

District Plan Team
Napier City Council

24 September 2021

To whom it may concern,

SUBMISSION ON THE DRAFT NAPIER DISTRICT PLAN

Thank you for the opportunity to make a submission on the draft Napier District Plan.

This submission provides an overview of why EQC is submitting on the plan. Given the significant hazard risk to Napier city, we believe there are opportunities to embed a risk-based framework beyond what is identified in the current draft. This will enable better decisions, to reduce the risk to people and property in Napier. Our submission is focussed on these opportunities. It summarises the key natural hazards that could impact Napier District, provides the EQC claims history for the district, outlines some general comments, then highlights specific issues we have through a detailed submission with recommended actions.

Why is EQC making this submission?

The EQC is a Crown Entity responsible for providing insurance to residential property owners against the impact of natural hazards¹. We also invest in and facilitate research and education about natural hazards, and methods of reducing or preventing natural hazard damage.

The contingent liability associated with natural hazard risk in New Zealand is high. EQC carries much of this liability on behalf of the Crown, through its provision of 'first-loss' insurance coverage. EQC therefore has a strong interest in reducing risk from, and building resilience to, natural hazards in Aotearoa New Zealand.

In addition, the implications of possible future insurance retreat in high-risk areas are significant for homeowners, mortgage holders, and communities. EQC is concerned about the numerous housing and urban development's recently approved that dramatically increase future risks².

¹ The EQC scheme insures against damage to residential buildings and land resulting from earthquakes, landslips, volcanic eruptions, hydrothermal activity, tsunamis, or natural disaster fire; and damage to residential land caused by storm or flood.

² For example, the retirement village in Ulyatt Road, Napier which is in the yellow tsunami evacuation zone <https://www.stuff.co.nz/business/101880273/concerns-raised-over-how-quickly-residents-could-evacuate-proposed-retirement-village>; and a subdivision in Te Awa in the orange tsunami zone <https://www.stuff.co.nz/business/property/126163052/elitist-gated-community-for-over55s-in-napier-approved-against-councils-wishes>

EQC has an increasingly active role in cross-government efforts to build New Zealand's resilience to natural disasters. In recent years we have also invested time in better leveraging our research, transforming it into useful tools and products, and getting it into the hands of people who can make a difference.

EQC operates in a unique position between central and local government, financial institutions, science and research institutions, and communities – and we have the ability to move between them and make connections. We have a rich source of information and data on natural hazard risks, impacts and loss modelling that can inform housing and urban development decisions. We would welcome the opportunity to use this expertise to help support the further development and implementation of the Napier District Plan.

Natural hazards of Napier

There is a lot of information on the hazards of the Hawke's Bay publicly available: the Hawke's Bay Emergency Management Group webpage³ provides information on the hazards that may affect Napier City: earthquake, tsunami, volcanic, storms and floods; and the Hawke's Bay Hazard Portal provides site specific information for property hazards, active faults, liquefaction, amplification, coastal hazards (including coastal erosion and inundation), flood risk areas, tsunami inundation, and landslide risk. Napier has a history of natural hazard events, the largest being the 1931 earthquake which destroyed the city. Land use planning provides the most proactive method to manage the risks from natural hazards, for both existing and new developments.

Earthquake and tsunami risks need to be taken seriously and have a joint land use planning and emergency management response. According to 2018⁴ statistics, population counts in tsunami evacuation zones show Napier has a total population of 49,111 in all its evacuation zones (i.e. red, orange, yellow). Of this population, approximately 22 are in the red zone, 11,431 are in the orange zone, and 37,658 are in the yellow zone. Research published in 2014 showed that 25-30% (i.e. 15,000-19,000) of Napier residents cannot get a safe location in time after a strong or long earthquake⁵.

This is compounded by new research⁶ that shows that the probability of an earthquake of at least magnitude 8 on the southern end of the Hikurangi subduction zone in the next 50 years is about 26%.

