

**BEFORE INDEPENDENT HEARING COMMISSIONERS
AT RANGIORA / WAIMAKARIRI**

**I MUA NGĀ KAIKŌMIHANA WHAKAWĀ MOTUHAKE
RANGIORA / WAIMAKARIRI**

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of the hearing of submissions and further submissions on the **Proposed Waimakariri District Plan**

HEARING TOPIC: **Stream 3 Matepā Māhorahora - Natural Hazards**

**STATEMENT OF PRIMARY EVIDENCE OF CLARE DALE
ON BEHALF OF KĀINGA ORA – HOMES AND COMMUNITIES**

PLANNING

10 JULY 2023

Instructing solicitor:
C E Kirman
Special Counsel
Kāinga Ora - Homes and Communities
PO Box 14594
Central Auckland 1051
E: claire.kirman@kaingaora.govt.nz

Counsel instructed:
B J Matheson
Richmond Chambers
PO Box 1008
Shortland Street
Auckland 1140
E: matheson@richmondchambers.co.nz

1. EXECUTIVE SUMMARY

- 1.1 My name is Clare Elizabeth Dale, and I am a Senior Planner at Novo Group Limited. I have been engaged by Kāinga Ora-Homes and Communities (**Kāinga Ora**) to provide evidence in support of its primary submission (submitter #325) and further submissions (further submitter #88) on both the Waimakariri District Council's (**WDC**) Proposed District Plan (**the PDP**) and Variation 1 (**V1**) to the Proposed District Plan (submitter #80).
- 1.2 Kāinga Ora made submissions and further submission points in relation to the natural hazards chapter of the Waimakariri Proposed District Plan (**PDP**). The Section 42A report only covers Kāinga Ora submission points on the PDP. In the Section 42A report the reporting officer Mr Willis has recommended accepting some but not all the changes requested by Kāinga Ora. This statement of evidence focuses on the submission points that remain in contention.
- 1.3 In summary the key points of my evidence are as follows:
 - a) **Natural hazards:**
 - i. Flood hazard information is dynamic and therefore it cannot be accurately and efficiently mapped as an overlay in the District Plan's planning maps. It is my view that flood hazard mapping, i.e. whether a site is subject to flood hazards, that sits outside the Plan is a useful and legitimate planning tool for Plan users.
 - ii. The Section 42A report appropriately recognises that large areas of the urban environment are in High Hazard Areas, but that residential and commercial activities are anticipated and as such sensitive activities should be considered permitted where floor levels are met or restricted discretionary if not met.
- 1.4 I consider that amendments are needed to ensure that the natural hazard mapping is efficient and effective. I have recommended further changes to the wording of the notified and s42A natural hazard provisions, a marked

up set of provisions showing the further amendments that I recommend are attached as **Appendix 2**.

2. INTRODUCTION

- 2.1 My full name is Clare Elizabeth Dale. I am a senior planner practising with Novo Group Limited in Christchurch. Novo Group is a resource management planning and traffic engineering consulting company that provides resource management related advice to local authorities and private clients.
- 2.2 I hold the qualifications of a Bachelor of Resource Studies (Policy and Planning Stream) from Lincoln University, attained in 2002. I am associate member of the New Zealand Planning Institute.
- 2.3 I have 20 years of experience as a resource management planner, predominantly working at Christchurch City Council in a range of planning roles (consenting, policy and heritage), and as a consultant since 2021.
- 2.4 My time at Christchurch City Council included several years with a focus on the Central City rebuild and high and medium density residential development including in a decision-making role. I have also prepared evidence for, and appeared in, resource management consent and plan hearings, Environment Court mediations, and Environment Court hearings.
- 2.5 I have been engaged by Kāinga Ora since July 2022 to provide planning expertise on the PDP process and V1 to the PDP. Novo Group had no involvement in preparing the Kāinga Ora primary submission on the PDP and became involved in this process at further submission stage. I have assisted with preparing the Kāinga Ora submission and further submissions on V1.
- 2.6 I am familiar with the national, regional and district planning documents relevant to the PDP. In preparing this evidence I have read the Section 32 and Section 42A reports together with the associated appendices prepared by Council staff.

Code of Conduct

- 2.7 Although this is a Council hearing, I confirm that I have read the Expert Witness Code of Conduct set out in the Environment Court's Practice Note 2023. I have complied with the Code of Conduct in preparing this evidence and agree to comply with it while giving evidence.
- 2.8 Except where I state that I am relying on the evidence of another person, this written evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this evidence.

Scope of Evidence

- 2.9 My evidence covers submissions and further submissions on the PDP in relation to natural hazards, with a focus on the mapping of flood hazards.
- 2.10 I note that the relevant statutory documents have been identified and outlined within the Section 42A reports of Mr Willis (natural hazards) and the overarching and Part 1 matters officers report by Mr Wilson and I agree with the identification of those matters.

3. KĀINGA ORA SUBMISSIONS AND FURTHER SUBMISSIONS

- 3.1 The Kāinga Ora submission points allocated to the Stream 3 hearings and Section 42A Report for natural hazards are attached in **Appendix 1**. Kāinga Ora's submission supports the general risk-based approach the PDP takes to managing natural hazards. However, Kāinga Ora opposes the inclusion of flood hazard mapping in the PDP's planning maps and instead seeks that flood hazard mapping be included in a GIS viewer that sits outside the Plan. For completeness, I note that the Kāinga Ora submission does not seek to remove mapping of the coastal hazard overlay, liquefaction hazard overlay or fault awareness / avoidance overlays from the Plan, as the location of these hazards is more certain.

4. RECOMMENDATIONS BY SECTION 42A REPORT AND RESPONSE

- 4.1 The evidence below is structured around the key headings in the Section 42A reports first noting the points of agreement.

Areas of Agreement with Section 42A Report

- 4.2 Having reviewed the relevant Section 42A reports, I generally support the following recommendations by the reporting planner Mr Willis on the matters covered within this evidence:
- (a) I agree with the removal of mapped Fixed Floor Levels in Kaiapoi (FMFFL).
 - (b) I accept the explanation and changes proposed to rule NH-R1 and NH-R3 in terms of activity status in urban flood areas and general rule clarity.

5. NATURAL HAZARDS (3.2 & 3.4) – GENERAL SUBMISSIONS / INTRODUCTION

- 5.1 The primary Kāinga Ora submission point (s325.101) and other subsequent points (s325.102 and s325.119 – s325.127) on the Natural Hazard Chapter of the PDP relate to mapping of flood hazards. They seek the:

“Removal of the mapped Natural Hazard Overlays from within the PDP – Urban Flood Assessment Overlay and Non-Urban Flood Assessment Overlay, and the mapped fixed floor level overlays; these should instead be included as a non-statutory map layers in the Waimakariri District Natural Hazards Interactive Viewer that sits outside the PDP.”

and:

“Amendments to provisions and deletion of references to these overlays in the PDP and instead refer to the specific hazard type and form that is being managed in the PDP i.e. high flood hazard area, overland flowpath, flooding predicted to occur in a 0.5% AEP (1 in 200-year) rainfall or breakout events, 1% AEP (1 in 100-year) Storm Surge Event concurrent with a 5% AEP (1 in 20 year) River Flow Event with sea level rise based on an RCP8.5 climate change scenario that will be identified through a flood assessment.”

- 5.2 The reasons for the submission highlight one of the benefits with this approach, which is the ability to operate a separate set of interactive maps which are continually subject to improvement and updates, without

reliance on the costly and timely Schedule 1 Resource Management Act 1991 processes. The approach preferred by Kāinga Ora can more efficiently and effectively deal with the dynamic nature of hazards that are subject to constant change through hazard mitigation works and reshaping of ground contours ensuring that the best available information is used when assessing and managing the risk from natural hazards.

- 5.3 Mr Willis for the Council has rejected this submission point for the reasons set out in paragraph 56 of the Section 42A report. The Council position remains that the flood assessment overlays have been included in the District Plan as a way to geographically identify areas susceptible to flooding and therefore where the flooding rules apply. Mr Willis considers:

“this to be a more efficient approach than making the entire district apply for a Flood Assessment Certificate (even noting the changes to the overlay that I am recommending elsewhere in this report). Having no overlay or map to geographically identify areas susceptible to flooding will likely result in either under or over capture of properties in a flood assessment or consent pathway”.

- 5.4 I agree with Mr Willis that an overlay or map is ultimately required to easily identify the applicability of flood hazard overlays and rules, but, as I elaborate on below, I do not agree that this requires the map to be in the District Plan itself. I also note that the Council’s proposed approach to high flood hazards and overland flow paths is consistent with the Kāinga Ora submission as these hazard areas are not proposed to be mapped in the Plan and are only identified via the Interactive Waimakariri GIS viewer and an application for a Flood Assessment Certificate.

- 5.5 In his report, Mr Willis also explains the Council’s proposed approach to managing the dynamic and changing nature of flood hazards as follows:

“The approach taken in the PDP is to identify an area that is susceptible to flooding based on current modelling (the flood hazard overlays) and to rely on a Flood Assessment Certificate to provide the most up-to-date flood modelling advice. Updates in understanding of flood risk and flood management requirements are introduced through the Flood Assessment Certificate, rather than changing District Plan flood maps themselves via a plan change process”.

- 5.6 Mr Willis acknowledges, and I agree, that a limitation of the fixed overlays is that over time they become inaccurate in their extent as modelled risk

evolves. The Council's proposed Flood Certificate approach does however respond in part to reduced and increased flood risk for areas within the overlays by specifying minimum floor levels that are responsive to the latest models (i.e. higher floor levels may be specified in a certificate where updated modelling indicates higher flood levels). Any areas that are not covered by fixed maps in the Plan would already be captured by the Building Act that requires floor levels to meet the 2% AEP level.

- 5.7 I agree with Mr Willis that the management of flood hazards need to be dynamic / responsive to the level of risk or knowledge of risk (be that increasing or decreasing). As such, the difference between the position of Kāinga Ora and Council relates to the most efficient and effective way to do this in a way that provides certainty for users of the Plan.
- 5.8 To the extent that Mr Willis has concerns with the approach proposed by Kāinga Ora, I note that this same matter was canvassed in hearings on the proposed Porirua District Plan. Ms Karen Williams (The Property Group Limited) provided planning evidence on this subject on behalf of Kāinga Ora (who filed equivalent submissions for those proceedings), and in the interests of efficiency, I agree with and adopt her evidence to the extent that it is relevant here. I have attached Ms Williams' evidence in full as **Appendix 3** to this evidence, but have set out below the extracts of that evidence which is directly relevant in these proceedings:

"5.3 In the s42A report, the reporting officer rejects the request to remove the flood hazards from the Natural Hazards Overlay within the Plan and instead provide this information in a GIS viewer sitting outside of the Plan. The reporting officer is not supportive of flood information sitting outside the Plan because changes to that information would not be subject to public participation, or any formal testing as would otherwise happen with a Schedule 1 process.

5.4 I disagree with the recommendation within the s42A report and I support the submission of Kāinga Ora to include flood hazard mapping in a GIS viewer that sits outside the Plan. In my view separate maps of this nature are a useful tool to set out information the Council holds on different matters relevant to provisions in the PDP where there is insufficient certainty and consistency over time to provide this information in a mapped District Plan overlay. The use of

information outside the PDP serves purely as information or guidance in the context of certain rules in a plan.

Dynamic Nature of Flood Hazard Information

5.5 Having maps sitting outside of the Plan for information purposes is appropriate in the context of flood hazard information as this information is dynamic and subject to change over time. Changes may be due to improved understanding of the natural hazard, to interventions that change the location of natural hazard, or to changing real world conditions including climate change. Therefore, it is difficult to map flood hazards within the planning maps in a way where the information will stay accurate and relevant over time.

5.6 I acknowledge the evidence of Ms Nitsche for the Council is that the flood hazard areas have been identified through comprehensive modelling, data collection, and community engagement. While I acknowledge that the modelling is based on best information and expertise, it can also be subject to inaccuracies or errors that either overestimate or underestimate the actual flood hazard risk on a particular site or location. Ground levels are also prone to change, for example through land development site works. Other physical features, such as culverts or other water conveying vectors can be inaccurately plotted or upgraded, diminishing the accuracy of the hazard profiling. In this regard, I note that the evidence of Ms Nitsche accepts that in some cases, the flood modelling information has not reflected accurate information and her evidence accordingly suggests some amendments to the spatial extent of identified flooding areas in response to matters raised by submitters.

