BEFORE THE HEARING PANEL

WHAKATANE DISTRICT COUNCIL
& BAY OF PLENTY REGIONAL COUNCIL

IN THE MATTER	of the Resource Management Act 1991 **(RMA)**
AND	
IN THE MATTER	of Plan Change 1 (Awatarariki Fanhead, Matatā) to the Operative Whakatane District Plan and Plan Change 17(Natural Hazards) to the Bay of Plenty Regional Natural Resources Plan

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LEGAL SUBMISSIONS FOR AWATARARIKI RESIDENTS INCORPORATED (ARI)

4 March 2020

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INTRODUCTION

1. Awatarariki Residents Incorporated (**ARI**) is a submitter and further submitter to Plan Changes 1 and 17 (**PC1** and **PC17**). At the time of submission, the society represented 25 Awatarariki residents but (post settlement processes) that number has reduced to 9 properties and 15 residents. Commissioners are required to consider the effects of the plan changes on those properties and those residents unless and until a settlement is reached that resolves the submission. Conditional or ongoing negotiations are not of course settlement.

2. While there is community interest in risk, ARI represents the majority of the most significantly affected parties. While there are relevant s6 RMA interests raised, the "economic, social and cultural" wellbeing of this small community merits greatest weight, for the simple reason that ARI and other resident-submitters are losing their homes under the Plan Changes, without compensation.

3. 15 years of delay by the District Council has been poorly explained. On its own evidence, Council delayed taking steps to allow alignment of regional and district planning instruments. While planning rationalisation is important, it is difficult to fathom the wait if Council is correct that there is an unacceptable risk of death to the Awatarariki community from debris flow. In light of Council's delay, prohibited status, extinguishment of existing use rights, and the unreasonable haste for residents to exit their homes (by March 2021) is not efficient, effective or reasonable.

4. Society members do not wish to expose themselves or their loved ones to unacceptable risk, where such risk is properly demonstrated by probative expert evidence, following independent testing; and owners are compensated under s85 RMA. Risk has been inadequately assessed, without consideration of the characteristics of specific areas, individual properties and their occupants. Less intrusive outcomes, such as emergency warning systems, are not addressed.

5. ARI relies on the Kotze & Leventhal Report. It took more than 12 months, and numerous complaints to the Ombudsman, to secure the baseline information set out in those reports. Having read the reports, it is now clear why Council tried to prevent disclosure. The peer review concludes the Tonkin & Taylor (**T & T**) risk analysis is correct in principle,[1] but is conservative and generalised.[2] This approach:

> "..may have resulted in loss of life calculation outcomes that are potentially higher for some properties than would be the case if property-specific parameters were adopted."[3]

1 Pg 7 of Appendix 5 to the s 42A report, Greg Kotze & Andrew Leventhal, *GHD Technical Assessment, Debris Flow Risk Management, Awatarariki Fanhead, Matatā, Bay of Plenty* (31 October 2019)
2 Their awkwardly phrased "conservatism generalisation": Pg 5 of Appendix 5 to the s 42A report, Greg Kotze & Andrew Leventhal, *GHD Technical Assessment, Debris Flow Risk Management, Awatarariki Fanhead, Matatā, Bay of Plenty* (31 October 2019).
3 Pg 5 of Appendix 5 to the s 42A report, Greg Kotze & Andrew Leventhal, *GHD Technical Assessment, Debris Flow Risk Management, Awatarariki Fanhead, Matatā, Bay of Plenty* (31 October 2019).

6. The risk assessment[4] has not addressed the boulder field or the narrowness of Kaokaoroa Street. Boulder strike is relevant to loss of life and the "..boulder field would be likely to impede (at least locally) flows of future debris". Kotze & Leventhal state that:

> "..the potential is considered to exist for future debris travel distance and debris travel direction to be subject to some disruption by the existing boulder field. This in turn, may contribute to a lower risk level calculation outcome for some properties." [5]

7. In other words, some of the high risk properties may be medium or low risk. If so, those home owners do not need to leave their homes. We don't know which homes, if any, because Council's experts has not undertaken risk analysis on a site by site basis. Council relies on a wrong interpretation of the RPS framework to justify this approach. Community wellbeing is better served if some of the property owners, following individualised assessment of risk, are able to remain in their homes.