Liquefaction is likely to be a significant issue for Napier, with moderate to severe damage expected in many areas of the district⁷. Groundwater levels (which will be impacted by sea level rise) are a critical factor in determining liquefaction potential (along with a large earthquake and soil type). Figures 1 shows a liquefaction land vulnerability map, based low, medium and high vulnerability levels. It is anticipated that up to very high liquefaction related land damage could occur in the southern suburbs of Napier (e.g. Marewa, Maraenui, Jervoistown, Meeanee), and up to moderate

³ <https://www.hbemergency.govt.nz/hazards/hazards-in-hawkes-bay/>

⁴ Sourced from Hawke's Bay Regional Council, 15 September 2021

⁵ Fraser, et al, 2014: Variable population exposure and distributed travel speeds in least-cost tsunami evacuation modelling. *Natural Hazards and Earth Systems Sciences*, 14, 2975-2991

⁶ Pizer, et al, Paleotsunamis on the Southern Hikurangi Subduction Zone, New Zealand, Show Regular Recurrence of Large Subduction Earthquakes. *The Seismic Record* 2021;; 1 (2): 75–84.

⁷ Rosser BJ, Dellow GD, compilers. 2017. Assessment of liquefaction risk in the Hawke's Bay Volume 1: The liquefaction hazard model. Lower Hutt (NZ): GNS Science. 108 p. (GNS Science consultancy report; 2015/186).

liquefaction related land damage could occur in the northern suburbs of Napier (e.g. Bayview, Westshore, Tamatea and Onekawa) and the suburbs to the west of Napier.

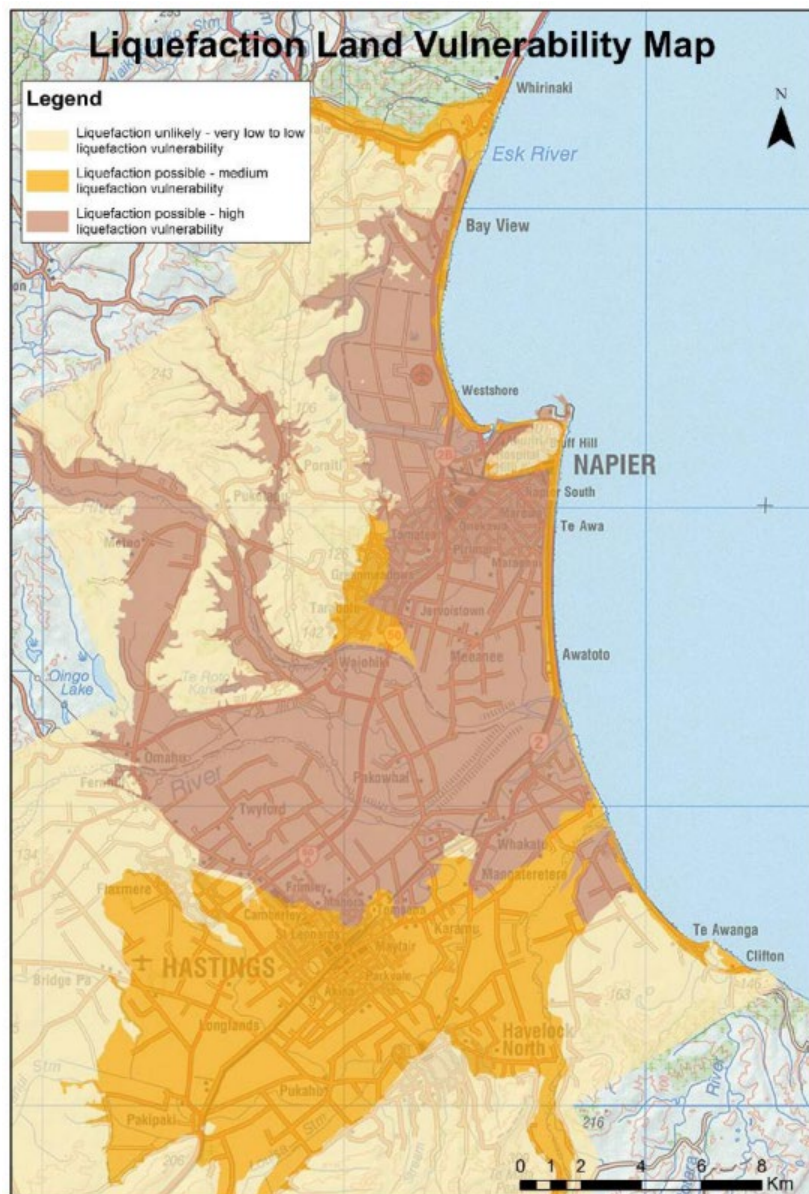


Figure 1: Liquefaction land vulnerability map showing areas of high, medium and low vulnerability (GNS Science, 2007, p87).

