BEFORE THE OTAGO REGIONAL COUNCIL

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of the Proposed Otago Regional Policy Statement 2021 – Chapter 12 HAZ – Hazards and risks

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STATEMENT OF EVIDENCE OF LUKE PLACE ON BEHALF OF QUEENSTOWN LAKES DISTRICT COUNCIL (138)

23 NOVEMBER 2022

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1. INTRODUCTION

1.1 My name is Luke Place. I am a Senior Policy Planner employed by the Queenstown Lakes District Council (**QLDC**) to prepare evidence in chief on HAZ – Hazards and Risks chapter of the Otago Regional Council's Proposed Regional Policy Statement (**RPS**).

1.2 I hold the qualifications of Bachelor of Resource and Environmental Planning (First Class Honours) from Massey University. I have been employed at QLDC since January 2017 in the areas of resource consenting and planning policy. I am currently leading a QLDC plan review topic that seeks to manage natural hazard risk in an already developed part of Queenstown.

1.3 I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court's Practice Note 2014 and that I agree to comply with it. I confirm that I have considered all the material facts that I am aware of that might alter or detract from the opinions that I express, and that this evidence is within my area of expertise, except where I state that I am relying upon the evidence of another person.

2. PURPOSE AND STRUCTURE OF EVIDENCE

2.1 The purpose of my evidence is to consider the Otago Regional Council (**ORC**) position on QLDC's submission in relation to the HAZ – Hazards and Risks chapter of the proposed RPS. In preparing this evidence, I have read the following:

a. Section 42A Hearing Report Proposed Otago Regional Policy Statement 2021, Chapter 12, HAZ – Hazards and risks, Andrew Maclennan, 27 April 2022 (**s 42A Report**)
b. Brief Of Supplementary Evidence of Andrew Cameron Maclennan Haz – Hazards And Risks
c. Statement Of Evidence of Scott David Kelly Dated 3 October 2022

3. Objectives

HAZ-NH-O1 – Natural Hazards

3.1 QLDC's submission supported the intent of HAZ-NH-O1 – Natural Hazards, to set a maximum level of risk that is tolerable but sought an amendment to clarify that acceptable levels of risk should be maintained, to provide greater support to HAZ-NH-P3. The s 42A officer agreed with QLDC's submission and recommended changes to broaden the objective to clarify that activities with an acceptable risk are maintained at that level of risk. I am satisfied the recommended changes by the s 42A officer address QLDC's submission.

3.2 As a result of a consequential amendment, the s 42A officer has also recommended the addition of *(in relation to natural hazards)* in HAZ-NH-O1 (and throughout the HAZ chapter and APP6). I do not support this amendment as it is superfluous in relation to a set of provisions that specifically addresses natural hazards.

3.3 I consider that a more straightforward alternative would be to reference 'natural hazard risks', as suggested below (my recommended amendments shown as blue text which is underlined and ~~struck through~~).

~~Levels of~~ ~~r~~*Natural Hazard* ***Risks*** ~~*(in relation to natural hazards)*~~ to people, communities and property from *natural hazards* within Otago are maintained where they are acceptable, and managed to ensure they[1] do not exceed a tolerable level.

HAZ-NH-O2 – Adaptation

3.4 QLDC requested that the word 'adaption' in the title of the objective be replaced with the more accepted term 'adaptation'. It is acknowledged that QLDC's relief with regard to the use of the word 'adaptation' has been accepted.

4. Policies - Assessing risk

HAZ-NH-P1 – Identifying areas subject to *natural hazards*

4.1 The QLDC submission on HAZ-NH-P1 supported the approach of identifying the location of natural hazards on a regional basis. However, it considered that the step of identifying which hazards need to be identified was missing from the

[1] 00138.142 QLDC

policy, and that the reference to assessment matters in limbs 1 – 6 were not helpful in the context of the policy.

4.2 The s 42A Report suggests that, a*s proposed, HAZ-NH-P1 guides the assessment of natural hazards to provide the information required for a risk assessment*[2]*.* In my view*,* HAZ-NH-P1 does not play a role in guiding risk assessments. It does not reference risk, nor does it have any specific linkage to APP6. It simply sets out that natural hazard areas be identified, being areas affected by the geological process of a hazard, as opposed to 'risk'. It equates to a mapping exercise.

4.3 In light of the above, the assessment matters listed at limbs 1 – 6 do not sit comfortably in this policy. They are not required for the 'identification' of natural hazard areas, and start to cross into the risk assessment of a hazard, which is helpfully directed and described by APP6. The assessment of these matters comes later in the process set out by the RPS which requires the consideration of risk. Ultimately, the matters in limbs 1 - 6 are considered as a result of the mapping not when mapping.