8. This generalised approach to risk is evident throughout Council's evidence. Council contends the level of detail "is appropriate, relative to the scale and significance of the anticipated effects".[6] It is of course disproportionate, from an individual property perspective; and there are other townships where people face fatality risk from natural hazards, such as Whakatane, Ohōpe[7] and Thames.[8] No one is asking them to quit their homes. Life is not risk-free, and it is trite law that the RMA is not a no-risk statute. People live with the risk.

9. Pressure from Council to "opt in", rather than await the outcome of the RMA process, and potentially be left with no home and no compensation process, has meant some residents of the Awatarariki Fanhead have left their community, believing their property is exposed to unacceptable risk, when they may not have needed to go. This concern led to ARI being at the Courtroom door in December 2019. The intended proceedings were settled by undertakings from both the Regional and District Council (and ARI): refer evidence of Rick Whalley.

10. It is common ground that PC17 (as drafted) eliminates existing use rights. The report identifies voluntary managed retreat and/or recourse to s 85 RMA as mitigation. But the fiscal risk is borne by ARI members. No assurances are given by Council that s85 compensation may be available, to the extent that ARI members decide to test plan change merits through a contested RMA process. There is some uncertainty as to the expiry date for voluntary retreat offers, identified in ARI's recent complaint to Council, produced by Mr Whalley.

11. Key points include:
    a. there is no policy imperative to avoid;

4 And probability of spatial impact
5 Pg 5 of Appendix 5 to the s 4221A report, Greg Kotze and Andrew Leveanthal, *GHD Technical Assessment, Debris Flow Risk Management, Awatarariki Fanhead, Matatā, Bay of Plenty* (31 October 2019) .
6 At [4.26] s 42A report.
7 https://www.whakatane.govt.nz/sites/www.whakatane.govt.nz/files/documents/about-council/council-projects/debris-flow-and-landslide-hazards/Risks%20Summary%20-%20Wha-and-Oho.pdf
8 https://waikatoregion.govt.nz/assets/WRC/WRC-2019/tr06-17.pdf

b. PC1 & PC17 are contrary to sustainable management and community wellbeing;
c. prohibited status is not appropriate;
d. lesser alternatives can manage or mitigate relevant risk without removing existing use rights; and
e. removal of people from their homes and revocation of existing use rights without reasonable compensation is unreasonable;
f. PC1 and PC17 should be cancelled or substantially modified to address these concerns.

PLANNING INSTRUMENTS: NZCPS

12 The Fanhead is within the coastal environment but the debris flow hazard is not a coastal hazard. This means that policies 24 to 27 of the NZCPS are not relevant, and do not justify PC1 and PC17, which relates to land-based hazard.

13 The subject area is susceptible to coastal hazards (coastal erosion, tsunami) but this is true of all or most coastal land in NZ. Policy 25 cannot be relied upon to remove residential living. There is no avoidance directive.

14 Other policies are enabling of existing coastal development, on the basis that development should be concentrated in areas where outstanding and high values are already compromised or affected by declined: cf Policy 6. The NZCPS does not justify the draconian steps taken in PC1 and PC17; Part 2 RMA and the RPS provide the most policy guidance.

RPS

15 Both Plan Changes must give effect to the RPS; and the RPS provides greater relevant direction on management of natural hazards.

16 Planning assessment appears to suggest that the RPS adopts a spatial scale that requires equal treatment of all properties identified as high risk. This proposition is not supported by the wording used in the RPS. On the whole, the wording used in the relevant objective and policies for management of Natural Hazards does not state a mandatory spatial scale. The relevant policies must be capable of assessment in relation to individual sites (for example, when considering resource consent applications).