EQC's analysis of insurance claims from the Canterbury Earthquake Sequence shows that while liquefaction damage claims only amounted to around 15% of all claims (see Figure 2), they amounted to around 55% of the total losses: while fewer properties were affected by liquefaction (than ground shaking alone), they suffered significant damage where it was present. This suggests that the **biggest determinant of loss was therefore not so much *how* a structure was built, but *where* it was built**. Properties sited on land subject to the highest cumulative hazard (usually ground shaking plus liquefaction, or ground shaking plus topographic amplification in the case of the Port Hills) suffered the highest losses.

With the return period for a large earthquake from the subduction zone, and the population of people exposed to liquefaction and tsunami, EQC considers this to be a significant risk under section 6(h) of the RMA that should be managed through the District Plan, in addition to emergency management measures.

Claims history

Since 1997 there have been almost 1,500 claims with loss above EQC excess in the Napier City area. Just over half of these are from earthquakes, and the remainder from a mixture of landslip, storm, and flood. The event with the largest number of claims (375) was a magnitude 5.5 earthquake on 25 August 2008, just south of Hastings. The claims were spread across the city, with a bias towards the southern end (probably due to being closer to the quake). EQC paid out \$860k to claimants.

The second-largest event in terms of EQC claim count (205) was the floods in November 2020. These are predominantly located on Napier Hill (Figure 3), with a handful around the hills to the west of the city. EQC paid out \$5.5m to claimants, with the total cost to insurers being \$87.72m⁸. This is the largest-cost event.