4.4 It is noted that not all of the information listed in limbs 1 – 6 will be available when identifying hazard areas. Many of these matters require further assessment and should not prevent hazards or locations being identified.

4.5 QLDC's submission requested that the policy be amended to identify natural hazards of interest in the Region, and requiring information about the characteristics of those natural hazards, including the locations where they affect people, communities and property, to be identified and described in a schedule to the RPS. The GNS advice[3] agrees that information in an appendix containing a description of each natural hazard's characteristics and potential consequences would be useful. It is not clear from the recommended changes that this has been considered.

4.6 The inclusion of the abovementioned schedule need not be developed during the course of the Schedule 1 RPS development process, but could occur at a later date in a similar to the way APP6 directs further plan making processes to

[2] Para 89, Natural Hazards s42a report

[3] Para 89, Natural Hazards s42a report

take place. The inclusion of this information in the plan would improve effectiveness and efficiencies in natural hazard management as it would direct plan users to a single source of information with regard to the natural hazards that require management in the Region. Alternatively, the information could sit outside of the plan in a reference document.

4.7 If the policy is to be retained in the form recommended in the s 42A Report, I consider that the s 42A amendment to limb 5 accurately reflects the GNS Science letter reference to HAZ-NH-P1 being a guide for risk assessments[4]. In particular, the recommended amendments to limb 5 suggest that a single likelihood is sufficient for assessing natural hazard risk. In my view, this does not reflect APP6 Step 1(1) or Step 4(1) where a high, median and maximum credible event are to be assessed. Taking this into account, I recommend the following amendment to limb 5 as an alternative to QLDC's primary relief (amendments shown as blue text which is underlined and ~~struck through~~):

For hazards not identified in accordance with HAZ-NH-P1A ~~U~~using the best available information, identify areas where *natural hazards* may adversely affect Otago's people, communities and property, by assessing:

…

(5) The likelihood of a representative range of at least three hazard scenarios with varying likelihoods of ~~an event~~ occurring including a high, medium and maximum credible event ~~using the best available information~~, and

…

HAZ-NH-P2 – Risk assessments

4.8 The QLDC submission requested that the policy be amended to remove the words 'the level of' in regard to risk assessments as it implies there is only one level of risk for each hazard, when in reality there is likely to be a range of risk levels associated with each hazard. It is acknowledged that QLDC's relief with regard to the use of the words 'the level of' has been accepted.

4.9 However, I do not consider the s 42A version response to 00236.085 Horticulture NZ is appropriate. The provision was amended as:

[4] Para 89, Natural Hazards s42a report

Within areas identified under HAZ-NH-P1 as being subject to natural hazards, Aassess the level of natural hazard risk by determining a range of natural hazard event scenarios and their potential consequences in accordance with the criteria set out within APP6

4.10 The amendment implies that all areas subject to natural hazards will be known, and therefore, that natural hazard risk will only be assessed in areas that are specifically known (through the application of HAZ-NH-P1) to be subject to a natural hazard. This is not realistic given the rapidly changing nature of natural hazards, and taking into account the unknown effects of climate change. It does not provide the level of flexibility necessary to address the dynamic reality of natural hazards. Activities may conceivably be proposed in locations that are subject to hazards that have not been identified as directed by HAZ-NH-P1. This may be the case in the Queenstown Lakes District where a range of commercial recreation and other activities take place in remote locations. It is important that these activities be required to undertake a risk assessment in accordance with APP6 if it has not been undertaken already as directed elsewhere by the RPS.

4.11 The submission by HortNZ requests that not all land uses should be required to undertake a risk assessment and it should only be required where there is a risk from an identified natural hazard. In my view, there is nothing in the notified version of HAZ-NH-P2 that requires all land uses to undertake a risk assessment, only where a natural hazard is present. This natural hazard may only be identified at the time an activity is proposed and more detailed site specific assessments are undertaken. As such, the recommended amendment has the effect of unnecessarily limiting the circumstances in which a risk assessment may need to be undertaken.

4.12 The explanation provided in the general themes section of the s 42A Report at para 54 – 63 also sets out that the methods are a 'holding pattern'[5] until a district or regional plan has been reviewed and has given effect to the HAZ- NH section of the proposed RPS, and that there will be situations where an activity requires a resource consent to change the use of land which will increase the risk from natural hazards within areas subject to natural hazards[6]. I consider clarification is needed as to whether all areas subject to natural hazards will be known both

[5] Para 60, Natural Hazards s42a report

[6] Para 58, Natural Hazards s42a report

before and after ORC has undertaken its identification exercise M1(2)(a), and if not, how can the recommended amendment to HAZ-NH-P2 be supported.