17 Appendix 6 to the s32 RMA assessment identifies the relevant provisions. Dealing with each in turn:

- Objective 31 – refers to "protection of property". This is not on any particular spatial scale and may relate to individual sites or groupings of properties.

- Policy NH1B – a risk management approach to use, development and protection of land. Again, no spatial scale is stated. 'Use, development and protection' is a familiar expression that can apply to individual as well as collective groupings of property.

- Policy NH2B: classification of risk is neutral as to spatial scale. Some properties are 'dissected' by the plan changes, including (for example) high and medium risk. Council's evidence yesterday suggested risk may need to be rationalized along property boundaries (i.e. on a title-basis).

- Policy NH3B refers to "the natural hazard zone scale". The spatial scope of this expression is clarified in Policy NH4B (which refers to "development sites" and "development", which is title-based, not area-based). The RPS definition of "natural hazard zone" scale is contextual. It depends what the relevant regional or district plan says. There is no mandatory quality or requirement that the "zone" be upscaled to a community wide and integrated view of risk. The "zone" could be identified on a "community lens" or individual property lens:

  > "..the zone within a hazard susceptibility area **defined by the relevant regional, city or district plan**, on the basis of existing or proposed land use, as the appropriate geographic scale to assess hazard risk.." (emphasis added)

- Put another way, the RPS does not define the areal extent of the "zone". Commissioners get to decide the size of the lens ("..defined by the relevant regional or district plan."). PC1 and PC17 will reflect your decision on the size of the "zone". Assessment of risk from an individual property lens might allow none, a few, or a number of the high risk properties to be reclassified for continued residential use.

- It is more proportionate and better promotes wellbeing to consider the individual, as well as the "community" lens. "Community wellbeing" includes whanau wellbeing. A fine-grained scale is justified, bearing in mind that it is a small grouping to begin. Every home and family that can remain adds to the community scale.

- Policy NH5B is not relevant (coastal hazards) and it is unclear why the s32 report relies on this provision and the associated NZCPS Policy 25.

- Policy NH7A involves identification by mapping of hazard susceptibility areas for (inter alia) debris flow.

- Policy NH8A involves assessment and classification of natural hazard risk within "areas". This is areal-based, but could be site by site or on a wider basis. A site can constitute an area. The AGS 2007 standard allows for identification of risk on variable spatial scales.

- Policy NH12A is not directive. Outcomes are to be "promote[d]". Plan provisions should "take into account" risk reduction measures, including "where practicable" existing land use. It is not practicable to remove residents against their will and demolish their homes, especially when lesser forms of intervention are available, such as early warning systems.

- Policy NH12A, as drafted and based on the language used, does not justify an avoidance or prohibition response. PC1 and PC17 do not give effect to this policy.

- Policy NH13C divides responsibility for mapping natural hazards. The Regional Council is responsible for some "area-based" hazard mapping (such as tsunami), with the District Council being responsible for mapping other hazards. Under NH13C(c), the District Council is responsible for mapping the location of debris flow hazard; and undertaking risk analysis and evaluation. Policy NH13C does not envisage that the Regional Council will be involved in management of debris flow hazard management. PC17 is inconsistent with this policy, and the Regional Council oversteps its appropriate role as identified in NH13C.

- As drafted, Policy NH14C is advisory or declarative of jurisdiction, rather than policy content. Consistent with Policy NH13C, it allocates responsibility for land use rules above the CMA to district and city councils. An advice note identifies the Regional Council's wider function under s30(1) RMA. Policy NH14C lacks policy content; it does not provide policy guidance to justify the planning overreach contemplated by PC17.

18 The s32 Report (and s42A assessment) overstate matters when they conclude that PC17 gives full effect to the RPS's natural hazard provisions.[9]

19 It is submitted that there is no substantive policy support for PC1 and PC17's interventionist and prohibitive approach, from the RPS. Prohibited status should be reserved for specific circumstances where materially justified. Examples are given in the *Coromandel Watchdog* (CA) decision.