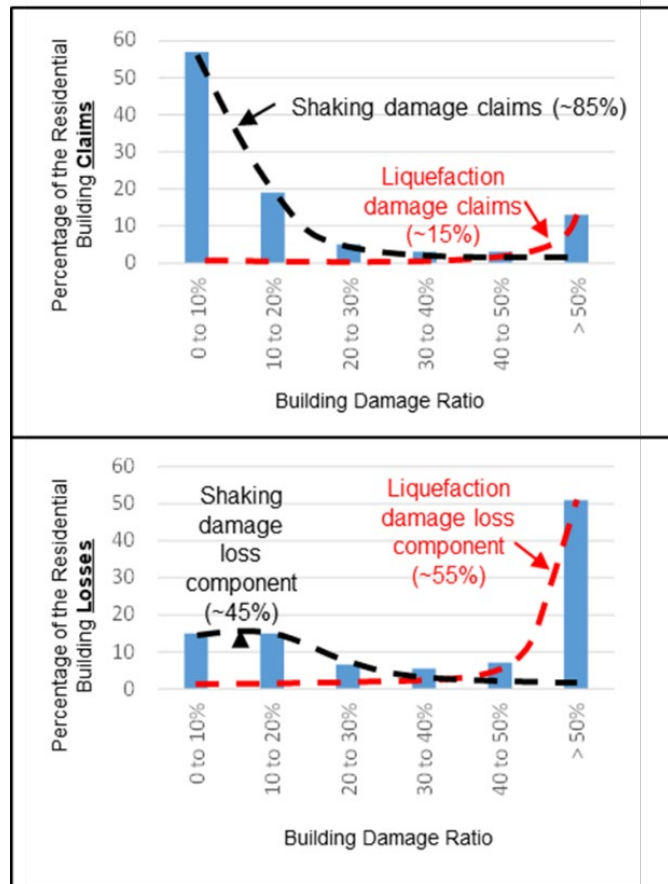


Figure 2 EQC Canterbury Earthquake Sequence Claims

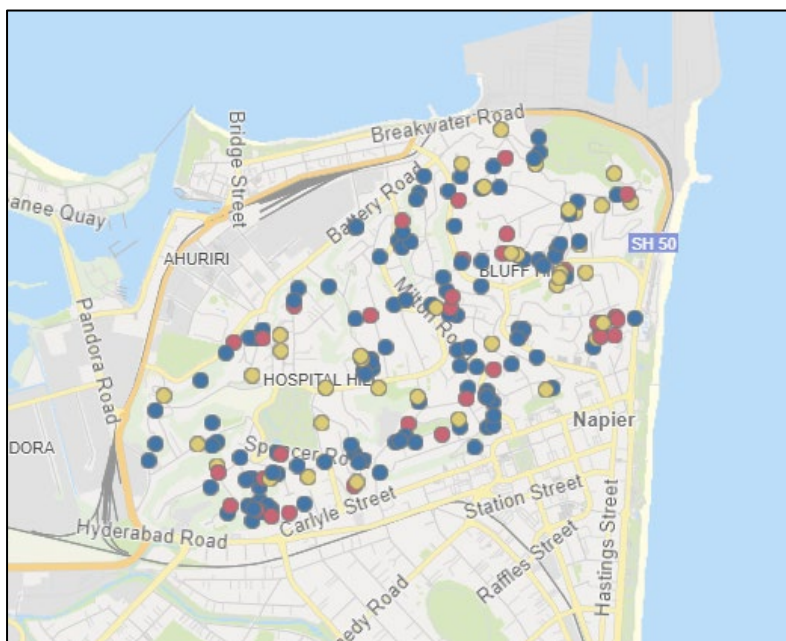


Figure 3: EQC Claims from the November 2020 Storm Event (yellow = flood; blue = landslip; red = storm)

⁸ <https://www.icnz.org.nz/natural-disasters/cost-of-natural-disasters>

The third-largest was a storm in late April 2011 (98 claims), with a very similar distribution to the 2020 floods. EQC paid out \$2.6m to claimants.

The 'all claims history' view of Napier City (Figure 4) is quite striking, with a *significant concentration of claims located on Napier Hill*. This concentration suggests to EQC that **stronger risk-based planning rules need to be in place for this part of the city**.



Figure 4: EQC 'All Claims History' View
(Yellow = building only; orange = land only; blue = building + land; purple = under assessment; as at March 2021)

General comments

This submission is focused on the four draft chapters related to natural hazards, subdivision, coastal environment, and earthworks. Overall, there is an opportunity to strengthen the District Plan by incorporating a risk-based approach to existing and any new development.

Risk-based planning provides a transparent and robust framework for determining levels of risk (e.g. significant, acceptable, tolerable), based on the land use and local context. Many councils around Aotearoa New Zealand are taking this approach to their natural hazard chapters, which is now considered best practice. While the plan is still in development as a draft, there is still the opportunity to incorporate a risk-based framework within the plan, while also engaging with your community about levels of risk. 'Community' includes Council staff, iwi, infrastructure providers, and experts, as well as those within the wider Napier community.

Recent risk-based approaches the Council could look at to inform their approach include those from Porirua City Council, Queenstown Lakes District Council, and although regional, the Bay of Plenty Regional Policy Statement, which provides a comprehensive framework that could inform an approach you could take.

Terminology within the draft refers to acceptable, unacceptable, and significant levels of risk, but without determining what these levels are, or by providing a framework so that activities can assess their level of risk, the policies become very open to interpretation and will not provide the outcomes sought.

Our detailed submission is as follows.