APP6 methodology

4.13 QLDC's submission expressed, in principle, support for the inclusion of a method in the proposed RPS to assess natural hazard risk. The relief included in QLDC's submission requested a number of amendments to APP6 and it is acknowledged that many of these points have been accepted or accepted in part. The proceeding paragraphs address outstanding matters contained with the various steps of APP6.

APP6 Step 1 – Limb 3

4.14 QLDC's submission requested that Step 1 be directive in regard to which representative concentration pathway (RCP) scenario should be considered in limb (3). Currently, limb 3 is ambiguous in regard to this matter. This ambiguity is not desirable as it will create uncertainty within a wider framework that ultimately aims to provide certainty in terms of the methodology to be applied in assessing natural hazard risk. APP6 should seek to remove ambiguity of this type in as many places as possible to ensure an effective and efficient approach to assessing risk. It is considered the ORC and its technical experts provide advice on which RCP scenario should be applied when considering hazard likelihood. This matter does not appear to have been addressed in the s42A report.

APP6 Step 1 – Table 6

4.15 The QLDC submission considered that the indicative frequencies in Table 6 were not appropriate on the basis that they exclude low frequency events which have the potential to cause significant consequences (i.e. high risk events).

4.16 I support QLDC's submission and consider that Table 6 is flawed because its indicative frequencies do not properly identify low frequency events which have the potential to cause significant consequences and therefore pose a high risk. This is because the 'rare' event likelihood starts at 2,501 years. The implications of insufficient identification of low frequency, or long return period events from Table 6 is that the risk assessment results from APP6 will be lower than under

the Australian Geomechanics Society Practice Note Guidelines for Landslide Risk Management 2007 (AGS) methodology, being an accepted method of assessing risk from slope stability hazards. This means APP6 is likely to represent a less conservative approach to managing risk than the AGS would have anticipated.

4.17 In response, the technical letter from GNS sets out that '*the explicit inclusion of likelihoods beyond 10-4 would not materially affect the result within the risk table, as any event with a likelihood greater than 1001 years results in tolerable risks. The likelihood table enables events with likelihoods greater than 2501 years to be considered should the natural hazard scenario descriptors apply to events of these probabilities*.'[7]

4.18 I agree that Table 6 does not specifically exclude long recurrence interval events from being considered – this is clear from the word 2,501 years 'plus' in the 'rare' likelihood column. I am not necessarily concerned that the subject events are being excluded from being considered, but with how they are categorised in the remaining steps of APP6. The likelihoods used in Table 6 skew qualitative risk assessment outcomes in Table 8 to be of lower risk, based on the low range of probabilities. It appears that the range of likelihoods provided are better suited to types of hazards that have a higher probability such as flooding. This however means that Table 6 does not set up a framework that effectively manages hazards which have a lower likelihood but significant consequences.

4.19 In practice, the range of likelihoods established in Table 6 mean that no unlikely or rare events will ever be categorised as a significant risk in Table 8 despite the severity of impact that may be associated with them as defined in Table 7, including loss of life. This is a technical gap within the notified version of APP6 which should be resolved. I note that the supplementary s 42A Report has recommended amendments to Step 4 of APP6 which seeks to address the issue that has been described here. I address this matter later in my statement.

4.20 Practical case studies are useful to illustrate this gap. One specific example was described in QLDC's submission but, for clarity, is summarised again in the proceeding paragraphs.

[7] Para 424, Natural Hazards s42a report

4.21 QLDC has recently undertaken an assessment of rockfall and debris flow risk across two developed alluvial fans[8]. The assessment used the AGS methodology[9] which assigns a likelihood descriptor 'rare' to landslide events with a recurrence interval of 100,000 years[10]. In contrast, Table 6 of APP6 uses a recurrence interval of 2,500 years for a 'rare' event. The implications of omitting the specific identification of low frequency, or long return period events from Table 6 is that the risk assessment results from APP6 will be lower than under the AGS methodology. This ultimately means that APP6 is a less conservative approach to managing risk (at least in relation to slope stability hazards) than is set out within the established AGS methodology.

4.22 The QLDC risk assessment identified risk to life/Annual Individual Fatality Risk (**AIFR**) levels that what would be categorised as 'significant' under Step 4 (4)(b) of APP6. This is because the QLDC risk assessment identified that AIFR levels from rockfall and debris flow risk which range between $1x10^{-3}$ and $1x10^{-6}$. However, the likelihoods for debris flow events considered as part of the QLDC risk assessment range from 100 - 2,500 years for a small event, 2,500 - 6,700 for medium event, and 6,700 - 20,000 for large event for one alluvial fan. On the other alluvial fan, the likelihoods for the events range from 50 – 200 years for a small event, 200 – 2,500 years for a medium event, and 2,500 – 10,000 for a large event. Under Table 6 of APP6, both the medium and large events would be 'rare' (using averaged return periods for each event). When these are applied to the notified version of Table 8 in APP6, it is only possible for the risk to be acceptable or tolerable, as there is no 'red' (or significant risk category) on the 'unlikely' and 'rare' rows of Table 8. This does not correspond with the AIFR assessment undertaken by QLDC. Under the notified APP6 methodology, there would be no requirement to proceed to a quantitative assessment despite the elevated levels of risk to life that have been identified and which the RPS directs specific action through the likes of HAZ-NH-P3 and HAZ-NH-P4.

