, which gives the ability for Councils to decline subdivision applications if there is a significant natural hazard risk. Including explicit rules in the plan is more transparent for applicants than the existing situation.</p> <p>The proposed plan change introduces subdivision controls in areas of mining subsidence. While there is a degree of uncertainty associated with mining subsidence risk, it is recognised that remediation or filling of mine workings would be very onerous geotechnically and economically. In Mining Subsidence hazard area 1 in particular, extensive geotechnical investigations would be required prior to building. Currently, the site suitability reports are required at a building consent stage. Without provisions to manage subdivision in areas of mining subsidence council carries the risk of allowing the creation of new lots that might not be able to be built on. Introducing subdivision rules addresses that risk.</p> <p>Effectiveness and efficiency</p> <p>The proposed approach to subdivision is considered to be the most effective in achieving the proposed objectives because:</p> <ul style="list-style-type: none"> • The provisions give effect to higher order direction (Section 6(h), NZCPS and RPS), which the proposed objectives also respond to; • Taking a nuanced approach to development, where the activity status is connected to the level of risk for specific natural hazard types. • The provisions would provide clarity upfront to applicants and council officers about the site investigations and information requirements expected for subdivision. <p>The subdivision rules relate to the location of the building platform and the intended activity to be located within the building platform. This means the natural hazard rules are only triggered if the building platform is located in a mapped hazard area, as opposed to being triggered if just a portion of a site is affected (but the building platform is clear of the hazard area). The proposed subdivision rule for land within or containing an area of moderate or high susceptibility to land instability hazards provides for a controlled activity status</p>

NH-O2 – New Development. *Avoid inappropriate subdivision, land use and development, particularly vulnerable activities, in areas subject to natural hazard risk.*

NH- SUB-O6 – Natural Hazards. *Avoid inappropriate new subdivision in areas subject to natural hazard risk.*

Relevant provisions	Assessment
	<p>where building platforms are not proposed to be located within 10 metre of the mapped areas of medium or high susceptibility to land instability. The 10 metre threshold stems from the +/-10m margin of error on the land instability GIS maps. An identical approach is used in Coastal Erosion or Coastal Flooding Hazard Areas with an opportunity for a controlled activity status where building platforms are not proposed to be located within the CEHA0, CEHA1, CEHA2, CFHA0, CFHA1 or CFHA2. This setting reflects the fact that some very large lots containing areas at risk from natural hazards may also contain portions that are free from hazards. A site suitability report would be still required under SUB-REQ3 to ensure appropriate identification of building platforms. Subdivision in Mining subsidence hazard area 1 takes a more stringent approach due the uncertainty of the condition of the mine workings.</p> <p>If a subdivision consent and a land use consent are applied for together, all matters can be considered at the same time. However, where a land use consent is applied for later, a new consideration of natural hazard risk will be required under the relevant land use rule. This is intentional because new information about natural hazards may have come to light since subdivision. Therefore, a subdivision consent does not automatically clear the land for future construction of buildings from the natural hazards risk perspective.</p>

9. Conclusions

303. PC1 has been developed to manage activities to limit the exposure of people, property and the environment to risks from natural hazards.
304. Pursuant to s32 of the RMA, the proposed PC1 objectives have been analysed against Part 2 of the RMA and the relevant provisions of higher order plans and policy documents. It is considered that the proposed objectives are the most appropriate way to achieve the purpose of the RMA.
305. The proposed provisions have been detailed and compared against viable alternatives in terms of their costs, benefits, efficiency and effectiveness and risk in accordance with the relevant clauses of s32 of the RMA. The proposed provisions are considered to represent the most efficient and effective means of achieving the proposed objectives and of addressing the underlying resource management issues relating to the management of risk from natural hazards.
306. The provisions manage the use, development, and protection of natural and physical resources in a way that enables people and communities to provide for their social, economic, and cultural well-being while assisting in the protection of public health and safety from the risks associated with the effects of natural hazards.
307. The proposed provisions address the identified issues with the current approach to management of natural hazard in the WDP. The plan change adopts a precautionary approach to development which better addresses the risk posed by known hazards within the district. It applies a stringent activity status for development in higher risk hazard areas, reflecting the greater risk of hazards in these areas. The plan change also adopts a more stringent approach for managing vulnerable activities in natural hazard areas, in recognition that these activities are more susceptible to the effects of natural hazards and/or less able to respond to and recover from natural hazard events.
308. While the proposed plan change may increase the number of land use consents required for development in hazard areas, and increase the assessments (and associated costs) required to support land use and subdivision consent applications, such costs are warranted given the amount of land and number of properties/buildings located within mapped hazard areas in the district and the increase in risk that would result from uncontrolled development of this land.