S10 RMA

20 Counsel for the Council refers to s10(4) RMA and *McKinlay v Timaru District Council to* submit that it is *vires* for PC17 to extinguish existing use rights for residential activity. ARI reserves its position on the validity of this.[10]

S85 RMA

20 It is not logical or correct to say that s85 is irrelevant to your assessment of PC1 and PC17. It is only the powers in s85(3) and s85(3A) (and the consequential or machinery provisions in s85(4)-(5)) that are limited to the Environment Court on appeal.

21 Sections 85(1), (2) and (6) are relevant to your assessment of the Plan Changes, because they have been validly raised in a submission made under Schedule 1, as anticipated by s85(2). The issue of reasonableness is not *ultra vires* or an

9 S32 analysis at [2.11], p13

10 The argument will be addressed, if needed, at Environment Court level, in terms of reading s10 RMA in light of Part 2.

irrelevant consideration. Weight is for Commissioners, but substantial weight is merited given the compulsory (and prohibitive) approach taken.

22 Reasonableness is defined by the effects of the use and user – i.e. residential – and not the receiving environment (risk posed by debris slip):

> **reasonable use**, in relation to land, includes the use or potential use of the land for any activity whose actual or potential effects on any aspect of the environment or on any person (other than the applicant) would not be significant.

23 PC1 and PC17 rezone residential land to high, medium and low risk debris flow areas. Land where residential activity is permitted, becomes land where residential activity is prohibited. This is near or at the end on a reasonableness spectrum. The Whalley family is able to live in their home on 31 March 2021. On 1 April 2021, they must leave. It is not clear that they must demolish it. But they will have to render it inaccessible, so that it cannot be lived in, e.g. by hoardings.

24 Each s85 case turns on its merits. The *Golf* decision cited by Counsel for the Council involved a golf course being rezoned for public open space. The facts are quite different. The District Council's position on this issue (that no relief, particularly compensation, will be granted on appeal) is untenable. It is also mean-spirited. Council wishes to render residential land unusable, without compensation.

25 By analogy (it is not a s85 RMA case) the Supreme Court in *Estate Homes* confirmed that compensation is justified, where there is no choice by the landowner. This was in context of a discussion for compensation for taking of road under the LGA, and not s85 RMA. But the principle of forced acquisition (or forced extinguishment of existing use rights) must be relevant to s85:

> [51] Professor Stoebuck, writing in relation to the constitutional position in the United States, observes that a distinguishing characteristic of eminent domain transfer is that it involves the transfer of rights which "may be compelled over the transferor's immediate, personal protest". The notion is that there is a forced acquisition of a landowner's rights under a power belonging to the state which allows the landowner no choice. In our view, that absence of choice must be present in a taking of property before the principle of statutory interpretation applied by the Court of Appeal in this case can be invoked. [Footnotes omitted][11]

26 Prohibited status and extinguishment of existing use rights meet this threshold of forced transfer (taking) of valuable property rights.

11 At [18] the SC identified the relevant approach taken by the CA:

> [18] The majority of the Court of Appeal took a completely different approach to Estate Homes' right to be compensated. Baragwanath and Goddard JJ decided that they should ascertain the meaning and application of the relevant statutory provisions by reference to the principle, having effect as a rule of statutory interpretation, that where there was a taking of private property under legislative authority, there was a presumption that the legislation would be read as providing for compensation. The majority decided that in the circumstances there had been a taking.

27 As drafted, it is PC17 that will force ARI residents out of their homes by abolishing existing use rights. The Regional Council is therefore *prima facie* liable for payment of Public Works Act compensation under s85 RMA, if it adopts PC17 in its present form. Commissioners are unable to direct PWA compensation, as this is reserved for the Environment Court on appeal. Therefore, your only option is to decline PC1 and PC17 or amend the rules.

A voluntary offer is not mitigation

28 The s 42A report agrees that the Plan Changes will have a largely sterilising effect for landowners located within the 'high risk' areas[12] "potentially well before March 2021".[13] In fact it has already occurred as landowners can't secure loans from banks or extend their mortgages.It is not in dispute that adverse effects from the plan change are significant to affected home owners as they no longer can occupy homes they have been living (some for multiple generations). The S 42A report finds that the reasonable use is no longer available due to the risk and secondly that where there are unreasonable effects of the loss of occupancy this is offset by the opt in Voluntary Retreat Programme.