5.7 I also draw on the evidence of Mr Liggett, which outlines the significant stormwater infrastructure upgrade works that are proposed in eastern Porirua as part of the wider Eastern Porirua Regeneration Programme. The evidence of Mr Liggett is that these works will considerably alter the existing flood hazard profile in this area, providing a more resilient and safer environment to existing residents and enabling further development.

5.9 In my opinion, the above matters demonstrate the often incomplete and dynamic nature of flooding information, which despite all efforts, can contain inaccuracies and rapidly be out-of-date. In my view the approach of applying overlays within district plans to map natural hazards is best applied for matters that are well defined and less subject to constant change, as may be the case for seismic and coastal hazards for example.

5.10 I agree with the evidence of Mr Liggett that requiring changes to flood hazard information to reflect changes in the environment, such as improvement works proposed at scale within eastern Porirua, through a Schedule 1 process is not an efficient planning process. The mismatch between the maps and true position will likely add cost to any consenting process until a Schedule 1 process is undertaken to update the maps.

5.11 As noted in the submission by Kāinga Ora, and the evidence of Mr Liggett, the Auckland Unitary Plan (AUP) provides an example of a plan which adopts a set of flood hazard overlay maps which sit outside the plan and operate as interactive maps on the Council's 'Geo Maps' website – a separate mapping viewer to the statutory maps. This approach is different to that of the traditional means of displaying hazard overlays on district plan maps and reflects that these maps do not have regulatory effect.

5.12 A GIS viewer outside the Plan can assist plan users in determining whether a site may be subject to a particular flooding hazard. The fact that this GIS viewer can be updated as new information becomes available outside of a formal plan change process will make it a more reliable starting point for further assessments over time, than a spatial layer within the Plan that is unable to be easily updated. Further, I have suggested that new definitions be incorporated into the Plan, to reflect the rules in relation to Flood Hazard – Stream Corridor, Flood Hazard –Overland Flow, and Flood Hazard – Inundation. This will ensure that proposals upon land that is subject to these hazards will be considered against the relevant rules. The flood maps will provide the basis for this determination but will not be the exclusive determining factor. This is similar to how flood hazards are managed in the AUP and endorsed by Council planners in Tauranga City's Plan Change 27 (Flooding from Intense Rainfall), which is currently at the hearing stage.

5.13 In my opinion, this alternative approach provides greater flexibility, while appropriately ensuring that natural hazard risks are adequately understood and managed”.

- 5.9 Whilst the evidence above was prepared in the context of the Porirua District Plan and accounted for specific factors that may influence flood risks in that District (e.g. stormwater infrastructure upgrade works), the justification for having flood maps outside of the Plan is directly and equally relevant in a Waimakariri context. Accordingly, I agree with and adopt the analysis above. I note that decisions on the Porirua District Plan have not yet been notified.

Non- Statutory Mapping Approach

- 5.10 I consider it important to note that whilst it is proposed that the flood maps remain outside of the Plan, clear definitions and rules or thresholds stipulating required floor levels would still remain within the Plan under the approach preferred by Kāinga Ora. The key requirement is that District Plan rules must be certain and capable of objective ascertainment. Activities in the 'Urban and Non-Urban Flood Assessment Areas' which are subject to the proposed rules can be objectively determined by applying the parameters used in the defined terms.
- 5.11 The non-statutory map approach requested by Kāinga Ora requires two new definitions to be included in the Plan. The recommended definitions are set out in **Appendix 2** and below:

Urban Flood Assessment Area

Means the land susceptible to flooding in the following scenarios:

- Flooding predicted to occur in a 0.5% AEP (1 in 200-year) Localised Rainfall Event.
- Flooding predicted to occur in a 0.5% AEP (1 in 200-year) Ashley River/ Rakahuri Breakout Event concurrent with a 5% AEP (1 in 20-year) Localised Rainfall Event.
- Flooding predicted to occur in a 0.5% AEP (1 in 200-year) Storm Surge Event concurrent with a 5% AEP (1 in 20-year) River Flow event with sea level rise based on an RCP8.5 climate change scenario.

Note: The Council holds publicly available information showing the modelled extent of flooding affecting specific properties in its GIS viewer. The maps are non-statutory and can be reviewed to take account of any property-specific information.

Non-Urban Flood Assessment Area

Means the land susceptible to flooding in the following scenarios:

- Flooding predicted to occur in a 0.5% AEP (1 in 200-year) Localised Rainfall Event.
- Flooding predicted to occur in a 0.5% AEP (1 in 200-year) Ashley River/ Rakahuri Breakout Event concurrent with a 5% AEP (1 in 20-year) Localised Rainfall Event.
- Flooding predicted to occur in a 0.5% AEP (1 in 200-year) Storm Surge Event concurrent with a 5% AEP (1 in 20-year) River Flow event with sea level rise based on an RCP8.5 climate change scenario.

Note: The Council holds publicly available information showing the modelled extent of flooding affecting specific properties in its GIS viewer. The maps are non-statutory and can be reviewed to take account of any property-specific information.

- 5.12 Further consequential amendments are also required throughout the Natural Hazard Chapter including the introduction, objectives, policies, rules and standards to recognise and give effect to the new definitions. I have recommend amended wording for the provisions in **Appendix 2**, removing reference to 'Urban Flood Assessment Overlay' and Non-Urban Flood Assessment Overlay' and replacing these with 'Urban Flood Assessment Area' and 'Non-Urban Flood Assessment Area'. Cross referencing to the Waimakariri District Natural Hazards Interactive GIS Viewer is also recommended.
- 5.13 The following provisions need to be modified to give effect to the Kāinga Ora submission: Introduction, NH-O2, NH-P1, NH-P8, NH-P10, NH-P11, how to interpret and apply rules, NH-R1, NH-R2, NH-R3, NH-R4, NH -R5, NH -R6, NH-R13, NH-R15, NH -R16, NH-S1 and NH-S2.
- 5.14 Despite the proposed changes to the text, I note that the Kāinga Ora requested approach to risk based management of natural hazards is still consistent with or the same as that proposed by Council in that the same objectives, policies and rules still apply, it is simply that the maps are in a different location.
- 5.15 The non-statutory mapping approach is also consistent with Chapter 11 of the Canterbury Regional Policy Statement (**RPS**) and in particular Objectives 11.2.1 and 11.2.3 and policies 11.3.1 and 11.3.2. I also consider that the approach addresses in part Environment Canterbury submission point s316.51 which is summarised in paragraph 47 and addressed in paragraph 61 and 62 of the Section 42A Report. The submission raised concerns about the limitations of the current mapping and that not all areas of the district that are potentially susceptible to flooding are included. The non-statutory mapping approach would enable new areas to be mapped or existing areas to be better refined when new or more accurate information became available.
- 5.16 The above recommended changes mean that resource consent requirements are determined according to whether a proposed activity is within an Urban Flood Assessment Area or Non-Urban Flood Assessment Area. Activities which are subject to the proposed rules can be readily determined by applying the parameters used in the defined terms, namely

the: 0.5% annual exceedence probability (AEP) or 1 – 200-year Localised Rainfall Event, a 0.5% AEP or 1 in 200-year Ashley River/ Rakahuri Breakout Event concurrent with a 5% AEP (1 in 20-year) Localised Rainfall Event or a 0.5% AEP (1 in 200-year) Storm Surge Event concurrent with a 5% AEP (1 in 20-year) River Flow event with sea level rise based on an RCP8.5 climate change scenario. As such the GIS viewer flood hazard maps do not directly trigger requirements for resource consent.

- 5.17 Although the GIS viewer maps do not have legal force, they may be used by applicants and the Council to inform an assessment against the definitions in the Plan. Applicants may also undertake their own mapping/assessments of flooding using the parameters in the definitions, albeit there would be no reason to do so with a publicly accessible GIS.
- 5.18 The GIS maps sitting outside of the Plan would provide a widely and easily accessible (and readily updated) means of determining whether a rule applies and/or compliance is achieved. This is important, insofar that principles of public participation and natural justice would be upheld, through public participation in the establishment of those rules or thresholds in the Plan. To the extent that flood maps outside the Plan might then change (as a result of updated modelling, new influences on flood risk, etc), the rules and thresholds would remain unchanged.
- 5.19 Insofar that the evidence of Ms Williams (**Appendix 3**) went on to address concerns about a prejudicial impact:

Public Participation

5.14 The reporting officer raises concerns regarding a lack of public participation in regard to updates to maps outside of the Plan. In my opinion, removal of the overlay from the Plan could result in less public engagement but it does not follow that there is no public engagement.

5.15 In my opinion, public engagement can and should remain an integral method in enhancing the accuracy of the flood hazard profile and spatial extent, despite this engagement sitting outside the formal Schedule 1 process. Indeed, the evidence of Ms Nitsche discusses the public engagement that is undertaken as part of the flood hazard modelling process generally. This is also outlined as a requisite step in the Flood Hazard Modelling Standard (Cardno NZ): Greater Wellington Regional Council (2021).

5.16 Ultimately, relocating the flooding maps outside to of the Plan would allow for a more agile response to updates and reflecting new information, but would not obviate the Council from engaging with owners of affected properties.

5.20 In my opinion there are some potential inefficiencies or limitations of the non-statutory mapping approach that also need to be considered when evaluating what is the most appropriate (ie effective and and efficient) planning provision or method. These include:

- Lack of certainty for property owners as the flood information is subject to change at any time and may not provide certainty for properties located on the border of areas susceptible to flooding. I note that the non-statutory map approach would mean that new properties could be added to the GIS viewer flood hazard areas if new larger rainfall events were modelled (as a result of climate change), and that properties could also be removed from the flood hazard areas if hazard mitigation works (eg; upstream stormwater detention basins) had been implemented reducing the flood risk. However, despite any Plan requirements as noted above the Building Act requirements for minimum floor levels designed for a 2% AEP event would apply regardless, and what these levels are at any point in time would be informed by the Waimakariri District Natural Hazards Interactive GIS Viewer.
- Not locating all of the relevant zone/ precinct /overlay etc information in the one location on statutory planning maps, so that all relevant District Plan information is available in one search, may lead to errors as there is potential for flood maps in a GIS viewer in a separate system to be missed. As noted above to overcome this I have recommended that GIS viewer be cross referenced in the introduction, how to interpret rules sections and also note the Urban and Non-Urban Flood Assessment Areas will be hyperlinked to the definitions (which also reference the GIS viewer).

5.21 In my opinion these limitations/inefficiencies are however, less than those of the fixed statutory maps within the District Plan. There is unnecessary

cost, time and resources expended undertaking numerous plan changes under a Schedule 1 process of the RMA to amend planning maps in the District Plan every time flood hazards are remodelled, or mitigation or flood management works are undertaken reduces overland flow paths and flood ponding issues across the District. This will also impact the resource consenting processes when Council is processing resource consents – the applicant and the Council processing planner will still need to do an assessment and show evidence that the flood hazards no longer apply. It could also lead to new hazard prone areas (as a result of larger rainfall events/ climate change) being missed in the consent process as the increased risk area will not be depicted in the Plan's maps until a Schedule 1 process is undertaken. Land use activities may have been undertaken without a due consideration of the flood risk profile of the activity.

- 5.22 The primary benefit of the Kāinga Ora preferred approach is quick and easy updating of flood hazard information, including spatial mapping of the most accurate information. I do not consider that this approach produces uncertainty for plan users or raises natural justice concerns.
- 5.23 I recognise that both statutory and non-statutory mapping options have limitations or inefficiencies, but overall consider that the non-statutory maps are most dynamic, responsive and efficient. Therefore, I agree with Kāinga Ora that it is appropriate to include flood hazard information in a non-statutory GIS Viewer sitting outside the Plan.