Appendix 1: Relevant statutory provisions

This appendix provides excerpts from central government level policy documents that are of particular relevance to the management of natural hazards. These policy documents set the legislative framework and provide direction for PC1.

RMA

Section 6 requires all parties exercising powers and functions under the RMA to recognise and provide for the following matters of national importance:

h) the management of significant risks from natural hazards.

Section 31(1)(b) provides Territorial Authorities the following function:

(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;

Section 35(5) requires local authorities to maintain records of current issues relating to the environment of the area, including:

(j) records of natural hazards to the extent that the local authority considers appropriate for the effective discharge of its functions;

Section 62(1) specifies that a regional policy statement must state:

(i) the local authority responsible in the whole or any part of the region for specifying the objectives, policies, and methods for the control of the use of land—

(i) to avoid or mitigate natural hazards or any group of hazards;

Section 106 provides that a consent authority may refuse subdivision consent in certain circumstances, including:

(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.

(1) Without limiting section 108 or any provision in this Part, the conditions on which a subdivision consent may be granted may include any 1 or more of the following:

(d) a condition that provision be made to the satisfaction of the territorial authority for the protection of the land or any part thereof, or of any land not forming part of the subdivision, against natural hazards from any source (being, in the case of land not forming part of the subdivision, natural hazards arising or likely to arise as a result of the subdividing of the land the subject of the subdivision consent):

Schedule 4

Schedule 4(1) requires an assessment of an activity's effects on the environment to include:

(f) any risk to the neighbourhood, the wider community, or the environment through natural hazards or hazardous installations.

NZCPS Relevant Policies

Policy 3 Precautionary approach

(1) Adopt a precautionary approach towards proposed activities whose effects on the coastal environment are uncertain, unknown, or little understood, but potentially significantly adverse.

(2) In particular, adopt a precautionary approach to use and management of coastal resources potentially vulnerable to effects from climate change, so that:

(a) avoidable social and economic loss and harm to communities does not occur;

(b) natural adjustments for coastal processes, natural defences, ecosystems, habitat and species are allowed to occur; and

(c) the natural character, public access, amenity and other values of the coastal environment meet the needs of future generations

Policy 24 Identification of coastal hazards

(1) Identify areas in the coastal environment that are potentially affected by coastal hazards (including tsunamis), giving priority to the identification of areas at high risk of being affected. Hazard risks, over at least 100 years, are to be assessed having regard to:

(a) physical drivers and processes that cause coastal change including sea level rise;

(b) short-term and long-term natural dynamic fluctuations of erosion and accretion;

(c) geomorphological character;

(d) the potential for inundation of the coastal environment, taking into account potential sources, inundation pathways and overland extent;

(e) cumulative effects of sea level rise, storm surge and wave height under storm conditions;

(f) influences that humans have had or are having on the coast;

(g) the extent and permanence of built development; and

(h) the effects of climate change on:

(i) matters (a) to (g) above;

(ii) storm frequency, intensity and surges; and

(iii) coastal sediment dynamics; taking into account national guidance and the best available information on the likely effects of climate change on the region or district.