4.23 The QLDC case study suggests that the qualitative methodology in notified version of Steps 1 to 3 of APP6 is not aligned with the quantitative methodology in Step 4. This inconsistency needs to be remedied. I acknowledge that Step 4 has been amended by way of the supplementary s 42A Report which appears to have narrowed this gap, at least in respect to the QLDC risk assessment

[8] Natural Hazards Affecting Gorge Road, Queenstown, Beca Limited, 12 November 2020

[9] Australian Geomechanics Society Guidelines for Landslide Risk Management - "Practice Note Guidelines for Landslide Risk Management 2007"

[10] APPENDIX C of Australian Geomechanics Society Practice Note Guidelines for Landslide Risk Management 2007

example. However, Table 6 does not appear to accurately represent the range of hazard types that occur within the Otago Region.

4.24 It is possible that the existing frequencies set out in Table 6 may be well suited to a range of different hazards that generally occur more often (i.e. flooding). Without any desire to unnecessarily increase the complexity of APP6, it may be appropriate to set out different frequency tables that are fit for purpose for the specific hazards being assessed (i.e. flooding, slope stability, liquefaction any other hazard that needs specific management through APP6) to more effectively capture the range of likelihoods associated with different hazards that affect the Otago Region.

4.25 It is noted that the Bay of Plenty Regional Policy Statement risk assessment methodology (as set out in Appendix L) uses a similar approach to what I suggest above. Their approach to likelihood consideration sets out a 'preferred starting point' for considering the likelihood of a range of different hazards.

4.26 The QLDC submission requested the following amendments to Table 6:

- It includes low frequency events, such as the likelihood table included in the AGS 2007 methodology
- There is alignment between the results expected through the qualitative assessment methodology and the quantitative assessment methodology
- If appropriate, there is a distinction between the likelihood table that applies to life-threatening hazards that are difficult to mitigate (such as debris flows) and hazards that are less likely to kill people (such as liquefaction).

4.27 It is requested that ORC's technical hazard experts consider these options to amend the gap in APP6.

APP6 Step 2 – Table 7

4.28 The QLDC submission requested a number of amendments to Step 2 of APP6, including that the list at (1) – (11) be deleted, that the reference to 'hazard zone' be clarified, and to clarify that any death from a natural hazard is no less than a major consequence. The QLDC submission was accepted in part.

4.29 In response to the submission of Port Otago, the s 42A Report has recommended the addition of two notes as an introduction to Step 2 of APP6. The notes state

Note 1: Table 7 shall be utilised by territorial authorities determining the level of risk presented by a hazard(s) when undertaking plan change or plan review processes.

Note 2: The matters listed in (1) to (11) provide useful considerations for territorial authorities, and are the primary considerations for resource consent applications triggering a risk assessment requirement in accordance with HAZ-NH-M3(7)(a) or HAZ-NH-M4(7)(a)

4.30 Read together, the notes suggest that Table 7 would not be applied to risk assessments for resource consent applications. It is not clear how APP6 can be completed for resource consent applications if matters at (1) – (11) of Step 2 are utilised alone or in isolation of Table 7. The matters at (1) – (11) do not correspond to any specific 'severity of impact' noted in Table 7 and cannot therefore lead to a risk assessment at Step 3.

4.31 QLDC's submission on Step 2 considered that some of the matters at (1) – (11) be removed as they were either inappropriate or overlap with the matters contained within Table 7. It does not appear this matter has been addressed by the s 42A Report.

4.32 I agree with the relief in QLDC's submission, in particular, the reasons stated for deleting (1) – (11), and consider that the matters contained within (1) – (11) and Table 7 should be deleted.

4.33 Alternatively, if the matters at (1) – (11) are considered necessary, they could be reframed as an additional note to help provide context to Table 7, as many (i.e. (1) – (5) and (7) – (8)) overlap with the matters in Table 7. In my view, matters (6), (9), (10), and (11) need not be included in any context setting note for Table 7 as they either do not directly relate to a consequence assessment, are considered elsewhere in the APP6 process, or are vague and complicate this step. Following this, I consider that Table 7 would be suitable for both resource consent and plan change processes, and that the two notes added to Step 2 could be deleted.