Removing Kaiapoi FMFFL

- 5.24 If the Independent Hearings Panel does not adopt a non-statutory mapping approach as requested by Kāinga Ora, then I accept that the Environment Canterbury submission seeking to remove the FMFFL in Kaiapoi and applying a Flood Assessment Certificate requirement to set the floor level and response by Mr Willis in his Section 42A Report agreeing to remove this is the next most appropriate option.

6. NATURAL HAZARDS (3.7) – RULES

NH-R1 Urban Flood Assessment Areas (Overlays)

- 6.1 Kāinga Ora s325.102 sought that the Natural Hazards Chapter recognise that large areas of the urban environment are in ‘High Hazard Areas’ but as residential and commercial activities are anticipated, sensitive activities should be discretionary rather than non-complying. I note that it appears the submission had misinterpreted the rule and that the Section 42A Report has provided a clear explanation of how NH-R1 works. I accept Mr Willis’s response and agree that the chapter provides for many hazard sensitive activities in existing urban areas to be permitted, subject to meeting the floor level requirements and that non-compliance defaults to an RDIS activity status, and not non-complying. I also agree that a permitted activity pathway with an RDIS status where the standards are not met is appropriate for existing urban areas, rather than a fully discretionary status that Kāinga Ora submission point originally sought.
- 6.2 In relation to rule NH-R1 and R2, the Section 42A Report also considered that if the flood assessment and fixed floor level overlays were deleted from the planning map as requested by Kāinga Ora then there would be no way for rules to be geographically limited to those parts of the district that flood (para 362, Section 42A Report). The result being that Flood Assessment Certificates would be required even for areas that the Council does not think flood. As explained in the evidence above this would not be the case. The Urban and Non-Urban Flood Assessment Areas would still be mapped in the GIS viewer and only those areas identified in the viewer as being within those flood assessment areas would require a certificate. In my opinion removing the maps from the District Plan would not result in unnecessary certificates being applied for on land that was not known to be susceptible to flooding.

NH-R3 – Rename

- 6.3 Submission point s325.125 relates to rule NH-R3, where Kāinga Ora sought that the rule be ‘renamed’ to provide clarity as to what the rule covers. The Section 42A report took the submission point further and considered that the submission relates to making amendments to the

whole rule to make it clearer what is permitted and to amend the rule for readability.

- 6.4 The name for rule NH-R3 currently reads '*Natural hazard sensitive addition to existing natural hazard sensitive activities*'. I suggest that this is renamed to '*Natural Hazard Sensitive Activities – Building Additions*'. I otherwise accept the Section 42A report response by Mr Willis and consider his amended wording improves the clarity of NH-R3.

7. SUMMARY OF PROPOSED WORDING CHANGES SOUGHT

- 7.1 The proposed additional changes sought by Kāinga Ora are included in **Appendix 2** of my evidence. I confirm that the version of relief in my evidence represents the full “updated” set of relief requested by Kāinga Ora in relation to this hearing topic. Other than the specific additional changes sought by Kāinga Ora and set out in this evidence and **Appendix 2**, I support the wording as recommended by the reporting officer in the Section 42A report.

8. CONCLUSION

- 8.1 Overall, I generally support the Natural Hazards Chapter of the PDP, with the exception of the way in which flood hazards are mapped. It is my view that flood hazard mapping that sits outside the Plan is a useful and legitimate planning tool for plan users as to whether a site is subject to flood hazards.
- 8.2 In my opinion, the proposed changes sought in Kāinga Ora’s submission and discussed within my evidence above, provide greater efficiencies in the identification and mapping of flooding hazards in the Waimakariri District, while maintaining an appropriate risk-based planning response to natural hazards.
- 8.3 I consider that the amendments to the Natural Hazard provisions outlined within my evidence and set out in **Appendix 2**, will be efficient and effective in achieving the purpose of the RMA, the relevant objectives of the PDP and other relevant statutory documents including the RPS.

A handwritten signature in blue ink that reads "Clare Dale". The signature is written in a cursive style with a period at the end.

Clare Dale
10 July 2023

Appendix 1: Kāinga Ora Submission Points for Stream 3 Hearing

Proposed District Plan Submissions Natural Hazards

Section/Sub-section/Provision	Support/Support in Part/Oppose	Submission	Relief sought / decision requested Changes sought by Kāinga Ora is shown in red as strikethrough for deletion and <u>underline</u> for addition. Consequential amendments may be required to give effect to the relief sought
Part 2: District Wide Matters – Hazards and Risks – Natural Hazards			
Part 2: District Wide Matters – Natural Hazards			
<i>Overall Chapter and Planning Maps</i>	Support in part	<p>Kāinga Ora generally supports the risk-based approach to the management of natural hazards.</p> <p>Consistent with its overall submission, Kāinga Ora opposes flooding hazard information being incorporated as Urban-Flood Assessment Overlay and Non-Urban Flood Assessment Overlay within the PDP, as these hazards are dynamic and subject to constant change through hazard mitigation works and reshaping of ground contours.</p> <p>Kāinga Ora supports the other hazard maps, i.e. Coastal Hazards, Tsunami Hazards and Fault Rupture Zones being included within the PDP planning maps as the location of these hazards is more certain.</p> <p>An alternative relief is proposed.</p> <p>Spatial identification of flood hazard areas should be made available through a set of non-statutory flood hazard maps, which would operate as interactive maps on the Council’s GIS website – thereby operating as a separate mapping viewer to the statutory DP</p>	<p><i>Kāinga Ora seeks changes consistent with its overall submission on the PDP. Key areas of relief sought in the Natural Hazards chapter are (but not limited to):</i></p> <ol style="list-style-type: none"> <i>1. Removal of the mapped Natural Hazard Overlays from within the PDP – Urban Flood Assessment Overlay and Non-Urban Flood Assessment Overlay, and the mapped fixed floor level overlays; these should instead be included as a non-statutory map layers in the Waimakariri District Natural Hazards Interactive Viewer that sits outside the PDP;</i> <i>2. Amendments to provisions and deletion of references to these overlays in the PDP and instead refer to the specific hazard type and form that is being managed in the PDP i.e. high flood hazard area, overland flowpath, flooding predicted to occur in a 0.5% AEP (1 in 200-year) rainfall or breakout events, 1% AEP (1 in 100-year) Storm Surge Event concurrent with a 5% AEP (1 in 20 year) River Flow Event with sea level rise based on an RCP8.5 climate change scenario that will be identified through a flood assessment;</i> <i>3. Recognise that large areas of the urban environment are in High Hazard Area but that residential and commercial activities are anticipated and as such sensitive activities should be considered as discretionary, rather than non-complying activities;</i> <i>4. Consequential changes to the numbering and naming of</i>

Section/Sub-section/Provision	Support/Support in Part/Oppose	Submission	Relief sought / decision requested Changes sought by Kāinga Ora is shown in red as strikethrough for deletion and <u>underline</u> for addition. Consequential amendments may be required to give effect to the relief sought
		maps. This approach is different to that of the traditional means of displaying hazard overlays on district plan maps and reflects that these maps do not have regulatory effect. The advantage of this approach is the ability to operate a separate set of interactive maps which are continually subject to improvement and updates, outside of and without a reliance on the Schedule 1 Resource Management Act 1991 process. Kāinga Ora notes that this is an approach taken by other Councils around the country.	<i>provisions following changes sought throughout chapter.</i>
<i>Introduction text</i>	Support in part	<p>Kāinga Ora supports the introduction as proposed with amendments reflected to the relief sought above.</p> <p>Consistent with Kāinga Ora’s overall submission, Kāinga Ora opposes flooding hazard information and overlays being incorporated in the PDP, as these hazards are dynamic and subject to constant change through hazard mitigation works and reshaping of ground contours.</p> <p>Amendments are sought to reflect the above, and also to assist in simplifying the introduction text.</p>	<i>Amendments sought to give effect to the relief sought above – related to the whole Natural Hazards chapter.</i>
Part 2: District Wide Matters – Natural Hazards: Objective			
<i>NH-01</i>	Support	Kāinga Ora supports these objectives as	<i>Retain as notified.</i>

Section/Sub-section/Provision	Support/Support in Part/Oppose	Submission	Relief sought / decision requested Changes sought by Kāinga Ora is shown in red as striketrough for deletion and <u>underline</u> for addition. Consequential amendments may be required to give effect to the relief sought
NH-O2 NH-O3 NH-O4		proposed.	
Part 2: District Wide Matters – Natural Hazards: Policies			
NH-P1 NH-P2 NH-P3 NH-P4 NH-P6 NH-P7 NH-P8 NH-P11 NH-P12 NH-P13 NH-P19	Support	Kāinga Ora supports this policy as proposed.	<i>Retain as notified.</i>
Part 2: District Wide Matters – Natural Hazards: Activity rules			
NH-R1 NH-R2 NH-R3 NH-R4 NH-R5 NH-R6	Support in part	Kāinga Ora supports these rules with amendments to the removal of the reference to the flood assessment overlays outlined above.	<i>Amend to align with the relief sought from Kāinga Ora to the Natural Hazards chapter, as outlined above.</i> <i>Consequential amendments may be required to the rules and standards to specifically outline the hazard areas and types that the rules and standards apply.</i>
NH-R3 <i>Natural hazard sensitive addition to existing natural hazard sensitive activities</i>	Support in part	Kāinga Ora generally supports this rule, however seek that the rule name be amended to make it clearer exactly what it is permitting.	<i>Amend rule title for readability.</i>
NH-R8	Support	Kāinga Ora supports this rule as proposed.	<i>Retain as notified.</i>

Section/Sub-section/Provision	Support/Support in Part/Oppose	Submission	Relief sought / decision requested Changes sought by Kāinga Ora is shown in red as strikethrough for deletion and <u>underline</u> for addition. Consequential amendments may be required to give effect to the relief sought
NH-R15	Support	Kāinga Ora supports this rule as proposed.	<i>Retain as notified.</i>
Part 2: District Wide Matters – Natural Hazards: Standards			
NH-S1	Oppose	Kāinga Ora opposes this standards and seeks amendments to the removal of the reference to the flood assessment overlays outlined above for the whole chapter.	<i>Amend to align with the relief sought from Kāinga Ora to the Natural Hazards chapter, as outlined above.</i> <i>Consequential amendments may be required to the rules and standards to specifically outline the hazard areas and types that the rules and standards apply.</i>
Part 2: District Wide Matters – Natural Hazards: Matters of Discretion			
NH-MD1 NH-MD2 NH-MD3	Support	Kāinga Ora supports these matters of discretion.	<i>Retain as notified.</i>

Appendix 2: Kāinga Ora Updated Relief Sought following S42A

In the text below black text is as notified, “blue mark up” amendments from Section 42A Report, and “red mark” Kāinga Ora evidence relief sought.

Appendix 2: Kāinga Ora Updated Relief Sought following S42A

In the text below black text is as notified and amendments from s42A Report, and “red markup” Kāinga Ora evidence relief sought.

NH - Matepā māhorahora - Natural Hazards

Introduction

The District is susceptible to a wide range of natural hazards, including flooding, fault rupture, liquefaction, tsunami, slope instability, and sea water inundation from storm surges.

When natural hazards occur, they can result in damage to property and infrastructure, and lead to a loss of human life. It is therefore important to identify areas impacted by natural hazards and to restrict or manage subdivision, use and development, including infrastructure, relative to the natural hazard risk posed. This is in order to reduce the risk of damage to property and infrastructure and the potential for loss of human life.

The District Plan focuses on the following natural hazards as they are the hazards that present the greatest risk to life, property and infrastructure, and whose future effects can be addressed through appropriate measures:

- Flooding, including from sea water storm surges coupled with sea level rise;
- Fault rupture; and
- Liquefaction.

~~Where freshwater flooding may occur, a certification process enables a site specific assessment based on up-to-date modelling. The approach to freshwater flood management in Kaiapoi involves the use of identified fixed minimum floor levels. The minimum fixed floor levels are shown on the planning map and have been determined from delineating areas or basins within Kaiapoi, with reference to different flood hazards and risks associated with pump failure.~~

The main coastal hazard affecting the District is sea water inundation, which occurs through the Waimakariri River and Ashley River/Rakahuri channels. The sea water inundation extends beyond the mapped Coastal Environment inland. Because of this, and the fact that the sea water inundation extent in the District is affected by concurrent freshwater flows present in the rivers, coastal hazards are located within the Natural Hazards Chapter, rather than as a separate coastal hazard contained in the Coastal Environment Chapter. Areas potentially subject to sea water inundation are identified by the Coastal Flood Assessment Overlay.