> *"Therefore, whilst it is agreed that the Plan provisions will render land in high risk areas of residential use, the unfair and unreasonable burden placed on those landowners will be offset by the buyout opportunity afforded through the Managed Voluntary Retreat Programme."*[14]

29 It is common ground that not all residents have taken part in the voluntary retreat package and have not benefited from it.[15] Both Councils now acknowledge that failure to opt in to the voluntary program does not preclude reliance on s85 RMA, per the undertakings produced by Rick Whalley. Council cannot have it both ways. The voluntary program is just that: a voluntary negotiation. It is not mitigation because it cannot be enforced against the plan change proponent.

RISK EVIDENCE

29 ARI is under-resourced. It was unable to access funding to engage independent experts for this hearing. But it wishes to raise some relevant evidential issues and questions, set out below and detailed in Appendix 1. Commissioners are not of course obliged to accept the expert evidence by the plan change proponent. Key points are:

Risk Analysis:

1. The correct methodology has been applied but there is diagreement between experts on the appropriate inputs. GHD identify the following inputs not included in Tonkin & Taylor risk analysis:
   a. Topography and characteristics of the area around houses;
   b. Characteristics of houses;

12 At pg 34 & 51 s 42A report.
13 At pg 51 s 42A report.
14 At pg 35, s 42A report.
15 Ibid.

c. Vulnerability of occupants.

2. Consideration (c), while technically correct, is unreliable; ie there will be a change in those that live in houses and challenging to place a regulatory control or measures for monitoring changes in risk.

3. Tonkin & Taylor Expert Mr Hind agreed with the GHD peer review that topography would have an impact. Mr Davied and Mr McSavaney diagreed.

4. ARI notes other factors potentially relevant to risk (such as characteristics of the catchment, mitigation to flow rates through catchment management, mitigation to flow path through replacement of the railway bridge).

Risk tolerance

1. BOPRPS Natural Hazards Framework, AGS 2007, and the GHD review endorse 1 x10-4 as the threshold for intolerable risk. The Plan Changes rely on a precautionary principle that relies on individual judgment of experts; this is difficult to test. A precautionary approach was justified in part by reference to areas of boulders and debris adjacent to homes. We know now, per evidence of Rick Whalley, that the boulders and debris were shifted by people, not nature, post 2005. The precautionary approach is not justified.

Early warning systems

1. EWS are an available mechanism to address risk from natural hazards. The applicability of an EWS has been inadequately assessed due to issues raised above with the consideration of risk and likely errors from expected flow rate and direction of any future debris flow. EWS are already effective in Awatarariki in mitigating natural hazard risk.

RELIEF

30 Council has shifted its position over the last fifteen years as to what is "tolerable risk" and the degree of urgency for intervention. This has caused stress and uncertainty for residents. That theme of uncertainty applies to the compensation package, with Council is taking a tactical position on s85 RMA that provides little comfort for ARI residents that wish to independently test assertions made through the Commissioner and Court process.

31 ARI therefore requests that Commissioners grant the relief set out in its submission as follows:

i. Withdraw Plan Change 17 and Plan Change 1 or delete pursuant to s85 of the RMA
ii. As a second preference, amend the Plan Changes to address the matters identified in the submission.
iii. ARI reserves its position on PWA acquisition, because only the Environment Court can address through s85 RMA.

DATED 4 March 2020

Rob Enright / Ruby Haazen
Counsel for ARI Inc.