4.34 The s 42A Report has recommended amendments to the way that Table 7 addresses deaths from hazards in the 'health and safety' column to reduce the degree to which the table is risk tolerant[11]. In particular, Table 7 has been amended so that any death from a natural hazard event is no less than a major consequence. While I am of the view that these amendments improve Table 7, it does not address the underlying concern with the type of events that would be considered significant in Table 8 of Step 3.

4.35 Mr Maclennan (s 42A Report author) notes that he would welcome evidence from submitters as to whether these suggested amendments align with what they would consider to be a 'Minor', 'Moderate', 'Major', or 'Catastrophic' events[12]. Like Mr Maclennan I acknowledge my limitations as a planning expert and not a technical expert on natural hazard processes and risk assessments. It is conceivable that qualitative descriptions could be used instead of specifically defining the number of deaths that need to be associated with a 'severity of consequence' classification in Table 7, such as 'many deaths', or to assume a direct relationship between the amount of building damage and deaths. An alternative approach would be to avoid specifying any number of deaths and to simply set out that 'deaths are experienced' for catastrophic and major hazards.

4.36 To support this, it is requested that ORC obtain technical advice on this matter from relevant natural hazard risk experts, or that ORC's in-house natural hazards staff consider how Table 7 could be amended.

APP6 Step 3 – Table 8

4.37 The preceding paragraphs have discussed the shortfall of Step 3 – Table 8 with regard to the way it categorises long recurrence interval events that may also have high consequences (i.e. deaths and large amounts of property damage). I consider that amendments are necessary to Step 3 – Table 8 to ensure that natural hazards are efficiently and effectively managed.

4.38 Para 453 of the s 42A Report described the relief of ORC in regard to Step 3 – Table 8. ORC's relief identifies a very similar issue within Step 3 – Table 8 to that of the QLDC submission (i.e. that long recurrence interval events are not appropriately provided for). ORC proposes two options to remedy this:

[11] Para 442, 443 Natural Hazards s42a report

[12] Para 443 Natural Hazards s42a report

Option A - Unlikely or rare and catastrophic scenarios; and likely but major scenarios are as significant or

Option B - Require a quantitative risk assessment if the natural hazard scenarios generate risk that is significant, or if a consequence is catastrophic or major.

4.39 I agree that the amendments by ORC go some way to improving Step 3 – Table 8. The amendments would ensure some long recurrence interval high consequence events would be considered significant and therefore need to proceed to Step 4 (quantitative risk assessment). For clarity, the tables below show the amendments (in underlined text) that would be associated with options A and B recommended by ORC.

ORC Option A

Table 1 – Risk table

Likelihood	**Consequences**				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost certain					
Likely				Significant	
Possible					
Unlikely					Significant
Rare					Significant
Green, Acceptable *Risk*: Yellow, Tolerable *Risk*: Red, Significant *Risk*					

ORC option B

Table 2 – Risk table

Likelihood	**Consequences**				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost certain					
Likely				Quantitative	
Possible				Quantitative	
Unlikely				Quantitative	Quantitative
Rare				Quantitative	Quantitative
Green, Acceptable *Risk*: Yellow, Tolerable *Risk*: Red, Significant *Risk*					

APP6 Step 4 – Table 8

4.40 I have read and considered the supplementary s 42A Report relating to natural hazards. I note it has recommended that Step 4 be amended so that, in addition to the significant risks contained in the notified version, that risks shown to be 'tolerable' but with a 'catastrophic consequence' also require a quantitative assessment.[13]

4.41 I consider that this amendment has improved the operation of APP6 in regard to those matters that were raised in the QLDC submission, which requested that Step 4 be amended to require a quantitative assessment for hazards considered to pose a real risk to life, and where the qualitative assessment under Step 3 shows a tolerable or significant risk.

4.42 However, the supplementary s 42A amendment falls short of the submissions of QLDC and ORC. The amendment to Step 4 still means that any event with a 'major' consequence and a 'likely' or 'possible' likelihood, and therefore also identified as being 'tolerable', would not require a quantitative assessment under Step 4.

4.43 The supplementary s 42A considers that the revised approach would be read in conjunction with the amendments to Table 7 and the health and safety column and that it would achieve similar outcomes to the ORC relief proposing options to amend Table 8.[14] However, I do not agree. In particular, it is noted that the amendments to Table 7 continue to identify deaths as being associated with major consequence events. Given this, an event that could occur up to once every 101 years ('possible') or less ('likely') that results in 1 – 10 deaths ('major') would be considered tolerable and therefore no quantitative assessment would be required. Likewise, 'almost certain' events with a moderate consequence (categorised as tolerable in Table 8) that have the potential to cause a large number of damage and injuries would not require a quantitative assessment.