Flooding and sea level rise are influenced by climate change. It is predicted that rainfall events will become more intense, storm events will become more common and the sea level will rise. The development of the flood assessment areas and coastal flood assessment overlays incorporate current climate change predictions. For the Waimakariri District, the modelling has been based on the climate change scenario of RCP 8.5, with 1m of sea level rise over the next 100 years.

Modelling indicates that the District is not susceptible to coastal erosion over the next 100 years, even when accounting for climate change, and as such the District Plan does not contain provisions for this hazard.

Slope stability is addressed through the earthworks provisions. These require appropriate measures and are incorporated into earthworks design to maintain stability of sloping sites.

The District is also susceptible to natural hazards such as tsunami, severe winds, and ground shaking from earthquakes. These hazards are primarily managed by other statutory instruments or processes including the Building Act 2004, Civil Defence Emergency Management Act 2002 and the Local Government Act 1974.

A risk-based approach is taken which factors in the need to allow people and communities to use their property and undertake activities, while also ensuring that life or significant assets are not harmed or lost as a result of a natural hazard event. ~~The RPS recognises that for existing urban areas the community has already accepted some natural hazards risk in order to support the ongoing development of the District's existing towns. The RPS accordingly requires development in high hazard areas in these locations to be either avoided or mitigated.~~ The District Plan maps do not identify high ~~flood~~ hazard areas or high coastal flood hazard areas, rather these are identified through the flood assessment certificate process. This enables the most up-to-date technical information to be used. However, as a guide, areas that are potentially high hazard can be identified through the Waimakariri District Natural Hazards Interactive [GIS Viewer](#). This interactive [GIS](#) viewer does not form part of the District Plan.

The provisions in this chapter are consistent with the matters in Part 2 - District Wide Matters - Strategic Directions and give effect to matters in Part 2 - District Wide Matters - Urban Form and Development.

Other potentially relevant District Plan provisions

As well as the provisions in this chapter, other District Plan chapters that contain provisions that may also be relevant to natural hazards include:

- [Definitions](#)
- Earthworks: this chapter contains provisions for earthworks occurring within a natural hazard overlay [or area](#).
- Subdivision: this chapter contains provisions for subdivision being undertaken within a natural hazard overlay [or area](#).
- Special Purpose Zone (Kāinga Nohoanga): how the natural hazards provisions apply in the Special Purpose Zone (Kāinga Nohoanga) is set out in Appendices SPZ(KN)-APP1 to SPZ(KN)-APP5 of that chapter.
- Any other District wide matter that may affect or relate to the site.
- Zones: the zone chapters contain provisions about what activities are anticipated to occur in the zones.
- [The Waimakariri District Natural Hazards GIS Viewer which contains up-to-date flood hazard mapping.](#)

Objectives	
NH-01	<p>Risk from natural hazards</p> <p>New subdivision, land use and development <u>other than infrastructure</u>:</p> <p>1. manages natural hazard risk, including coastal hazards, in the existing urban environment to ensure that any increased risk to people and property is low;</p>

	<ol style="list-style-type: none"> 2. is avoided in the Ashley Fault Avoidance Overlay and high hazard areas for flooding outside of the urban environment where the risk to life and property are unacceptable; and 3. <u>avoids or mitigates natural hazard risk in the existing urban environment to ensure that any increased risk to people and property is acceptable; and</u> 4. outside of the urban environment, in all other instances is undertaken to ensure natural hazard risk, including coastal hazard risk, to people and property is avoided or mitigated and the ability of communities to recover from natural hazard events is not reduced.
NH-O2	<p>Infrastructure in natural hazard overlays <u>or natural hazard areas</u></p> <p>For infrastructure within natural hazard overlays <u>or natural hazard areas</u>:</p> <ol style="list-style-type: none"> 1. existing infrastructure, <u>including critical infrastructure</u>, can be upgraded, maintained and replaced; 2. new non-critical infrastructure does not increase the risk to life or property from natural hazard, including coastal hazard, events and is designed to maintain its integrity and ongoing function during and after natural hazard events, or is easily replaced; 3. <u>new critical infrastructure</u> is avoided in high flood hazard areas and high coastal flood hazard areas, unless there is a functional need or operational need for the location or route.
NH-O3	<p>Natural hazard mitigation</p> <p>Adverse effects on people, property, infrastructure and the environment resulting from methods used to manage natural hazards are avoided or, where avoidance is not possible, mitigated.</p>
NH-O4	<p><u>Natural defences features</u></p> <p>Natural defences <u>features</u> and systems are maintained to reduce the susceptibility of people, communities and property and infrastructure from natural hazard events.</p>
NH-O5	<p><u>Climate change</u></p> <p><u>The effects of climate change, and its influence on sea levels and the frequency and severity of natural hazards, are recognised and provided for.</u></p>
Policies	
NH-P1	<p>Identification of natural hazards and a risk-based approach</p> <p>Identify natural hazards, including coastal hazards, through the use of overlays and assess the risk for the management of subdivision, use and development within the overlays based on:</p> <ol style="list-style-type: none"> 1. the sensitivity of the building occupation to loss of life, damage to property from a natural hazard and the ability for communities to recover after a natural hazard event; and

<p>NH-P2</p>	<p>2. the level of hazard presented to people and property from a natural hazard, recognising that climate change will alter the frequency and severity of some natural hazard events.</p> <p>Activities in high hazard areas for flooding within urban areas</p> <p>Manage <u>Avoid or mitigate adverse effects arising from</u> subdivision, use and development for natural hazard sensitive activities within high flood hazard and high coastal flood hazard urban environments to ensure that:</p> <ol style="list-style-type: none"> 1. minimum floor levels are incorporated into the design of development to ensure the risk to life and potential for building damage from flooding is mitigated; and 2. the risk <u>from surrounding</u> to on surrounding properties is not significantly increased <u>no more than minor</u> and the net flood storage capacity is not reduced; and 3. the conveyance of flood waters is not impeded; or 4. the nature of the activity means the risk to life and potential for building damage from flooding is low.
<p>NH-P3</p>	<p>Activities in high hazard areas for flooding outside of urban areas</p> <p>Avoid subdivision, use and development for natural hazard sensitive activities outside urban environments in high flood hazard and high coastal flood hazard urban environments unless:</p> <ol style="list-style-type: none"> 1. the activity incorporates mitigation measures so that the risk to life, and building damage is low; 2. the risk from flooding to on surrounding properties is not significantly increased <u>no more than minor</u>; 3. the conveyance of flood waters is not impeded; and 4. the activity does not require new or upgraded community scale natural hazard mitigation works.
<p>NH-P4</p>	<p>Activities outside of high hazard areas for flooding</p> <p>Provide for subdivision, use and development associated with natural hazard sensitive activities outside of high flood hazard and high coastal flood hazard urban environments where it can be demonstrated that:</p> <ol style="list-style-type: none"> 1. the nature of the activity means the risk to life and potential for building damage from flooding is low; or 2. minimum floor levels are incorporated into the design of development to ensure building floor levels are located above the flood level so that the risk to life and potential for building damage from flooding is mitigated <u>avoided</u>; and 3. the risk from flooding to on surrounding properties is not significantly increased <u>no more than minor</u> and the net flood storage capacity is not reduced; and 4. the ability for the conveyancing of flood waters is not impeded.

NH-P5	<p>Activities within the Fault Awareness Overlay and Ashley Fault Avoidance Overlay</p> <p>For activities within fault overlays:</p> <ol style="list-style-type: none"> 1. only allow subdivision, use and development for natural hazard sensitive activities in the Ashley Fault Avoidance Overlay where the risk to life or property is low; and 2. manage subdivision in the Fault Awareness Overlay so that the risk to life and property is low.
NH-P6	<p>Subdivision within the Liquefaction Hazard Overlay</p> <p>Manage subdivision within the Liquefaction Hazard Overlay to ensure that the risk to life and property is low.</p>
NH-P7	<p>Additions to existing natural hazard sensitive activities</p> <p>Provide for additions to buildings for existing natural hazard sensitive activities where it can be demonstrated that:</p> <ol style="list-style-type: none"> 1. the additions provide for the continued use of the existing building; and 2. the change in on site risk from the building additions to life and property is low; and 3. the risk from the natural hazard to surrounding properties and people is not significantly increased.
NH-P8	<p>Subdivision, use and development other than for any natural hazard sensitive activities</p> <p>Allow for subdivision, use and development associated with activities that are not natural hazard sensitive activities within all natural hazard overlays or natural hazard areas where as there is a low risk to life and property.</p>
NH-P9	<p>Community scale Natural hazard mitigation works</p> <p>Natural hazard mitigation works:</p> <ol style="list-style-type: none"> 1. undertaken by the Crown, the Regional Council or the District Council are enabled where community scale natural hazard mitigation works are necessary to protect existing communities from natural hazard risk which cannot reasonably be avoided, and any adverse effects on the values of any identified <u>SNA</u>, ONL, ONF, SAL, scheduled natural character areas, the coastal environment, and Sites and Areas of Significance to Māori are mitigated; or 2. not undertaken by the Crown, the Regional Council or the District Council, will only be acceptable where: <ol style="list-style-type: none"> a. the natural hazard risk cannot reasonably be avoided; b. any adverse effects of those works on the values of any areas identified as <u>SNA</u>, ONL, ONF, SAL, scheduled natural character areas and the coastal environment, and on sites and

	<p>areas of significance to Māori are avoided, remedied or mitigated in accordance with the provisions in those chapters;</p> <p>c. the mitigation works do not transfer or create unacceptable hazard risk to other people, property, infrastructure or the natural environment; and</p> <p>d. the mitigation works do not involve the construction of private flood mitigation measures such as stopbanks, or floodwalls to protect new hazard sensitive activities as these works could result in significant residual risk to life or property if they fail.</p>
<p>NH-P10</p>	<p>Maintenance and operation of existing infrastructure</p> <p>Allow for Enable the operation, maintenance, replacement, minor upgrading, repair and removal of all existing infrastructure in identified natural hazard overlays <u>or areas</u>.</p>
<p>NH-P11</p>	<p>New below ground infrastructure and upgrading of infrastructure outside of high hazard areas</p> <p>Provide for new and upgrading of existing below ground infrastructure outside of high flood-hazard and high coastal flood hazard areas, where:</p> <ol style="list-style-type: none"> 1. if located within a flood assessment <u>area</u> or coastal flood assessment overlay, the original ground level is reinstated at completion of the works; 2. it does not increase the risk to life or property from natural hazard events; 3. it does not result in a reduction in the ability of people and communities to recover from a natural hazard event; and 4. it is designed to maintain reasonable and safe operation during and after a natural hazard event.
<p>NH-P12</p>	<p>New below ground infrastructure and upgrading of infrastructure within high flood-hazard areas</p> <p>Provide for the installation of new and upgrading of existing below ground infrastructure in high flood-hazard or high coastal flood hazard areas where:</p> <ol style="list-style-type: none"> 1. the infrastructure does not exacerbate the natural hazard risk or transfer the risk to another site; 2. the conveyance of flood waters is not impeded; 3. there is a functional need or operational need for the infrastructure to be located in a high flood-hazard or high coastal flood hazard area and there are no practical alternatives; and 4. the location and design of the infrastructure address relevant natural hazard risk and appropriate measures have been incorporated into the design to provide for the continued operation.