ARI Appendix 1:

Evidential issues:

Risk Analysis: Conservatism versus Generalisation

12. Mr Davies and Mr McSaveney support the outer limit for the high zone being determined by the 1 x 10-5 fatality risk contour. This is more precautionary than BOPRC RPS Natural Hazards Framework (Appendix L)[16], the AGS 2007 guidelines[17] (and the GHD review endorsement of the same).[18]

13. In evidence Mr Davies stated that 1 x 10-5 fatality risk is commonly accepted by AGS 2007 guidelines (Figure 1).[19] This contradicts the Kotze & Leventhal Report, which summarises the commonly accepted position of the AGS 2007 guidelines in their peer review[20]. The Kotze & Leventhal Report was drafted by two of the authors (one of which was the chair) of the AGS 2007 Guidelines itself.

14. In answering questions from the Commissioners, Mr Davies stated that 'a line is too precise, it should be a much broader area' and that it was 'not justifiable to provide for houses in the area of trees and boulders'. Mr Davies confirmed that such an approach was being 'overly precautious, and noted he applied a 'beyond reasonable doubt' approach to loss of life. This confirms the element of judgment applied by this expert to risk assessment.[21]

16 Appendix L of BOPRPS:
(ii) If the AIFR is greater than 1 x 10-4 re-categorise the risk as High.
(iii) If the AIFR is 10-4 or less, steps 1–5 should be repeated using the event likelihood(s) specified in Column B of Table 20.
(iv) If the risk screening matrix categorises risk from any secondary assessment as High, the risk for the purpose of Policy NH 3B is High.
(v) If the risk screening matrix does not categorise risk from any secondary assessment as High the risk for the purpose of Policy NH 3B is Medium.

17 The AGS guidelines for landslide risk management suggest "tolerable limit" of 10-4/annum for existing development and 1 x 10-5 for future development.

18 Appendix 5 to the s 42A Report: Debri Flow Risk Management, GHD, 31 October 2019, and Planning Policy Assessment by Enfocus Ltd (**Kotze & Leventhal Report**).

19 At [7.48] (a), statement of evidence of Tim Davies, dated 15 January 2020.

20 P.42, Australian Geomechanics, Journal and New of the Australian Geomechanics Society Volume 42 No 1 March 2007 (AGS 2007).

21 Transcript not available

15. Such an overly precautionary approach is out of step with the guidelines, the Kotze & Leventhal Report, community perspectives as to tolerable risk[22].

16. The Kotze & Leventhal Report concludes that "conservatism generalisation" "may have resulted in Loss of Life calculation outcomes that are potentially higher for some properties than would be the case if property-specific parameters were adopted"[23]. In the approach taken to Awatarariki Fanhead actors were assumed to be common across numerous properties rather than investigating their differences. Such an approach disregards:

a. The impact of boulders at properties between Clem Elliot Drive, Kaokaoroa Street and Arawa Street creating a "boulder field" which would potentially slow the debris flow down; similarly the Kaokaoroa street characteristics and accumulation of debris in other areas in the zone have not been adeqautely assessed. Both could provide conditions that have the potential to "provide some buffer effect and/or deflation of debris, whereby the P(S:H) for some properties on the Fanhead would be less than 1.0 and possibly as low as 0.7."

b. In evidence, planning and risk experts have dealt with the issue of the topography including existing boulders inconsistently:

i. Gerard stated that he was unable to comment on the point and that there is no evidence on this matter but then went on to state: "Hence there is nothing to suggest that a change to the planning approach is warranted."[24]

ii. In questioning from the commissioners Mr Hind agreed that "land around the area has changed"[25] since the 2005 debri flow, that the "ability of a debris flow to carry large debris drops off "very very quickly"[26], it was relevant that "some houses suffered no damage", that "the boulders would act to divert the flow or at least some of the flow depending on the height of flow and velocities"and that "boulders would have an impact".

iii. This position was then countered in follow up reply from Batchelar, MacSaveny and Davies. Davies stated that while there is a "tendency to be influenced by existing topography", depicting the "behavior of a debris

[22] Evidence of Rick, Rachel and Pam Whalley, 4 March 2020. None of the risk analysis, economic or social evidence has included engagement with those affected.
[23] At pg 5 of Appendix 5 of the s 42A report, "**Kotze & Leventhal Report**."
[24] At pg 4, Gerard Willis, (Appendix 5 to the S 42A report) *Policy and Planning Assessment of the GHD Technical Assessment of Debri Flow Risk Management,* (28 Novemebr 2019).
[25] Anwsers of Mr Hind to questions from the commissioners, 3 March 2020.
[26] Ibid.