4.44 In my view, any tolerable risk which has a major consequence (i.e. a risk of death) should be subject to a quantitative assessment. Further, I consider that a risk with an almost certain likelihood and moderate consequence should be subject to a qualitative assessment.

[13] Para 25, Supplementary s42a, Natural Hazards

[14] Para 24, Supplementary s42a, Natural Hazards

4.45 For clarity, I recommend the following amendments to paragraph two of Step 4 (shown in blue text below):

> If the assessment undertaken in Steps 1-3 determines that one of the three natural hazard scenarios generate risk that is significant, or is a tolerable risk with a catastrophic or a major consequence, or is a risk that has a moderate consequence with an almost certain likelihood, undertake a quantitative risk assessment utilising the following methodology.

4.46 While Steps 1-3 will qualitatively categorise natural hazard risk based on a community's understanding and acceptance level of risk, it will not provide quantitative understanding of the risk a natural hazard presents to the built environment, or health and safety.

4.47 My recommended approach is a hybrid between the QLDC submission and Options A and B of the ORC submission.

4.48 A quantitative assessment provides a greater level of understanding of the risk present. In my view, the types of risk I recommend adding to Step 4 above exist at the margin between significant and tolerable, (in the same way as unlikely and rare events with a catastrophic consequence) and should not be treated differently to those amendments that have been recommended in the supplementary s 42A. A quantitative assessment of risks in this margin would ensure a better definition of areas of significant risk and confidence that the risk is either tolerable or significant according to the AIFR values identified in Step 4.

4.49 In my view, my recommended amendment would better achieve the direction of HAZ-NH-O1 to manage risks to ensure they do not exceed tolerable levels. Requiring a quantitative assessment at the margins between significant and tolerable levels of risk identified by way of a qualitative assessment (alongside the addition recommended by the supplementary s 42A report) would provide a more robust natural hazards management framework.

4.50 It is acknowledged that the recommended amendment may impose greater costs for communities, both in terms of resource consent applications and plan changes in areas that are shown to be subject to some types of tolerable levels

of natural hazard risk. However, as noted above, I consider that this approach would provide benefits in the form of more reliable risk assessments in areas at the margin between tolerable and significant risk, and ensure that effective and efficient natural hazard risk management is being implemented in these areas. This has a range of social and economic benefits in the form of ensuring the adverse effects of natural hazard events area managed proactively.

5. Responding to risk

HAZ-NH-P4 – Existing activities

5.1 HAZ-NH-P4 provides ways to reduce existing natural hazard risk to a tolerable or acceptable level in areas identified under HAZ-NH-P1 as being subject to natural hazards.

5.2 The QLDC submission highlights that limb 3 is the only part of HAZ-NH-P4 which provides a method that would result in risk reduction. I agree, although I acknowledge the important roles that the other limbs in HAZ-NH-P4 play in managing risk within already developed areas.

5.3 The s 42A Report recommends deleting limb 2 in its entirety on the basis of a submission from the New Zealand Infrastructure Commission, as the policy is unclear whether it relates to existing activities, or whether it applies to new activities (where there is a policy for managing new activities with respect to natural hazards at HAZ-NH-P3)[15].

5.4 While I agree that an important distinction exists between HAZ-NH-P3 and HAZ-NH-P4 with regard to 'existing' and 'new' activities, I note that it is not entirely clear what constitutes a 'new' activity as opposed to an 'existing' activity. There is no definition contained within the RPS for the purposes of the natural hazards chapter.

5.5 The AGS provides a description of existing development and new development[16] as follows:

[15] Para 164, s42a report, Natural Hazards

[16] Page 78, Australian Geomechanics Society Practice Note Guidelines For Landslide Risk Management 2007

"Existing Development" includes existing structures, and slopes that have been modified by cut and fill, that are not located on or part of a recognizable landslide and have demonstrated non-failure performance over at least several seasons or events of extended adverse weather, usually being a period of at least 10 to 20 years.

"New Development" includes any new structure or change to an existing slope or structure. Where changes to an existing structure or slope result in any cut or fill of less than 1.0m vertical height from the toe to the crest and this change does not increase the risk, then the Existing Slope / Existing Structure criterion may be adopted. Where changes to an existing structure do not increase the building footprint or do not result in an overall change in footing loads, then the Existing Development criterion may be adopted.

5.6 Definitions of existing slopes, new slopes and existing landslides are also provided but are not referenced in the RPS.

5.7 In my view, these definitions apply a purist view of existing and new. It would be of assistance for ORC's experts to clarify if they consider the AGS definitions to be transferable in this instance.