<p>NH-P13</p>	<p>New above ground critical infrastructure and upgrading of critical infrastructure within high flood-hazard areas</p> <p>Only allow for the new and upgrading of existing above ground critical infrastructure in high flood-hazard or high coastal flood hazard areas where:</p> <ol style="list-style-type: none"> 1. there is a functional need or operational need for that location, <u>including as a result of the linear nature of some infrastructure</u>, and there are no practical-reasonable alternatives; 2. the location and design of the infrastructure address relevant natural hazard risk and appropriate measures have been incorporated into the design to provide for the continued operation; and 3. the infrastructure does not exacerbate the natural hazard risk or transfer the risk to another site.
<p>NH-P14</p>	<p>New infrastructure and upgrading of infrastructure within fault overlays</p> <p>Within the fault overlays:</p> <ol style="list-style-type: none"> 1. provide for new and upgrading of existing non critical infrastructure below and above ground in the Ashley Fault Avoidance Overlay where: <ol style="list-style-type: none"> a. it does not increase the risk to life or property from a natural hazard event; and b. it does not result in a reduction in the ability of people and communities to recover from a natural hazard event; 2. avoid new and upgrading of existing critical infrastructure below and above ground in the Ashley Fault Avoidance Overlay unless there is <u>an operational need or functional need and no reasonable alternative</u>, in which case the infrastructure must be designed to: <ol style="list-style-type: none"> a. maintain, as far as practicable, its integrity and ongoing operation during and after natural hazard events; or b. be able to be reinstated in a timely manner; 3. enable small scale critical infrastructure and other infrastructure in the Fault Awareness Overlay, while ensuring that larger critical infrastructure does not increase the risk to life or property from natural hazard events unless: <ol style="list-style-type: none"> a. <u>there is an operational or functional need or there is no reasonable alternative</u>, in which case the infrastructure must be designed to maintain, as far as practicable, its integrity and ongoing operation during and after natural hazard events; or b. be able to be reinstated in a timely manner.
<p>NH-P15</p>	<p>Natural features providing natural hazard resilience</p> <p>Protect natural features which assist in avoiding or reducing the impacts from natural hazards, such as natural ponding areas, wetlands, water body margins and riparian margins, dunes, berms and beaches from inappropriate subdivision, use and development and restore, maintain or enhance the functioning of these features.</p>
<p>NH-P16</p>	<p>Redevelopment and relocation in coastal hazard and natural hazard</p>

	<p>overlays</p> <p>Encourage redevelopment, or changes in land use where that would reduce the risk of adverse effects from natural hazards, including managed retreat and designing for relocation or recoverability from natural hazard events.</p>
NH-P17	<p>Hard engineering natural hazard mitigation within the coastal environment</p> <p>Only allow hard engineering natural hazard mitigation within the coastal environment that reduces the risk of natural hazards when:</p> <ol style="list-style-type: none"> 1. soft engineering measures would not provide an appropriate level of protection and it can be demonstrated that there are no other reasonable alternatives; 2. the construction of hard engineering measures will not increase the risk from coastal hazards on adjacent properties that are not protected by the hard engineering measures; 3. where managed retreat has not been adopted and there is an immediate risk to life or property from the natural hazard; 4. it avoids the modification or alteration of <u>natural defences features</u> and systems in a way that would compromise their function as natural defences; and 5. significant adverse effects on natural defences and systems from those measures are avoided, and any other adverse effects are avoided, remedied or mitigated.
NH-P18	<p>Fire and ice risks</p> <p>Manage wildfire and vehicle crash risk on roads affected by ice hazard through restrictions on the planting of woodlots and shelterbelts.</p>
NH-P19	<p>Other natural hazards</p> <p>Encourage the consideration of <u>a risk based approach for other natural hazards as part of subdivision, use and development to achieve an acceptable level of risk, and where there is uncertainty in the likelihood or consequences of a natural hazard event, adopt a precautionary approach.</u></p>

Activity Rules

How to interpret and apply the rules

1. [Definitions](#)
2. [The Waimakariri District Natural Hazards Interactive GIS Viewer which contains up-to-date flood hazard mapping.](#)
3. Some sites may have more than one overlay or [area](#) applying. The rules of all the applicable overlays or [areas](#) apply.
4. For rules that refer to the Kaiapoi Fixed Minimum Finished Floor Level Overlay, the minimum floor level is specified in the planning map.

5. Rules that refer to a Flood Assessment Certificate or Coastal Flood Assessment Certificate require a certificate to be obtained from the District Council to determine compliance with the rule. The alternative is to apply for resource consent as set out in the rule.
6. The District Council will issue a certificate, upon application, in accordance with the published Council guidance on the matter.
7. Certificates are valid for three years from the date of issue. If a land use consent is required, the five year period provided under the RMA to give effect to the resource consent overrides the three year certificate lifespan.
8. The Flood Assessment Certificate and Coastal Flood Assessment Certificate specify circumstances when required minimum building floor levels or land levels will not be provided.
9. The AEP flood event risk level, minimum floor levels and overland flow path locations are to be determined by reference to:
 - a. the most up to date models, maps and data held by the District Council and the Regional Council; and
 - b. any information held by, or provided to, the District Council or the Regional Council that relates to flood risk for the specific land.

Non-Coastal Hazards

NH-R1	Natural hazard sensitive activities	
<p data-bbox="159 936 418 1035">Urban Flood Assessment Overlay Area</p> <p data-bbox="159 1073 350 1205">Kaiapoi Fixed Minimum Finished Floor Level Overlay</p>	<p data-bbox="423 936 691 968">Activity status: PER</p> <p data-bbox="423 1003 516 1035">Where:</p> <ol style="list-style-type: none"> <li data-bbox="472 1073 1078 1171">1. the building is erected to the level specified in an existing consent notice <u>decision</u> that is less than five years old; or <li data-bbox="472 1178 1078 1955">2. the building: <ol style="list-style-type: none"> <li data-bbox="561 1213 1078 1892">a. does not exceed the permitted building coverage for the zone; and <ol style="list-style-type: none"> <li data-bbox="634 1276 1078 1549">i. if located within the Kaiapoi Fixed Minimum Finished Floor Level Overlay, the building has a finished floor level equal to or higher than the minimum finished floor level shown on the planning map; or <li data-bbox="634 1556 1078 1892">ii. if not located within the Kaiapoi Fixed Minimum Finished Floor Level Overlay, the building has a finished floor level equal to or higher than the minimum finished floor level as stated in a Flood Assessment Certificate issued in accordance with NH-S1; and <li data-bbox="561 1898 1078 1955">b. is not located within an overland flow path as stated in a Flood Assessment 	<p data-bbox="1078 936 1354 1035">Activity status where compliance is not achieved: RDIS</p> <p data-bbox="1078 1073 1354 1136">Matters of discretion are restricted to:</p> <ul style="list-style-type: none"> <li data-bbox="1122 1178 1354 1304">• NH-MD1 - Natural hazards general matters <p data-bbox="1078 1346 1354 1377">Notification</p> <p data-bbox="1078 1383 1354 1619">An application for a restricted discretionary activity under this rule is precluded from being publicly notified, but may be limited notified.</p>

	Certificate issued in accordance with NH-S1.	
NH-R2	Natural hazard sensitive activities	
Non-Urban Flood Assessment Overlay Area Rural Zones	<p>Activity status: PER</p> <p>Where:</p> <ol style="list-style-type: none"> 1. the building is erected to the level specified in an existing consent notice decision that is less than five years old; or 2. if located within the Non Urban Flood Assessment Overlay, the building: <ol style="list-style-type: none"> a. is not located on a site within a high flood-hazard area as stated in a Flood Assessment Certificate issued in accordance with NH-S1; and b. has a finished floor level equal to or higher than the minimum finished floor level as stated in a Flood Assessment Certificate issued in accordance with NH-S1; and e. is not located within an overland flow path as stated in a Flood Assessment Certificate issued in accordance with NH-S1; or 3. if the activity is a residential unit or a minor residential unit and is located outside of the Non Urban Flood Assessment Overlay and located within Rural Zones, it has a finished floor level that is either: <ol style="list-style-type: none"> a. 400mm above the natural ground level; or b. is equal to or higher than the minimum finished floor level as stated in a Flood Assessment Certificate issued in accordance with NH S1. 	<p>Activity status where compliance with NH-R2 (1), NH-R2 (2)(b), NH-R2 (2)(c) and NH-R2 (3) is not achieved: RDIS</p> <p>Matters of discretion are restricted to:</p> <ul style="list-style-type: none"> • NH-MD1 - Natural hazards general matters <p>Activity status where compliance with NH-R2 (2)(a) is not achieved: NC</p> <p>Notification An application for a restricted discretionary activity under this rule is precluded from being publicly notified, but may be limited notified.</p>
NH-R3	<u>Natural Hazard Sensitive Activities – Building Additions</u> Additions to existing natural hazard sensitive activities	
Urban Flood Assessment Overlay Area Kaiapoi Fixed Minimum Finished Floor Level Overlay	<p>Activity status: PER</p> <p>Where:</p> <ol style="list-style-type: none"> 1. the addition to a building does not result in a new or additional natural hazard sensitive activity establishing on the site; and 2. the addition: 	<p>Activity status where compliance is not achieved: RDIS</p> <p>Matters of discretion are restricted to:</p> <ul style="list-style-type: none"> • NH-MD1 - Natural hazards general matters

<p>Non-Urban Flood Assessment <u>Overlay Area</u></p> <p>Ashley Fault Avoidance Overlay</p> <p>Rural Zones</p>	<ul style="list-style-type: none"> a. is not located within the Ashley Fault Avoidance Overlay; or b. is erected to the level specified in an existing subdivision consent notice decision or on an approved subdivision consent plan that is less than five years old; or e. if located in the Kaiapoi Fixed Minimum Finished Floor Level Overlay, any building footprint addition has a finished floor level equal to or higher than the minimum finished floor level shown on the planning map; or d. <u>if located within the Non-urban Flood Assessment <u>Overlay Areas</u>, the addition is located on a site outside of a high hazard areas as stated in a Flood Assessment Certificate issued in accordance with NH-S1;</u> e. if located within any Flood Assessment <u>Overlay Areas</u>, the building footprint addition is: <ul style="list-style-type: none"> i. located on a site outside of a high flood hazard area as stated in a Flood Assessment Certificate issued in accordance with NH-S1; and ii. is not located within an overland flow path as stated in a Flood Assessment Certificate issued in accordance with NH-S1; and iii. has a finished floor level equal to or higher than the minimum finished floor level as stated in a Flood Assessment Certificate issued in accordance with NH-S1; or f. if the activity is a residential unit or a minor residential unit and is located outside of the Non-Urban Flood Assessment Overlay and located within Rural 	<p>Notification</p> <p>An application for a restricted discretionary activity under this rule is precluded from being publicly notified, but may be limited notified.</p>
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	<p>Zones, it has a finished floor level that is either:-</p> <ol style="list-style-type: none"> i. 400mm above the natural ground level; or ii. is equal to or higher than the minimum finished floor level as stated in a Flood Assessment Certificate issued in accordance with NH S1. 	
NH-R4	Below ground infrastructure and critical infrastructure	
<p>Urban Flood Assessment Overlay Area</p> <p>Kaiapoi Fixed Minimum Finished Floor Level Overlay</p> <p>Non-Urban Flood Assessment Overlay Area</p>	<p>Activity status: PER</p> <p>Where:</p> <ol style="list-style-type: none"> 1. <u>the profile, contour or height of the land is not permanently raised by more than 0.25m when compared to natural ground level the activity does not exacerbate flooding on any other property by displacing or diverting floodwater on surrounding land in a 0.5% AEP event.</u> 	<p>Activity status where compliance is not achieved: RDIS</p> <p>Matters of discretion are restricted to:</p> <ul style="list-style-type: none"> • NH-MD3 - Natural hazards and infrastructure <p>Notification An application for a restricted discretionary activity under this rule is precluded from being publicly notified, but may be limited notified.</p>
	<p>Advisory Note</p> <ul style="list-style-type: none"> • This rule applies in addition to EI-R1 to EI-R56. 	
NH-R5	Above ground infrastructure that is not critical infrastructure	
<p>Urban Flood Assessment Overlay Area</p> <p>Kaiapoi Fixed Minimum Finished Floor Level Overlay</p> <p>Non-Urban Flood Assessment Overlay Area</p>	<p>Activity status: PER</p> <p>Where:</p> <ol style="list-style-type: none"> 1. <u>the profile, contour or height of the land is not permanently raised by more than 0.25m when compared to natural ground level the activity does not exacerbate flooding on any other property by displacing or diverting floodwater on surrounding land in a 0.5% AEP event; and</u> 2. <u>new infrastructure or upgraded an extension to existing infrastructure:</u> <ol style="list-style-type: none"> a. has a footprint of less than 10m²; or 	<p>Activity status where compliance is not achieved: RDIS</p> <p>Matters of discretion are restricted to:</p> <ul style="list-style-type: none"> • NH-MD3 - Natural hazards and infrastructure <p>Notification An application for a restricted discretionary activity under this rule is precluded from being publicly notified, but may be limited notified.</p>