Policy 25 Subdivision, use, and development in areas of coastal hazard risk

In areas potentially affected by coastal hazards over at least the next 100 years:

- (a) avoid increasing the risk¹⁰ of social, environmental and economic harm from coastal hazards;
- (b) avoid redevelopment, or change in land use, that would increase the risk of adverse effects from coastal hazards;
- (c) encourage redevelopment, or change in land use, where that would reduce the risk of adverse effects from coastal hazards, including managed retreat by relocation or removal of existing structures or their abandonment in extreme circumstances, and designing for relocatability or recoverability from hazard events;
- (d) encourage the location of infrastructure away from areas of hazard risk where practicable;
- (e) discourage hard protection structures and promote the use of alternatives to them, including natural defences; and
- (f) consider the potential effects of tsunami and how to avoid or mitigate them.

Policy 26 Natural defences against coastal hazards

- (1) Provide where appropriate for the protection, restoration or enhancement of natural defences that protect coastal land uses, or sites of significant biodiversity, cultural or historic heritage or geological value, from coastal hazards.
- (2) Recognise that such natural defences include beaches, estuaries, wetlands, intertidal areas, coastal vegetation, dunes and barrier islands.

Policy 27 Strategies for protecting significant existing development from coastal hazard risk

- (1) In areas of significant existing development likely to be affected by coastal hazards, the range of options for reducing coastal hazard risk that should be assessed includes:
 - (a) promoting and identifying long-term sustainable risk reduction approaches including the relocation or removal of existing development or structures at risk;
 - (b) identifying the consequences of potential strategic options relative to the option of 'do-nothing';
 - (c) recognising that hard protection structures may be the only practical means to protect existing infrastructure of national or regional importance, to sustain the potential of built physical resources to meet the reasonably foreseeable needs of future generations;
 - (d) recognising and considering the environmental and social costs of permitting hard protection structures to protect private property; and
 - (e) identifying and planning for transition mechanisms and timeframes for moving to more sustainable approaches.
- (2) In evaluating options under (1):
 - (a) focus on approaches to risk management that reduce the need for hard protection structures and similar engineering interventions;
 - (b) take into account the nature of the coastal hazard risk and how it might change over at least a 100-year timeframe, including the expected effects of climate change; and
 - (c) evaluate the likely costs and benefits of any proposed coastal hazard risk reduction options.
- (3) Where hard protection structures are considered to be necessary, ensure that the form and location of any structures are designed to minimise adverse effects on the coastal environment.
- (4) Hard protection structures, where considered necessary to protect private assets, should not be located on public land if there is no significant public or environmental benefit in doing so.

Appendix 2: Northland Regional Policy Statement May 2016 Summary

To ensure that the options that are presented are reasonable and relevant to the Whangarei district and consistent with the statutory direction in the northland context, this appendix provides a summary of the policy direction in the Northland Regional Policy Statement which is of particular relevance to the management of natural hazards.

Section 2.7

Section 2.7 of the RPS sets out the natural hazards issue as follows:

“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 changing climate”.

The related explanatory text describes that the two most significant natural hazards for the region are flooding and coastal hazards (coastal inundation and erosion), and that a significant challenge is managing existing development and the presence of infrastructure in natural hazard-prone areas.

Section 3.13

In response to this issue, Objective 3.13 Natural Hazard Risk of the RPS is as follows:

“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:

- *Increasing our understanding of natural hazards, including the potential influence of climate change on natural hazard events;*
- *Becoming better prepared for the consequences of natural hazard events;*
- *Avoiding inappropriate new development in 10 and 100 year flood hazard areas and coastal hazard areas;*
- *Not compromising the effectiveness of existing defences (natural and man-made);*
- *Enabling appropriate hazard mitigation measures to be created to protect existing vulnerable development;*
- *Promoting long-term strategies that reduce the risk of natural hazards impacting on people and communities; and*
- *Recognising that in justified circumstances, critical infrastructure may have to be located in natural hazard-prone areas.”*

Section 7

Section 7 of the RPS sets out policies and methods for the management of natural hazards, including flood hazards, within the Northland region. The overall objective in relation to natural hazards is to minimise the risks and impacts of natural hazard events. This includes avoiding inappropriate new development in flood hazard areas and providing for appropriate mitigation measures to protect existing vulnerable development. The RPS also seeks to encourage risk reduction measures as a broad strategy on the basis that it can be less costly than the social and economic impacts caused by natural hazards, and generally ensure that development is appropriate to the level of risk faced and the relative vulnerability of different activities.