5.8 Clarity on this matter is important, if for example, an existing/already developed area is subject to a level of natural hazard risk that needs to be reduced or managed. It is not clear if additions or alterations to an existing building would constitute a new activity or an existing activity. If such an example constitutes a new activity, it is important that limb 2 remains but be transferred into HAZ-NH-HAZ-NH-P3. In my view, this is important as restricting the future state of these existing activities is a key tool in managing natural hazard risk in an already developed area to a tolerable or acceptable level. Similarly, it would be useful for the other limbs in HAZ-NH-P4 that relate to managing existing activities or their future state, be removed from HAZ-NH-P4 and transferred to HAZ-NH-P3. In my view, this constitutes all limbs except for limb 2. This additional detail on how new activities should be managed provides important detail and support to assist territorial authorities carry out effective natural hazards management.

Other matters – HAZ-NH-P4

5.9 QLDC's submission requested that Limbs 1 and 2 of the policy be amended as they currently set out that risk be reduced '*or*' community vulnerability be reduced. The submission points out that both risk and community vulnerability are important concepts when managing risk, and that an either or option is not appropriate.

5.10 This relief is addressed at para 159 of the s 42a Report by way of the GNS Science letter. It sets out that '*The addition of "and/or" within each limb would better reflect the intention behind the policy, but would convolute the policy and be inconsistent with the drafting of the rest of the RPS. In this instance, "or" should be viewed as being generally inclusive'*.

5.11 I do not agree that the word 'or' is understood as being 'generally inclusive'. In my view, the use of the word 'or' provides an option, i.e. either x or y can be undertaken to achieve the policy direction. In this case, the policies suggest that activities could either reduce risk or reduce community vulnerability. This application of the use of 'or' is clearly set out in the remainder of HAZ-NH-P4, in particular Limb 4. In my view, community vulnerability is tied up in the meaning of risk. This is supported by the application of Step 2 in APP6 which sets out the matters that need to be considered when determining consequences. Further, HAZ-HN-E1 sets out that 'these provisions take a risk-based approach, taking into consideration the likelihood of the hazard and the vulnerability of people, communities, and the environment'. As such, the word 'or' in Limb 1 should be amended to 'and'.

5.12 The QLDC submission also requests additional amendments to HAZ-NH-P4 to provide helpful direction on how risk can be reduced, including timeframes and methods, and further detail on what constitutes vulnerable activities.

5.13 I agree that such additional detail would be invaluable to territorial authorities and plan users who, at this time, would have little or no experience reducing risk in existing/already developed areas. Very few examples exist of reducing this risk prior to an event taking place. Further, no national guidelines exist (as yet) to guide territorial authorities or plan users on how to navigate the significant complexity associated with managed retreat or managing existing uses to reduce risk. The GNS letter supports this relief in part, however, no amendments

have been recommended by way of the s 42A Report as it is directed by way of HAZ–NH–M5(1)[17]. While HAZ–NH–M5 provides scope for developing other incentives and mechanisms, it does not provide the level of direction or specificity necessary to assist the effective and efficient implementation of the policy.

6. **Implementation**

HAZ-NH-M1 – Statement of responsibilities

6.1 The QLDC submission requested amendments to HAZ-NH-M1 to provide additional clarity in regard to roles and responsibilities between ORC and territorial authorities.

6.2 I agree that the RMA provides insufficient direction in regard to how regional councils and territorial authorities are to divide roles and responsibilities in regard to natural hazards management and that the RPS should be the tool used to fill this gap.

6.3 The GNS Science letter agrees that '*clear responsibilities would likely result in notable progression*'[18]. However, this relief has not been accepted on the basis that '*these responsibilities should only be clarified with the agreement of both parties, and in this instance the one regional council and five territorial authorities*'[18].

6.4 While I agree that it is effective and efficient to ensure such matters are addressed between relevant authorities, I am not aware that this approach has been undertaken by way of the RPS development process. As such, the formal RPS hearings process provides the only mechanism to formalise these roles and responsibilities within the RPS. On this basis, the opportunity should be taken at this time as the RPS is not likely to be amended until the next review, many years in the future.

6.5 The GNS Science letter agrees that the mapping of hazards creates tensions and that '*regional councils are generally better placed to take the lead in this,*

[17] Para 160, s42a report, Natural Hazards
[18] Para 290, s42a report, Natural Hazards

and this should be acknowledged. To state that territorial authorities are responsible for mapping or identifying natural hazards via a register that Otago Regional Council maintains is impractical'[19].

6.6 The GNS Science advice has not been incorporated into the recommended amendments and the QLDC relief has not been accepted in regard to mapping, on the basis that HAZ-NH-M1 provides sufficient flexibility relating to mapping. I agree that flexibility is provided however, I also note that this flexibility is the source of the ambiguity raised in the QLDC submission and by way of the GNS Science letter. I consider that 'flexibility' in the method would perpetuate the shortcoming of the method. In my view, HAZ-NH-M1 should be amended to remove the dual responsibilities in regard to mapping such that the regional council is identified as the authority responsible for mapping and identifying hazards.