	<ul style="list-style-type: none"> b. is not located within an overland flow path as stated in a Flood Assessment Certificate issued in accordance with NH-S1; <u>or</u> c. <u>is limited to a customer connection.</u> d. <u>Is for temporary military training activity.</u> 	
	<p>Advisory Note</p> <ul style="list-style-type: none"> • This rule applies in addition to EI-R1 to EI-R56. 	
<p>NH-R6 Above ground critical infrastructure</p>		
<p>Fault Awareness Overlay</p> <p>Urban Flood Assessment Overlay Area</p> <p>Kaiapoi Fixed Minimum Finished Floor Level Overlay</p> <p>Non-Urban Flood Assessment Overlay Area</p>	<p>Activity status: PER</p> <p>Where:</p> <ol style="list-style-type: none"> 1. <u>The infrastructure is a road and does not exacerbate flooding on any other property by displacing or diverting floodwater on surrounding land in a 0.5% AEP event;</u> 2. if located with the Fault Awareness Overlay, new critical infrastructure or an extension to existing upgraded infrastructure has a footprint of less than 100m² <u>per structure</u>; and 3. if located within a Flood Assessment Overlay Area or the Kaiapoi Fixed Minimum Finished Floor Level Overlay: <ul style="list-style-type: none"> a. the profile, contour or height of the land is not permanently raised by more than 0.25m when compared to natural ground level; the activity does not exacerbate flooding on any other property by displacing or diverting floodwater on surrounding land in a 0.5% AEP event; and b. the infrastructure is located on a site outside of high flood hazard area as stated in a Flood Assessment Certificate issued in accordance with NH-S1; or 	<p>Activity status where compliance is not achieved: RDIS</p> <p>Matters of discretion are restricted to:</p> <ul style="list-style-type: none"> • NH-MD3 - Natural hazards and infrastructure <p>Notification</p> <p>An application for a restricted discretionary activity under this rule is precluded from being publicly notified, but may be limited notified.</p>

	<p>c. new infrastructure or an extension to existing upgraded infrastructure:</p> <ul style="list-style-type: none"> i. has a footprint of less than 103m² per structure attached to the ground; or ii. is located 3m or more above ground level, excluding any support base, towers or poles, at an elevation higher than the minimum finished floor level as stated in a Flood Assessment Certificate issued in accordance with NH-S1; or iii. has a finished floor level equal to or higher than the minimum finished floor level as stated in a Flood Assessment Certificate issued in accordance with NH-S1; and <p>d. new buildings, or extensions to existing buildings that increase the footprint of the existing infrastructure by more than 25m², are not located within an overland flow path as stated in a Flood Assessment Certificate issued in accordance with NH-S1.</p>	
	<p>Advisory Note</p> <ul style="list-style-type: none"> • This rule applies in addition to EI-R1 to EI-R56. 	
NH-R7	Woodlots and shelterbelts	
Rural Zones	<p>Activity status: PER</p> <p>Where:</p> <ul style="list-style-type: none"> 1. any woodlot or shelterbelt shall comply with the following fire hazard setback distances, measured from the 	<p>Activity status where compliance is not achieved: RDIS</p> <p>Matters of discretion are restricted to:</p>

	<p>outside extent of the canopy at the time of planting:</p> <ol style="list-style-type: none"> a. 30m from any boundary of any adjoining site; and b. 10m from any road. <p>2. any woodlot or shelterbelt established on the north side of South Eyre Road, Tram Road, Oxford Road, or Birch Hill Road shall comply with the following ice hazard height and setback distances:</p> <ol style="list-style-type: none"> a. trees adjoining the road boundary shall be maintained at a height of no greater than 3m; b. trees capable of growing up to 6m in height shall be setback 5m from the road boundary; and c. trees capable of growing 8m in height or higher shall be setback 15m from the road boundary. 	<ul style="list-style-type: none"> • NH-MD1 - Natural hazards general matters <p>Notification An application for a restricted discretionary activity under this rule is precluded from being publicly notified, but may be limited notified.</p>
NH-R8	Maintenance of existing community scale natural hazard mitigation works	
All Zones	Activity status: PER	Activity status where compliance is not achieved: N/A
NH-R9	Upgrading existing community scale natural hazard mitigation works	
	<i>The rule does not apply to the planting of vegetation as part of natural hazard mitigation works.</i>	
All Zones	Activity status: PER	Activity status where compliance is not achieved: N/A
Ashley River / Rakahuri Saltwater Creek Estuary ONF	Activity status: RDIS Matters of discretion are restricted to: <ul style="list-style-type: none"> • NH-MD2 - Natural hazard mitigation works 	Activity status where compliance is not achieved: N/A
Waimakariri River ONF		
Ashley River / Rakahuri SAL		
NH-R10	Construction of new community scale natural hazard mitigation works	
	<i>The rule does not apply to the planting of vegetation as part of natural hazard mitigation works.</i>	
All Zones	Activity status: PER	Activity status where compliance is not achieved: RDIS
	Where:	

	<ol style="list-style-type: none"> the works are limited to soft engineering natural hazard mitigation <u>and do not include earth engineered bunds</u>; and the works are not located within a site and area of significance to Māori (refer also to Rule SASM-R5). 	Matters of discretion are restricted to: <ul style="list-style-type: none"> NH-MD2 - Natural hazard mitigation works
Ashley River / Rakahuri Saltwater Creek Estuary ONF Waimakariri River ONF Ashley River / Rakahuri SAL	Activity status: RDIS Matters of discretion are restricted to: <ul style="list-style-type: none"> NH-MD2 - Natural hazard mitigation works 	Activity status where compliance is not achieved: N/A
NH-R11	New and upgrading of above and below ground existing infrastructure that is not critical infrastructure <i>This rule shall not apply to customer connections.</i>	
Ashley Fault Avoidance Overlay	Activity status: RDIS Matters of discretion are restricted to: <ul style="list-style-type: none"> NH-MD3 - Natural hazards and infrastructure 	Activity status where compliance is not achieved: N/A
NH-R12	Natural hazard sensitive activities	
Ashley Fault Avoidance Overlay	Activity status: DIS	Activity status where compliance is not achieved: N/A
NH-R13	Upgrading of existing or construction of new non-community scale natural hazard mitigation works for flood mitigation	
	<i>The rule does not apply to the planting of vegetation as part of natural hazard mitigation works.</i>	
Urban Flood Assessment Overlay Area Kaiapoi Fixed Minimum Finished Floor Level Overlay Non-Urban Flood	Activity status: DIS	Activity status where compliance is not achieved: N/A

Assessment Overlay Area		
NH-R14	New and upgrading of above and below ground critical infrastructure	
Ashley Fault Avoidance Overlay	<p>Activity status: DIS <u>RDIS</u></p> <p>Where:</p> <ol style="list-style-type: none"> 1. the critical infrastructure involves any of the following: <ol style="list-style-type: none"> a. electricity substations, networks, and transmission and distribution installations, including the National Grid and the electricity distribution network; b. supply and treatment of water for public supply; c. stormwater and sewage treatment and disposal systems; d. radiocommunication and telecommunication installations and networks; e. strategic road and rail networks; f. petroleum storage and supply facilities; <p><u>Matters of discretion are restricted to:</u></p> <p><u>NH-MD3 – Natural hazards and infrastructure</u></p>	<p>Activity status where compliance is not achieved: NC</p>

Coastal Hazards

NH-R15	Natural hazard sensitive activities within the urban environment	
Coastal Flood Assessment Overlay	<p>Activity status: PER</p> <p>Where:</p> <ol style="list-style-type: none"> 1. the building is erected to the level specified in an existing subdivision consent notice decision or on an approved subdivision consent plan that was approved after 1 January 2021, and is less than five years old; or 2. the building: <ol style="list-style-type: none"> a. does not exceed the permitted building coverage for the zone; and b. has a finished floor level equal to or higher than the minimum finished floor level as stated in a Flood Assessment Certificate issued in accordance with NH-S1. 	<p>Activity status where compliance is not achieved: RDIS</p> <p>Matters of discretion are restricted to:</p> <ul style="list-style-type: none"> • NH-MD4 - Natural hazards coastal matters
	<p>Advisory Note</p> <ul style="list-style-type: none"> • Further information on hazards including technical reports and hazard maps identifying areas potentially subject to freshwater flooding, sea water inundation flooding and areas that are potentially high hazard 	

	<p>flooding areas can be found on the Waimakariri District Natural Hazards Interactive GIS Viewer. This further information does not form part of the District Plan.</p>	
NH-R16	Natural hazard sensitive activities outside the urban environment	
Coastal Flood Assessment Overlay	<p>Activity status: PER</p> <p>Where:</p> <ol style="list-style-type: none"> the building is erected to the level specified in an existing subdivision consent notice <u>decision</u> or on an approved subdivision consent plan that was approved after 1 January 2021, and is less than five years old; or the building is identified as being subject to 0.29m <u>0.3m</u> or less of coastal flooding as stated in a Coastal Flood Assessment Certificate and has finished floor level equal to or higher than the minimum finished floor level as stated in a Coastal Flood Assessment Certificate issued in accordance with NH-S2. 	<p>Activity status where compliance is not achieved: RDIS (see NH-R16 (3))</p>
Coastal Flood Assessment Overlay	<p>Activity status: RDIS</p> <p>Where:</p> <ol style="list-style-type: none"> the building is identified as being subject to between 0.3m and 0.99m <u>more than 0.3m and less than 1m</u> of coastal flooding as stated in a Coastal Flood Assessment Certificate and is to be erected on raised land or utilises a combination of raised land and a raised floor level equal to or higher than the minimum requirements stated in a Coastal Flood Assessment Certificate issued in accordance with NH-S2. <p>Matters of discretion are restricted to:</p> <ul style="list-style-type: none"> NH-MD4 - Natural hazards coastal matters 	<p>Activity status where compliance is not achieved: NC</p>
	<p>Advisory Note</p> <ul style="list-style-type: none"> Further information on hazards including technical reports and hazard maps identifying areas potentially subject to fresh water flooding, sea water inundation flooding and areas that are potentially high hazard flooding areas can be found on the Waimakariri District Natural Hazards Interactive GIS Viewer. This further information does not form part of the District Plan. 	