Relevant policies distinguish between existing (Policy 7.1.4) and new (Policy 7.1.2) subdivision and development within 10-year and 100-year flood hazard areas, as well as setting out a general risk management approach for areas where natural hazard risk exists but the extent of the hazard has not been assessed and mapped (Policy 7.1.1). In this case the policy enables development to be considered and assessed on a site-specific or case-by-case basis taking into consideration the precautionary principle.

The policy framework also provides for regionally significant infrastructure and critical infrastructure within hazard areas in certain circumstances (Policy 7.1.5). Directs councils to consider national guidance and the best available information on the likely effects of climate change to be factored into the management of subdivision, use and development (Policy 7.1.6).

Policies within Section 7.2 specifically address risk reduction measures. Policy 7.2.1 requires the protection, restoration and enhancement of natural features and systems that reduce the impacts of natural hazard events. Policy 7.2.2 establishes a preference for non-structural measures when managing and mitigating the risk of adverse effects from natural hazards. This policy also establishes the context in which hard protection may be considered appropriate. Policy 7.2.3 provides for the protection and maintenance of hard protection structures.

The methods set out in the RPS to implement the policy framework are typically directive in nature and provide strong guidance to district councils (as well as the regional council) in terms of how to give effect to the RPS. Relevant methods are summarised below.

Method 7.1.7 requires that:

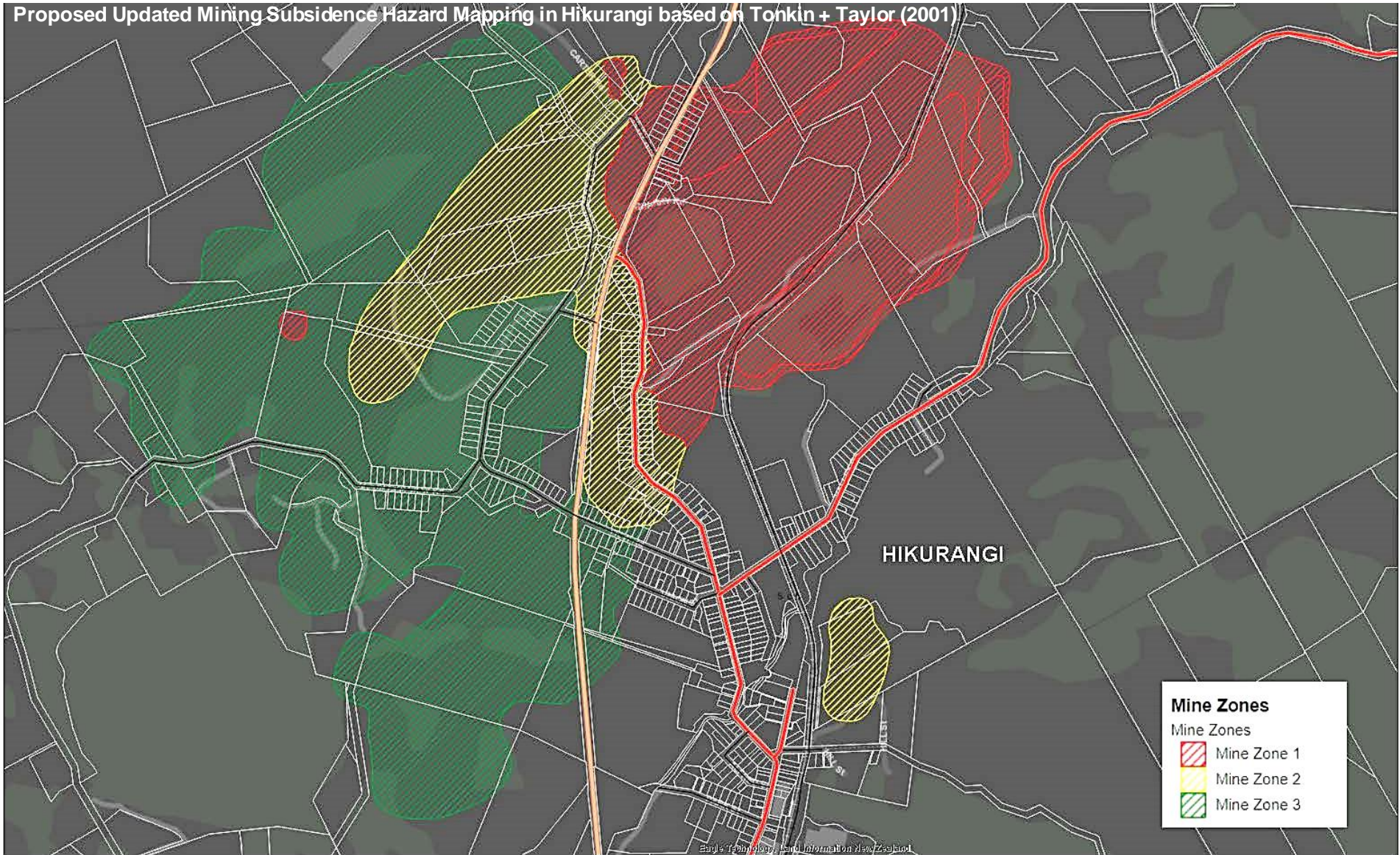
- New flood maps shall be incorporated into district plans as soon as practicable after such areas have been investigated, defined and mapped by the regional council.
- Rules in district plans shall classify: (a) New subdivision proposals that do not comply with policies 7.1.2 and 7.1.3; and (b) New proposals that do not comply with policy 7.1.2(e), as prohibited or non-complying activities.
- An engineer's assessment shall be required for new subdivision and development within 10-year and 100-year flood hazard areas and for new land use or building development within 10-year flood hazard areas.
- New habitable dwellings and non-habitable buildings shall meet minimum floor level requirements.
- The risks of natural hazards shall be assessed prior to any re-zoning or intensification being enabled.
- The latest national guidance and best available information on climate change effects on natural hazards shall be taken into account.
- A regional land use consent will be required (through a regional plan) where habitable buildings in high risk coastal hazard areas have been materially damaged or destroyed by a natural hazard event.