Natural Hazards

Page	Section	Issue	Recommended Action
3	Tsunami	First sentence difficult to read. There is a lot of information on the Hikurangi subduction zone which could be included to provide more context to the actual tsunami threat e.g. it's now believed to be a 1 in 4 threat in the next 50 years. EQC considers this to be a significant threat.	Rewrite first sentence. Provide more information about the source of tsunami for the East Coast e.g. Hikurangi subduction zone.
3	Liquefaction and Earthquake Hazard	Earthquake and liquefaction events can't be avoided, but the consequences can. Land use planning can still play an important, proactive risk reduction role by taking a risk-based approach to avoiding the areas most susceptible to liquefaction (e.g. critical infrastructure, residential development), or required ground remediation works to reduce potential land damage.	Suggested rewording: 'While earthquakes and subsequent liquefaction cannot be avoided, the consequences can. Mitigation can be addressed through risk-based land use planning and building regulations'.
		While there are no identified active surface faults within Napier's boundary, the sub-surface Awanui Fault responsible for the 1931 earthquake runs deep under the city. In addition to those that may be buried, large earthquakes will occur on the Hikurangi margin, off the Napier coast. These ruptures may cause shaking damage in Napier, and possible tsunami. Ground shaking can be planned for in the District Plan, by identifying liquefaction prone land, and by taking a risk-based approach to development. Tsunami can also be planned for by ensuring developments and key infrastructure are built outside tsunami inundation zones.	Acknowledge the Hikurangi margin as a potential source of ground shaking and subsequent liquefaction and tsunami. Take a risk-based approach to locations susceptible to liquefaction and tsunami inundation.
4	Flooding Hazard	The residual risk from pump failure needs to be planned for i.e. indemnification for those areas that would be flooded (and how high) from a pump failure.	Identify the residual risk of pump failure. Take a risk-based approach to developments in these areas.
6	Strategic direction – relevant outcomes	There are no key outcomes directly relevant to natural hazards? Why?	Provide a key outcome relevant to natural hazards e.g. by taking a risk-based approach natural hazards their risks are managed to an acceptable level; or the Napier community is a sustainable and resilient community that manages its risks from natural hazards.

7	Issues – NH-11	First sentence is difficult to understand.	Delete first sentence
	NH-12	As liquefaction has the potential to affect substantial areas of Napier, there is a need to limit infill housing, upgrade/relocate infrastructure, assess any changes of use, etc, to manage this risk.	Include options to manage the risk, such as limiting further development and upgrading or relocating infrastructure.
	NH-13	First sentence, second paragraph: Where the risk to life and property from some natural hazards can be avoided, it is the Councils intention to do so". ALL natural hazards can be avoided, so it is a political decision as to whether or not they are avoided. An explicit risk-based approach would provide a framework to inform this decision making. Last two sentences, second paragraph: While regulating land use will not increase the likelihood of a hazard, it can worsen the risk by allowing more development in high risk areas. A risk-based approach is needed to ensure the risks are managed to an acceptable or tolerable level.	Reword explanation.
		For many hazards, the probability, timing, magnitude and extent are known. And for those where there is a greater uncertainty, this does not take away from the point that they will still occur at some time, and have consequences. Land use regulations that aim to reduce risks can reduce the consequences, and recovery time.	Reword explanation.
	Land use planning, building code requirements, emergency management, and where possible, early warnings can all contribute to reducing the effects of natural hazard events.	Reword explanation.	
9	Objectives – NH-01	Objective is too long, incomplete, and difficult to understand.	Rewrite.
	NH-02	Objective is missing words and difficult to understand. "Significant risk" will need to be defined/explained somewhere.	Rewrite objective. Ensure that and explanation or definition of significant risk is provided somewhere in the plan.
	NH-03	The heading for the Objective reads "Mitigation measures <u>do not increase</u> any adverse effects ...", but the explanation reads "... <u>do not result in</u> any adverse effects..." (emphasis added). There are two different objectives – to not increase (i.e. not more than current), versus do not result in (i.e. zero). These would give two different	Review the objective – is it to not increase adverse effects, or not result in adverse effects?