NH-R17	Above ground critical infrastructure	
Coastal Flood Assessment Overlay	<p>Activity status: PER</p> <p>Where:</p> <ol style="list-style-type: none"> 1. <u>The infrastructure is a road and does not exacerbate flooding on any other property by displacing or diverting floodwater on surrounding land in a 0.5% AEP event the profile, contour or height of the land is not permanently raised by more than 0.25m when compared to natural ground level;</u> 2. <u>The activity does not exacerbate flooding on any other property by displacing or diverting floodwater on surrounding land in a 0.5% AEP event; and</u> <ol style="list-style-type: none"> a. new infrastructure or an extension to existing <u>upgraded</u> infrastructure has a footprint of less than <u>103m² per structure</u>; and b. any new building that is identified as being subject to 0.29m <u>0.3m</u> or less of coastal flooding as stated in a Coastal Flood Assessment Certificate and has finished floor level equal to or higher than the minimum finished floor level as stated in a Coastal Flood Assessment Certificate issued in accordance with NH-S2; or c. if not a building, new infrastructure, excluding any support base, towers or poles, is located above ground level at an elevation higher than the minimum floor level as stated in a Coastal Flood Assessment Certificate issued in accordance with NH-S2. 	<p>Activity status where compliance is not achieved: for NH-R17 (1), NH-R17 (1)(a) and NH-R17 (1)(e) <u>NH-R17 (2), NH-R17 (2)(a) and NH-R17 (2)(c)</u>: RDIS</p> <p>Matters of discretion are restricted to:</p> <ul style="list-style-type: none"> • NH-MD3 - Natural hazards and infrastructure <p>Activity status where compliance is not achieved for NH-R17 (1)(b) <u>NH-R17 (2)(b)</u>: RDIS (see NH-R17 (2)) <u>NH-R17 (2)</u>)</p>
Coastal Flood Assessment Overlay	<p>Activity status: RDIS</p> <p>Where:</p> <ol style="list-style-type: none"> 3. any building that is identified as being subject to between 0.3m and 0.99m <u>more than 0.3m and less</u> of coastal flooding, as stated in a Coastal Flood Assessment Certificate, is erected on raised land or utilises a combination of raised land and a raised floor level equal to or higher than the minimum requirements stated in a Coastal Flood 	<p>Activity status where compliance is not achieved: NC</p>

	<p>Assessment Certificate issued in accordance with NH-S2.</p> <p>Matters of discretion are restricted to:</p> <ul style="list-style-type: none"> NH-MD4 - Natural hazards coastal matters 	
NH-R18	Below ground infrastructure and critical infrastructure	
Coastal Flood Assessment Overlay	<p>Activity status: PER</p> <p>Where:</p> <ol style="list-style-type: none"> the profile, contour or height of the land is not permanently raised by more than 0.25m when compared to natural ground level <u>the activity does not exacerbate flooding on any other property by displacing or diverting floodwater on surrounding land in 0.5% AEP event.</u> 	<p>Activity status where compliance is not achieved: RDIS</p> <p>Matters of discretion are restricted to:</p> <ul style="list-style-type: none"> NH-MD4 - Natural hazards coastal matters
NH-R19	Construction of new community scale natural hazard mitigation works involving hard engineering natural hazard mitigation	
	<i>The rule does not apply to the planting of vegetation as part of natural hazard mitigation works.</i>	
Coastal Flood Assessment Overlay	Activity status: DIS	Activity status where compliance is not achieved: N/A
NH-R20	Upgrading of existing or construction of new non-community scale natural hazard mitigation works for coastal flood hazard mitigation	
	<i>The rule does not apply to the planting of vegetation as part of natural hazard mitigation works.</i>	
Coastal Flood Assessment Overlay	Activity Status: NC	Activity status where compliance is not achieved: N/A

Natural Hazard Standards

NH-S1 Flood Assessment Certificate		
<ol style="list-style-type: none"> The District Council will issue a Flood Assessment Certificate (which will be valid for three years from the date of issue) that specifies: <ol style="list-style-type: none"> whether the activity is located on a site that is within a high flood hazard area; and whether the activity is located within an overland flow path; and 	<p>Activity status where compliance is not achieved: N/A</p>	

- c. where the activity is located on land that is within the Urban Flood Assessment ~~Overlay Area~~, the minimum finished floor level in accordance with (e); or
- d. where the activity is located on land that is within the Non-Urban Flood Assessment ~~Overlay Area~~ and is located on land that is outside of a high flood hazard area, the minimum finished floor level in accordance with (e); and
- e. the minimum finished floor level shall be calculated as the highest of the following:
 - i. flooding predicted to occur in a 0.5% AEP (1 in 200-year) Localised Rainfall Event plus up to 500mm freeboard; or
 - ii. flooding predicted to occur in a 0.5% AEP (1 in 200-year) Ashley River/Rakahuri Breakout Event concurrent with a 5% AEP (1 in 20-year) Localised Rainfall Event plus up to 500mm freeboard; or
 - iii. flooding predicted to occur in a ~~10.5%~~ AEP (1 in ~~1200~~-year) Storm Surge Event concurrent with a 5% AEP (1 in 20-year) River Flow Event with sea level rise based on an RCP8.5 climate change scenario, plus up to 500mm freeboard.

2. Freeboard will be applied as follows:

- c. Low Hazard – 400mm Freeboard
- d. Medium to high hazard – 500mm freeboard.

Advisory Notes

- An application form and guidance on how to obtain a Flood Assessment Certificate are available on the District Council's website.
- Certificates are valid for three years from the date of issue. If a land use consent is required, the five year period provided under the RMA to give effect to the resource consent overrides the three year Certificate lifespan.
- Under NH-S1 the District Council will not provide a required minimum floor level for high flood hazard areas within the Non-Urban ~~Environment~~ Flood Assessment Area. A resource consent will be required in this situation.
- Further information on hazards including technical reports and hazard maps identifying areas potentially subject to freshwater flooding, sea water inundation flooding and areas that are potentially a high hazard area can be found at the Waimakariri District Natural Hazards Interactive [GIS Viewer](#). This further information does not form part of the District Plan.
- The AEP flood event risk level, minimum floor levels and overland flow path locations are to be determined by reference to:
 - The most up to date models, maps and data held by the District Council and the Regional Council; and
 - Any information held by, or provided to, the District Council or the Regional Council that relates to flood risk for the specific land.

<p>1. The District Council will issue a Coastal Flood Assessment Certificate (which will be valid for three years from the date of issue) for a site within the Coastal Flood Assessment Overlay that specifies:</p> <ol style="list-style-type: none"> a. whether the activity is located on a site that is likely to be affected by sea water storm surge flooding; and b. whether the activity is located on a site that is within a high coastal flood high coastal flood hazard area; and c. where the activity is located on a site that is within the Non-Urban Flood Assessment Overlay Areas and is outside of a high coastal flood hazard area and (a) is met, the minimum land level in accordance with (d), or the minimum land and finished floor level combination in accordance with (e); d. the minimum land level shall equal: <ol style="list-style-type: none"> i. the flooding level predicted to occur in a 1% AEP (1 in 100-year) Storm Surge Event concurrent with a 5% AEP (1 in 20-year) River Flow Event with sea level rise of 1m based on an RCP8.5 climate change scenario; e. the minimum land and floor level combination shall equal: <ol style="list-style-type: none"> i. land filled to be within 300mm of the required land level under (d); and ii. a floor level that meets the minimum level specified in NH-S1. 	<p>Activity status where compliance is not achieved: N/A</p>
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Advisory Notes

- An application form and guidance on how to obtain a Flood Assessment Certificate are available on the District Council's website.
- Certificates are valid for three years from the date of issue. If a land use consent is required, the five year period provided under the RMA to give effect to the resource consent overrides the three year Certificate lifespan.
- Under NH-S2 the District Council will not provide a required minimum floor/land level for high ~~coastal flood~~ coastal flood hazard areas within the Non-Urban Flood Assessment Area. A resource consent will be required in this situation.
- Further information on hazards including technical reports and hazard maps identifying areas potentially subject to freshwater flooding, sea water inundation flooding and areas that are potentially high hazard ~~flood~~ flooding areas can be found on the Waimakariri District Natural Hazards Interactive [GIS](#) Viewer. This further information does not form part of the District Plan.
- The AEP flood event risk level, minimum floor levels and overland flow path locations are to be determined by reference to:
 - The most up to date models, maps and data held by the District Council and the Regional Council; and
 - Any information held by, or provided to, the District Council or Regional Council that relates to flood risk for the specific land.
- Freeboard will be applied as follows:
 - Low Hazard – 400mm freeboard
 - Medium to High Hazard – 500mm freeboard

Matters of Discretion

NH-MD1	Natural hazards general matters
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1. The extent to which the ~~The setting of~~ minimum floor levels are not achieved by the proposal and the effect of the lower levels, and effects of minimum land levels and the predicted sea water and other inundation that will occur on the site.
2. ~~The frequency at which any proposed building or addition is predicted to be damaged and the extent of damage likely to occur in such an event, including taking into account the building material and design proposed; the anticipated life of the building, whether the building is relocatable, and for redevelopments, the extent to which overall risk will change as a result of the proposal.~~
2. The frequency at which any proposed building or addition is predicted to be damaged and the extent of damage likely to occur in such an event, including taking into account:
 - a. The building material and design proposed;
 - b. The anticipated life of the building;
 - c. The proposed use of the building, including whether it is retail, commercial or industrial activity or has a low staff occupancy rate, that would lessen the adverse effects of it being damaged in a natural hazard event;
 - d. Whether the building is relocatable; and
 - e. For redevelopments, the extent to which overall risk will change as a result of the proposal.
3. The extent to which site access will be compromised in a natural hazard event and any alternative access provided.
4. The extent to which the proposal causes flood water displacement or flow path disruption onto other sites.
5. The extent to which any flood mitigation measures are proposed, their effectiveness and environmental effects, and any benefits to the wider area associated with flood management.
6. The extent to which the proposal relies on Council infrastructure and the risks to that infrastructure from natural hazards, including taking into account maintenance and repair costs that might fall on the wider community.
7. The extent to which there are any ~~positive~~-negative effects from a ~~reduction~~ an increase in floor levels in relation to neighbouring buildings or the streetscape.
8. In relation to wildfire and ice, the degree of risk posed to life and property due to the non-compliance.
9. In relation to tsunami risk, the nature of the proposed activity and the ease of evacuation.

NH-MD2

Natural hazard mitigation works

1. The extent to which the natural hazard risk cannot be avoided.
2. Any adverse effects of those works on the natural and built environment and on the cultural and spiritual values of Ngāi Tūāhuriri, including any matters specified in CE-MD1, ECO-

	<p>MD1, NATC-MD3, NATC-MD4, NATC-MD5, NATC-MD6 and CE-MD1, SASM-MD1, SASM-MD2 and SASM-MD3.</p> <ol style="list-style-type: none"> 3. Any adverse effects on the values of any identified ONL, ONF or SAL including any matters specified in NFL-MD1. 4. The extent to which the mitigation works transfer, or create, unacceptable hazard risk to other people, property, infrastructure, or the natural environment.
NH-MD3	<p>Natural hazards and infrastructure</p> <ol style="list-style-type: none"> 1. Any increase in the risk to life or property from natural hazard events. 2. Any negative e Effects on the ability of people and communities to recover from a natural hazard event. 3. The extent to which the infrastructure will suffer damage in a hazard event and whether the infrastructure is designed to maintain reasonable and safe operation during and after a natural hazard event. 4. The time taken to reinstate critical infrastructure following a natural hazard event. 5. The extent to which the infrastructure exacerbates the natural hazard risk or transfers the risk to another site. 6. The ability for flood water conveyance to be maintained. 7. The extent to which there is a functional need and operational need for that location and there are no practical alternatives. 8. The extent to which any mitigation measures are proposed, their effectiveness and environmental effects, and any benefits to the wider area associated with hazard management. 9. The positive benefits derived from the installation of the infrastructure. 10. Any effects on cultural values.
NH-MD4	<p>Natural hazards coastal matters</p> <ol style="list-style-type: none"> 1. The frequency at which any proposed building or addition is predicted to be damaged and the extent of damage likely to occur in such an event, taking into account: <ol style="list-style-type: none"> a. proposed land and floor levels; b. the building material and design proposed; c. the certainty of the modelling; and d. the time frame over which sea level rise inundation is predicted to occur. 2. The extent to which the building is readily relocatable and when inundation is predicted to occur as a result of sea level rise, including the use of ‘trigger’ decision-points that take into account actual sea level rise and how such triggers will provide advance warning of the need to relocate the building, and proposals to manage residual risk. 3. The extent to which site access will be compromised in a coastal hazards event and any alternative access provided. 4. The extent to which any coastal flooding mitigation measures are proposed, their effectiveness and environmental effects, including

	<p>displacement onto surrounding sites and disruption of flow paths and any benefits to the wider area associated with flood management.</p> <p>5. The extent to which the proposal relies on Council infrastructure and the risks to that infrastructure from coastal hazards, including taking into account maintenance and repair costs that might fall on the wider community.</p> <p>6. Whether there are any positive <u>negative</u> effects from a reduction an increase in floor or land levels in relation to accessibility, the height of the existing building, neighbouring buildings or the streetscape or the financial viability of the development.</p> <p>7. Whether the site is located within an existing urban area and raised land or floor levels would create an unreasonable burden on the ability to continue to use an existing building and support the local community.</p>
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Overlay Amendments

Liquefaction Hazard Overlay

Amend the Liquefaction Hazard Overlay so that it only captures the gold coloured 'liquefaction damage is possible' area (i.e. it excludes the green coloured 'liquefaction damage is unlikely' areas) and is limited to areas within the Waimakariri District.