flow was impossibe" and a debris flow may "ignore topography".[27] He also stated that an "accumulation of boulders may create a further threat to a debris flow". The velocity of the flow at the point that it engage the boulder field has not been analysised given the generalised approach to risk.

c. The second issue with the risk analysis raised in the Kotze & Leventhal Report was that common spatial probability has been considered, which ignores individual characteristics of properties including rate of occupancy and type of dwelling (permanent or holiday). As a result the author considers that the spatial probability assumption could be "questioned".[28] This factor could also be impacted by residential layout at the location most occupied by the person at risk (i.e. the location of the bedroom).

17. Other issues historically raised by the Society but not addressed by either the Tonkin & Taylor Report or the Kotze & Leventhal Report[29] include the assumption that "debris flow volumes and materials" being the same as that which occurred in the 2005 Debris Flow[30] has been applied to risk analysis. This excludes consideration of the impact from a build up of dams in the catchment which intensified the debris flow and any catchment mitigation works.[31]

18. The updated meteorologial report includes forecast changes in frequency (years) of 18 May 2005 rainfalls for the period 2018-2100. In questioning Mr Blackwood stated that effects from increases in the number storms such as the 2005 event would unlikely not be felt in the area for another 40 years. Mr Hind stated that an increase in the type of storm and thus rainfall from the 2005 event " would provide a shorter return period" however "you cannot directly relate certain rainfall to the outcome of a debris flow actually happening" .. there is "no certainty that if increased rainfall would result in events of that magnitude would increase."[32] Mr Hind also noted that increase in the number of heavier rainfall might provide a positive mitigation in that more material from the catchment might be more frequently washed out.[33] Reliance cannot be placed on whether climate would create a positive or negative effect on the number and size of

27 Tim Davies, 3 March 2020.
28 Ibid.
29 Ibid, Levanthal assumed catchment conditions would remain the same.
30 GHD report.
31 Refer to report of John Douglas, attached to statement of evidence of Rick Whalley.
32 Mr Hind, evidence given in answer to questions from commissioners 3 March 2020.
33 Ibid.

future debri flows. A precautionary approach to climate change is standard practise however it may not be applicable until after the life the this version of the plan.

Early warning systems

19. Early Warning Systems (**EWS**) are a well known and regularly utalised risk reduction mechanism. EWS systems applicability have been considered on the basis of risk analysis and flow rates of the debri flow in 2005. Given the issues identified above regarding risk the same flaws flow through to an assessment of an EWS (assumption of 2005 flow rate as remaining the same and failure to consider topography and individual characteristics of properties).

20. Early reports in regard to the Awatarariki Fanhead supported an EWS including the peer report by Tim Davies and Mauri McSavaney. [34] An EWS was discounted by the Council following a later report by Tim Davies that dismissed EWS. [35] New evidence was provided on 15 January 2020 and 24 February 2020 relating to the Awatarariki catchment debris flow early warning system framework.[36] [37] This recent evidence demonstrates that an early warning system will work at Awatarariki in reducing risk however the authors did not work with the community at risk (as stated in their report as best practice and critical to success) and instead supported a precautionary rather than a risk-based approach in concluding that it was an inappropriate response.

21. Early warning systems work, when developed with the communities most affected. Awatarariki residents have evacuated for cyclone events and tsunami warnings and heavy rainfall warnings. This lesser form of intervention is a more appropriate method for PC1 and PC17.

[34] https://atlas.boprc.govt.nz/api/v1/edms/document/A2899013/content at para. [VI].
[35] https://atlas.boprc.govt.nz/api/v1/edms/document/A2899017/content
[36] https://atlas.boprc.govt.nz/api/v1/edms/document/A3463614/content
[37] https://atlas.boprc.govt.nz/api/v1/edms/document/A3487684/content