Method 7.1.8 relates to monitoring and information gathering and clarifies the respective roles of NRC and district councils in relation to natural hazards, noting that regional and district councils should work collaboratively to establish and maintain an integrated natural hazards database for the region.

Method 7.1.9 relates to advocacy and education, including raising public awareness and preparedness, and assisting communities to build resilience. Method 7.1.9(3) is targeted at reducing risk to existing development in consultation with affected communities.

Method 7.2.4 establishes that the policy framework of the RPS will largely be implemented through regional and district plans.

Appendix 3: Hikurangi Mining Subsidence Areas



Appendix 4: Example of costs of natural hazard events in the District

The following examples of damage from recent and widely-known natural hazard events in the district have been collated from operational reporting. While it is not feasible or practicable to quantify in this report all of the damage to Council infrastructure and to private individuals, the cases below illustrate a clear trend of escalating natural hazard risk.

The cases listed below are not intended to be a full and complete account of the extent of natural hazard damage in the district. Rather, these are provided as case studies. Due to the dynamic nature of some natural hazards and the unprecedented impacts of climate change it is difficult to extrapolate the costs associated with damage from natural hazards in the future.

1. Insurance Council of NZ data recorded \$44 million in claims following July 2020 Upper North Island Flooding.⁴⁴ Of those, \$27 million were in house and contents claims, however not all these claims would have been in Whangarei District. More detailed insurance information is difficult to obtain due to commercial sensitivity.
2. Severe storms and increased tendency for intense rainfall caused extensive damage in Whangarei over three latest winters 2020-2022. The examples below provide partial quantification of risks from infrastructure exposure to natural hazards and demonstrate a trend to increasing impacts of climate change on the District:
 - June 2020 had several storm events, with total monthly rainfall reaching in excess of 240mm in some urban areas. In addition to the considerable rain fall, the region was subjected to constant gale force winds reaching speeds up to 100kmh, the combination of these factors in conjunction with the already saturated soils led to widespread damage ranging from flooding, slips, scouring and dropouts to uprooted trees and signs. A large proportion of this damage was in rural areas and required immediate first response actions ensuring roads were kept open and safe. The roading department reported the costs of first response and remedial works associated with these storm events at over \$900,000⁴⁵
 - 17-19 July 2020 saw a extreme storm event with widespread flooding and damage, being a 1 in 100 year rainfall event. This was exacerbated by preceding elevated rainfall with Glenbervie Forest receiving 287% of its expected July rain – almost three times the monthly median. During the 17 July 2020 rain event a number of rain gauges registered more than 40mm in an hour. The Whangarei City gauge had 76mm in a 60-minute period. Glenbervie Forest received 60mm in a 30-minute period. A number of gauges had rainfalls exceeding a 1 in 100 chance of happening (> 100-year return period). The roading department reported the costs of first response and remedial works associated with these storm events at \$4.9 million.⁴⁶ The remediation costs for stormwater, waste and drainage and parks works are reported at a further \$1.3 million⁴⁷
 - Even more extreme rainfall was recorded during a storm event on 21 March 2022. A NIWA rain gauge recorded 123.2mm from 3:30 to 4:30am. NRC's Brynderwyn gauge recorded 112mm in an hour. Return period analysis for the Brynderwyn gauge has it exceeding a 1 chance of happening in 100 years for rainfall recorded over 10 minutes, 20 minutes, 30 minutes, 1 hour, 2 hours and 6 hours. The one hour total far exceeded a 1 chance in 250 years or a 0.004% chance of happening in any one year. The roading department reported the costs of initial response, immediate reinstatement and major remedial works associated with these storm events at over \$950,000.⁴⁸
3. There are no readily accessible records of costs of damage from land slippage in the district. This is mainly because damage of this type is deal with at the individual property level and the costs falling on the property owners (with potential for EQC payouts in qualifying cases). No widespread landslide events have been recorded in the district in the recent years, however a maps of recorded

⁴⁴ Insurance Councils of NZ. (n.d.). Cost of natural disasters. <https://www.icnz.org.nz/natural-disasters/cost-of-natural-disasters>

⁴⁵ Whangarei District Council. (2020). June 2020 Emergency Works Storm Damage Report. Roding department.

⁴⁶ Whangarei District Council. (2020). July 2020 Emergency Works Storm Damage Report. Roding department.

⁴⁷ Whangarei District Council. (2020). MBIE WDC Storm Response Funding reporting. Waste and Drainage department.

⁴⁸ Whangarei District Council. (2022). March 2022 Emergency Works Storm Damage Report. Roding department.

landslides is included in Figure 4 of Appendix A to the Tonkin and Taylor Landslide Susceptibility Assessment 2020. Two instances of slippage on private land received considerable attention in the community and the local media and are appropriate to include in this report as an illustration of financial impacts of land instability events on property owners:

- A slip at the end of Manuka Place in Raumanga in August 2019 caused structural damage to a house rendering it uninhabitable, and damaged WDC infrastructure. The owners of the home were moved to temporary accommodation⁴⁹. The costs of this natural hazards event, therefore, goes beyond the costs of repairing the dwelling and the infrastructure, and includes unquantifiable costs of displacement and disruption to people's lives.
- Properties from 80-94 Mackesy Road have been affected by land slippage and movement following the July 2020 rainfall event. The geotechnical assessment observed cracking and slumping in the land and structural cracks in buildings, including complete splitting of kitchen floor tiles. The report recommended placing dangerous building notices on dwellings at numbers 92 and 94⁵⁰.

⁴⁹ NZ Herald (2019). Report on Slumped Whangarei Land Blames Rain and Nearby Earthworks.

<https://www.nzherald.co.nz/northern-advocate/news/land-slip-assessors-in-whangarei-waiting-for-rain-for-more-geotech-work/YPJBNYCXE5NUM5J6HWFV7RRY/>

⁵⁰ Tonkin and Taylor. (2020). 80-94 Mackesy Road Geotechnical Advice Memo to Whangarei District Council.