		outcomes, and therefore need to be consistent in what the intent of the objective is.	
	NH-O4	The term “significant risk” needs to be defined.	Ensure that and explanation or definition of significant risk is provided somewhere in the plan.
		Land instability and tsunami hazards also need to be included in the list of significant risks associated with other hazards.	Include land instability and tsunami in the list of significant risks.
	NH-O5	“...acceptable level” or risk needs to be defined.	Ensure that and explanation or definition of acceptable risk is provided somewhere in the plan.
	NH-O6	This is difficult in interpret based on NH-O5 above. Opportunity to include reference to risk-based planning. These two objectives could be combined?	Re-write objective and explanation to make it clearer, e.g. Take a risk-based approach to life and property.
10	NH-O8	The management of coastal hazard risks can also include restricting further development in existing areas, by taking a risk-based approach. This needs to be included in the explanation.	Include ‘no further development in existing developed areas’, or ‘take a risk-based approach to further development in existing areas’.
11	Policies – NH-P1	Great to see that a risk-based approach has been made explicit in the this policy. Can this be extended across all hazards?	Take a risk-based approach to all hazards.
		Risk Management Standard AS/NZ 4360 has been superseded by AS/NZS ISO 31000:2009	Update reference to AS/NZS ISO 31000:2009.
	NH-P2	Tsunami should be included in the list of hazards.	Include tsunami.
	NH-P3	This policy appears to be limited to coastal areas only (i.e. mean high water springs), yet other mitigation measures can also have adverse effects on the environment, such as river/flood protection works, stormwater systems, retaining walls, etc. This policy needs to be expanded to include all types of mitigation, not just for the coastal environment. Alternatively, the policy could be renamed explicit for coastal hazards, with an additional policy for ‘other’ hazards.	Expand policy explanation for all hazard mitigation measures, not just coastal.
	NH-P5	It is unclear whether it’s the vulnerability (e.g. economic, social, cultural, environmental) to coastal hazards, or the susceptibility to coastal hazards that is the intent of this policy, as vulnerability relates to people’s circumstances, where susceptibility is location specific. I think the intent of the policy is focused on susceptibility.	Replace ‘vulnerability’ with ‘susceptibility’.
	NH-P6	The term “unacceptable” needs to be defined.	Ensure that and explanation or definition of unacceptable risk is provided somewhere in the plan.

12-13	NH-P9	The economic cost of mitigation and continual maintenance also needs to be taken into account, as this cost needs to inform any decision making on mitigation measures.	Include an addition point j. “the economic cost of mitigation and continual maintenance”.
13	NH-P11	The term “unacceptable” needs to be defined.	Ensure that an explanation or definition of unacceptable risk is provided somewhere in the plan.
13	NH-P12	The wording of the explanation is a little confusing. Risk = likelihood (probability) and consequences, so needs rewording.	Explanation needs rewording. Suggest: New critical or strategic infrastructure is only located in areas where there is a high probability and of high risk from natural hazards where there is no reasonably practicable alternative.
14	NH-P16	Climate change will have a potentially big impact on groundwater, so the effects of a development on groundwater should also be included.	Include new point f. groundwater.
15	Natural Hazards Activity Table	There is an opportunity to take a risk-based approach to the activities listed in the table across all hazards – this table only addresses Coastal and River Hazard Areas i.e. land instability and liquefaction areas are not included, which does not give effect to the policies and objectives.	Take a risk-based approach to the activities across all hazards.
22-23	NH-AC2: General	The residual risk of any mitigation measures should be included in the assessment matters.	Include additional point as follows: The extent of any residual risk and how this will be managed.

Subdivision

Page	Section	Issue	Recommended Action
2	Introduction	Good subdivision design should also include consideration of the risks from natural hazards.	Include an additional bullet point “the risks from natural hazards”.
3-4	SUB-I3	Support the intent of this issue, however it is unclear what “it” in the issue statement “...it will not be subject to inappropriate levels of risk from natural hazard” refers to – the land uses enabled by subdivision, or infrastructural services? Or should it be both?	Clarification of issue statement.
		The final sentence refers to the location and design of the subdivision, but not infrastructural services. Infrastructure should also be included in the explanation, as a functioning infrastructure network is key to recovery and resilience.	Include the location of design of infrastructure needs to avoid or mitigate potential impacts from natural hazards.
4	SUB-I4	Support the intent of this issue, particularly point f.	No action required
7	SUB-O5	Support the intent of this objective, however ‘unacceptable’ needs to be defined or a framework to assess levels of risk included.	Ensure that an explanation or definition of unacceptable risk is provided somewhere in the plan.
10	SUB-P8	Ensuring that evacuation routes are ‘fit for purpose’, particularly in those locations with limited evacuation options, needs to be included in the list of factors to be considered.	Include new point f. evacuation routes.
12	SUB-P15	Support the intent of this policy. Point b: guidance will be required on how liquefaction can be appropriately managed, e.g. through ground remediation works, foundation design, shape and size of house. Point c – in addition to maintaining overland flow paths, their capacity should also be monitored and reviewed to ensure they are still able to safely convey flood waters as the climate changes.	Provide guidance on how liquefaction can be ‘appropriately’ managed to an acceptable level. Re word point c: <u>Monitoring, reviewing and</u> maintaining the function of overland flood flow paths
15	Subdivision Activity Table SUB-R2	Matters of control are restricted to 4. Natural hazards and land stability. Land stability issues (i.e. land instability) is a natural hazard, and therefore doesn’t need to be explicitly included.	Remove “4. Natural hazards and land stability ”, or change to “Natural hazards <u>including</u> land stability”.
20	SUB-R12	Support the intent of this prohibited status.	No action required
25	SUB-S8	Matters of discretion include 2. Natural hazards and land stability. Land stability issues (i.e. land instability) is a natural hazard, and therefore doesn’t need to be explicitly included.	Remove “2. Natural hazards and land stability ”, or change to “Natural hazards <u>including</u> land stability”.