6.7 I also note that HAZ-NH-M1(3)(b) sets out that territorial authorities will be responsible for describing the characteristics and extent of areas subject to natural hazards in their district plans. In my view this is not an efficient or effective requirement as the characteristics and extent of areas subject to natural hazards are subject to change as new information comes to hand, technology is developed, risk profiles change, and as climate change continues to influence natural processes and systems in unpredictable ways. This means that plans may be subject to regular and disruptive schedule 1 changes when any sort of change to the characteristics and extent of areas subject to natural hazards is identified.

HAZ-NH-M2 – Local authorities

6.8 The QLDC submission requested additional clarity in regard to the roles of ORC and territorial authorities in implementing HAZ-NH-M2.

6.9 I agree this is necessary, in particular with regard to the recommended addition of Limb 8 to HAZ-NH-M3 and HAZ-NH-M4 which specifies that natural hazard risk assessments need not be undertaken once the assessment required by HAZ-NH-M2(1) has been undertaken. It is not clear how often the risk assessments required by HAZ-NH-M2 will need to be updated to ensure they

[19] Para 190, s42a report, Natural Hazards

are responding to changing circumstances. It is acknowledged that HAZ-NH-M2 sets out that research will continue to be undertaken, however, does not specify how regularly risk assessments need to be updated to ensure the exemption specified in Limb 8 to HAZ-NH-M3 and HAZ-NH-M4 remains efficient and effective.

6.10 Plans are updated once every 10 years, and amendments to district plans and regional plans/policy statements are often out of sync. It is unclear if the RPS anticipates this process occurring every 10 years or over a lesser or greater timeframe. I acknowledge my limitations as a planning expert in regard to this matter and would be open to suggestions from ORC's technical hazard experts/GNS Science expert to understand how often this risk assessment should be undertaken and via what arrangements between local authorities.

HAZ-NH-M4 – District Plans

6.11 The QLDC submission requested that Limb 2 of HAZ-NH-M4 be deleted as it requires district plans to implement risk reduction measures, including to existing activities. This is not possible as s 10 of the RMA does not allow district plans to manage existing uses.

6.12 The GNS Science letter notes that while this is the case, should the regional council make amendments to its regional plan in this regard, district plans would be required to reflect this[20]. The GNS Science letter considers that a less onerous drafting would be to change the words 'require implementation of' to 'implement'.

6.13 I do not agree that the recommended words are less onerous. I consider the words to have the same meaning and do not therefore change the intent of the limb from the notified version. It does not reflect the inability for district plans to implement risk reduction measures unilaterally.

6.14 I also note elsewhere in this statement that HAZ-NH-P4 only has one aspect that provides for reducing risk, which is by managing existing activities. As such, HAZ-NH-M2(2) should be more directive in regard to this single mechanism, as

[20] Para 345, s42a report, Natural Hazards

opposed to referencing the word 'including by'. The RPS does not offer any other mechanism to manage existing use rights.

6.15 If Limb 2 is retained, it should be modified to be more directive by reflecting the GNS Science letter as follows (blue underlines and ~~strikethroughs~~ show recommended changes):

Territorial authorities must prepare or amend and maintain their *district plans* to:
…
(2) ~~require implementation of~~ implement natural hazard risk reduction measures, ~~including to~~ by managing existing activities in accordance with HAZ–NH–P4 where provided for by regional council plan changes

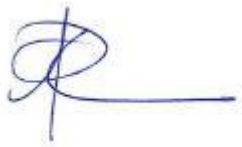
New method

6.16 The QLDC submission requested that a new method be included to set out expectations in regard to monitoring of risk levels.

6.17 This relief was accepted in part and the s 42A Report recommended that this amendment be included as a new clause (d) to HAZ-NH-M1(2) – statement of responsibilities. I support this recommendation as it will ensure that the resource management system in Otago is responsive to the changing nature and scale of naturel hazard risk. However, I note that this new method has not been transcribed into the s 42A version of the RPS.

6.18 While I support this new method, I am of the view that it could be improved to associate it with a specific output that is time bound, i.e. so that it requires natural hazard risk monitoring reports to be prepared every x years.

6.19 Outlined above in regard to HAZ-NH-M2 I recommended that the RPS be amended to understand how often risk assessments should be undertaken and via what arrangements between local authorities. It is possible that this monitoring requirement and risk assessment update be tied together to get an evidence-based update process. Once again, I acknowledge my limitations as a planning expert in regard to this matter and would be open to suggestions from ORC's technical hazard experts/GNS Science expert to inform how often this monitoring should be undertaken.



Luke Place

23 November 2022