35-36	Assessment criteria - Natural hazards	Support the intent of k. to n. The 'Note' on page 36 implies that floor levels could be required to be raised above a flood height, which would reduce the risk of flooding through a house. However, while this is a risk reduction option, there can be substantial land damage around and under a home from flood waters (and damage to services), and the experience of having water under a home can be stressful for those living there. This should not be an option that is relied upon to allow development to proceed in locations susceptible to flooding.	Further consideration needed as to whether raising floor levels presents an acceptable mitigation measure for flooding (i.e. is the associated land damage, sanitary issues and stress from having floodwaters under the floor level warrant this option?).
39-40	SUB-AC4 Natural hazards and land stability	Land stability issues (i.e. land instability) is a natural hazard, and therefore doesn't need to be explicitly included. Point b – as above, this implies that floor levels could be required to be raised above a flood height, which would reduce the risk of flooding through a house. However, while this is a risk reduction option, there can be substantial land damage and sanitary issues under a home from flood waters (and damage to services), and the experience of having water under a home can be stressful for those living there. This should not be an option that is relied upon to allow development to proceed in locations susceptible to flooding.	Remove "Natural hazards and land stability", or change to "Natural hazards including land stability". Further consideration needed as to whether raising floor levels presents an acceptable mitigation measure for flooding (i.e. is the associated land damage, sanitary issues and stress from having floodwaters under the floor level warrant this option?).

Coastal Environment

Page	Section	Issue	Recommended Action
3	Interface with other legislation	This section only acknowledges the Reserves Act. Other legislative linkages could also be included, such as the Civil Defence Emergency Management Act, which provides for the identification and management of coastal hazards through risk assessment and warnings (i.e. storm surge, tsunami), evacuation planning (i.e. tsunami evacuation mapping, signage), education.	Include reference to the role of the Civil Defence Emergency Management Act in managing coastal hazards.

	CE-I7	Support this Issue, and that new development should be located elsewhere. The intensification of existing developments should also be restricted, so as not to increase the risk.	Include the restriction of intensification of existing development.
	CE-AC1	Support points n, o, p in relation to risks from natural hazards.	No action required.

Earthworks

Page	Section	Issue	Recommended Action
3	EW-I4	Support the explanation of the issue.	No action required.
5	EW-O2	Support intent of Objective, but could be further clarified that both the physical earthworks and their future outcome consider natural hazard risks and the health and safety and people and property (i.e. during earthwork process as well as once completed).	Amend wording to “Earthworks activities <u>and their completed form</u> consider natural hazard risks”
6	EW-P4	Support the intent of this policy.	

If you have any questions regarding this submission, please do not hesitate to contact our office.

Yours sincerely



Dr Jo Horrocks

Chief Resilience & Research Officer

Earthquake Commission *Kōmihana Rūwhenua*

Level 11 Majestic Tower, Willis St, Wellington

Mob: +64 27 311 7407

Our mission is to reduce the impact on people and property when natural disasters occur

EQC's Resilience Strategy for Natural Hazard Risk Reduction

EQC Resilience and Research Programme