Urban and Non-urban Flood Assessment ~~Overlays~~ Areas

~~Delete the Urban and Non-Urban Flood Assessment Overlay from the Planning Maps and R-~~replace the Urban and Non-Urban Flood Assessment Overlays with Urban and Non-Urban Flood Assessment Areas which are non-statutory GIS layers in the Waimakariri District Natural Hazards Interactive GIS Viewer. These layers will be based on what was agreed in the Joint Witness Statement included as Appendix D (this includes a GIS overlayer based on the 200-year return period (0.5% AEP) which can be updated in response to current modelling).

Kaiapoi Fixed Minimum Floor Level Overlay

Delete the Kaiapoi Fixed Minimum Floor Level Overlay and replace with the Urban Flood Assessment ~~Overlay Area~~.

Definitions

...

~~'High coastal flood hazard area'~~

means:

~~a. land likely to be subject to coastal erosion, including the cumulative effects of sea level rise, over the next 100 years; and~~

b. land subject to water depth of 1 metre or greater in a 1% AEP (1 in 100-year) storm surge event (excluding tsunami), concurrent with 5% AEP (1 in 20-year) river flow event with a median sea level rise projection over the next 100 years based on an RCP8.5 high emissions scenario.

'High flood hazard area'

means:

a. land where there is inundation by floodwater, and where the water depth (metres) x velocity (metres per second) is greater than or equal to 1, or where depths are greater than 1 metre, in a 0.2% Annual Exceedance Probability flood event.

High Hazard Area means:

a. land likely to be subject to coastal erosion; and

b. land where there is inundation by floodwater and where the water depth (metres) x velocity (metres per second) is greater than or equal to 1, or where depths are greater than 1 metre, in a 0.2% Annual Exceedance Probability flood event. When determining a. and b. above, the cumulative effects of climate change over the next 100 years (based on latest national guidance) and all sources of flooding (including fluvial, pluvial, and coastal) must be accounted for.

...

Urban Flood Assessment Area

Means the land susceptible to flooding in the following scenarios:

- Flooding predicted to occur in a 0.5% AEP (1 in 200-year) Localised Rainfall Event.
- Flooding predicted to occur in a 0.5% AEP (1 in 200-year) Ashley River/ Rakahuri Breakout Event concurrent with a 5% AEP (1 in 20-year) Localised Rainfall Event.
- Flooding predicted to occur in a 0.5% AEP (1 in 200-year) Storm Surge Event concurrent with a 5% AEP (1 in 20-year) River Flow event with sea level rise based on an RCP8.5 climate change scenario.

Note: The Council holds publicly available information showing the modelled extent of flooding affecting specific properties in its GIS viewer. The maps are non-statutory and can be reviewed to take account of any property-specific information.

Non-Urban Flood Assessment Area

Means the land susceptible to flooding in the following scenarios:

- Flooding predicted to occur in a 0.5% AEP (1 in 200-year) Localised Rainfall Event.
- Flooding predicted to occur in a 0.5% AEP (1 in 200-year) Ashley River/ Rakahuri Breakout Event concurrent with a 5% AEP (1 in 20-year) Localised Rainfall Event.
- Flooding predicted to occur in a 0.5% AEP (1 in 200-year) Storm Surge Event concurrent with a 5% AEP (1 in 20-year) River Flow event with sea level rise based on an RCP8.5 climate change scenario.

Note: The *Council* holds publicly available information showing the modelled extent of flooding affecting specific properties in its GIS viewer. The maps are non-statutory and can be reviewed to take account of any property-specific information.

Appendix 3: Evidence of Karen Tracey Williams 19 November 2021 – Natural Hazards Chapter of Proposed Porirua District Plan

Under the Resource Management Act 1991

In the matter of Hearing of Submissions and Further Submissions on the Proposed
Porirua District Plan

Evidence of Karen Tracy Williams on behalf of Kāinga Ora – Homes and Communities

19 November 2021

Hearing Stream 3 – Natural Hazards – Wednesday 8 December, 1.30pm

MC.

Solicitors:

Nick Whittington

PO Box 90750, Victoria Street West, Auckland 1142

DX CP24063

T: +64 9 336 7500

nick.whittington@mc.co.nz

Evidence of Karen Tracy Williams on behalf of Kāinga Ora – Homes and Communities

1 Introduction

- 1.1 My name is Karen Tracy Williams, and I am Principal Planner at The Property Group Limited, based in Wellington.
- 1.2 I am providing planning evidence on behalf of Kāinga Ora – Homes and Communities (“**Kāinga Ora**”) in respect of submissions made on the Porirua Proposed District Plan (“**PDP**” or “**the Plan**”). Specifically, my evidence is in relation to the topic of Natural Hazards.
- 1.3 I was involved with the preparation of primary and further submissions by Kāinga Ora in relation to the PDP. I am familiar with Kāinga Ora’s corporate intent in respect of the provision of housing within Porirua. I am also familiar with the national, regional and district planning documents relevant to the PDP.
- 1.4 In preparing this evidence I have read the Section 42A reports prepared by Council staff and structured my evidence accordingly.
- 1.5 I confirm that I have read the Expert Witness Code of Conduct set out in the Environment Court’s Practice Note 2014. I have complied with the Code of Conduct in preparing this evidence and agree to comply with it while giving evidence. Except where I state that I am relying on the evidence of another person, this written evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this evidence.

2 Expertise

- 2.1 I have a Master of Resource and Environmental Planning, (First Class Honours) from Massey University, and a Bachelor of Arts from the University of Otago. I have 15 years’ experience in working with resource management and planning

matters under the Resource Management Act 1991. I am an Intermediate member of the New Zealand Planning Institute.

2.2 I have worked for local government and in private consultancy. My experience includes the preparation and processing of applications for resource consent and the preparation of, and submissions to, District Plans. I have also prepared evidence for, and appeared in, the Environment Court.

2.3 For completeness I note:

(a) Between April 2017 - May 2019 I was a consultant to the Council's District Plan review team. I was primarily involved in the initial policy development for the commercial chapters, and the Hongoeka Special Purpose Zone.

(b) I was the Acting Manager of Resource Consents and Compliance at Porirua City Council between February 2019 - June 2019.

(c) I continue to process occasional resource consents on behalf of the resource consent team.

(d) Between September 2019 and December 2020, I was engaged as a consultant to provide planning services specific to the Eastern Porirua Regeneration Programme (a project-based team originally formed within HLC, and then Kāinga Ora – Homes and Communities).

3 Executive Summary

3.1 Kāinga Ora made 31 submission points in relation to the Natural Hazards section of the PDP. Kāinga Ora's submission supports the general risk-based approach the PDP takes to managing natural hazards.

3.2 However, Kāinga Ora opposes the inclusion of flood hazard mapping as part of the PDP and is instead seeking that flood hazard mapping be included on a GIS viewer that sits outside the Plan. Flood hazard information is dynamic and therefore it cannot be accurately mapped as an overlay in the planning maps. It is my view that flood hazard mapping that sits outside the Plan is a useful and legitimate planning tool for plan users as to whether a site is subject to flood hazards.

Therefore, I agree with Kāinga Ora that it is appropriate to include flood hazard information in a non-statutory GIS Viewer sitting outside the Plan.

- 3.3 This evidence also discusses other related submission points and consequential changes in relation to this matter.
- 3.4 In summary, I generally support the proposed Natural Hazard provisions, and propose a number of amendments which I consider will assist to provide an appropriate framework within the Plan which achieves a balance between enabling activities and development to occur in such a way that any potential risks and/or adverse effects associated with flood hazards can be adequately identified and managed.
- 3.5 In my opinion, the proposed changes sought in Kāinga Ora's submission and discussed within my evidence, will provide greater flexibility to the identification of flooding hazards, while maintaining an appropriate risk-based planning response to natural hazards.

4 Scope of Evidence

- 4.1 Hearing Stream 3 addresses submission points relating to the following broad topics: Strategic Directions - Resilience, Efficiency, and Energy; Strategic Directions - Historic and Cultural Heritage; Hazards and Risks; and Historic and Cultural Values. The corresponding s42A reports split these matters into topic-based reports that reflect the structure of the PDP, as set out below:
- (a) Strategic Directions related to Resilience, Efficiency & Energy and Historic and Cultural Heritage.
 - (b) Contaminated land.
 - (c) Hazardous substances.
 - (d) Natural Hazards.
 - (e) Coastal Environment.
 - (f) Historic Heritage including extent of land the subject of overlay.
 - (g) Sites and Areas of Significance to Māori.

(h) Notable Trees including the extent of land the subject of overlay.

4.2 This evidence addresses Kāinga Ora’s submission points¹ on the **Natural Hazards** chapter within the PDP, as they relate to the recommendations of the s42A report on that topic. I acknowledge the Council recommendations that have been made in the other s42A reports for the wider balance of topics noted in 4.1 above, but present no evidence in relation to these topics and recommendations.

4.3 In preparing my evidence, I have reviewed:

- (a) The notified provisions of the Natural Hazards Chapter of the PDP;
- (b) The Section 32 report for Natural Hazards prepared and notified by PCC;
- (c) The Section 42A Natural Hazards report by PCC;
- (d) Flood Hazard Modelling evidence of Ms Nitsche; and
- (e) The Wellington Regional Policy Statement (“**RPS**”)

4.4 Kāinga Ora made a number of submission and further submission points, on the Natural Hazards chapter. Kāinga Ora’s submission acknowledges and supports the risk-based approach to natural hazards. It also seeks an approach to flood hazard mapping to utilise non-statutory mapping that sits outside the PDP for flood hazards to guide plan users. This latter topic forms the basis of much of my evidence.

4.5 To avoid repetition, I have consolidated my evidence into the broad themes and submission points as follows:

- (a) Flood hazards as a non-statutory layer - submission points **81.402, 81.404** and **81.928** oppose the inclusion of flood hazard mapping as part of the PDP instead seeking that flood hazard mapping be included on a GIS viewer that sits outside the Plan.
- (b) Definitions relevant to natural hazards – submission points **81.112, 81.113, 81.73**. Additional definitions are also suggested as a

¹ 81.73, 81.96, 81.112, 81.113, 81.129, 81.142, 81.156, 81.402, 81.403, 81.404, 81.405, 81.406, 81.407, 81.408, 81.409, 81.410, 81.411, 81.412, 81.413, 81.414, 81.415, 81.416, 81.417, 81.418, 81.419, 81.420, 81.421, 81.422, 81.423, 81.884, and 81.928.

consequential change arising from submissions **81.402, 81.404, and 81.928.**

- (c) Consequential edits and amendments to assist with Plan clarity and reflect the removal of the flooding hazard mapping from the PDP and into a non-statutory GIS viewer. These consequential changes are considered to be covered broadly by various Kāinga Ora submission points, and more specially in relation to the following:
 - (i) Chapter introduction (submission **81.403**)
 - (ii) Objectives and policies (submissions **81.405 – 81.415**)
 - (iii) Rules (submissions **81.416 - 81.423**) and
 - (iv) APP10 (submission **81.884**).
- (d) Other amendments sought to provisions not otherwise addressed above (submissions **81.407, 81.408, 81.409, 81.409**).

5 Submission

- 5.1 Kāinga Ora’s submission seeks a planning framework that provides for an appropriate degree of flexibility within an otherwise well-structured risk-based natural hazards framework. This will help to facilitate the reconfiguration of existing housing stock within Porirua and enable Kāinga Ora to deliver public housing in an efficient and effective manner, so as to better contribute to the social and economic wellbeing of the Porirua community, including the health and safety of Kāinga Ora’s tenants.

Mapping of Flood Hazards

- 5.2 The Kāinga Ora submission opposed the inclusion of flood hazard mapping as an overlay within the PDP and sought that flood hazard mapping be included on a GIS viewer that sits outside the Plan. This is reflected throughout the submission of Kāinga Ora on the Natural Hazard provisions, and specifically within submission points **81.402, 81.404, and 81.928.**
- 5.3 In the s42A report, the reporting officer rejects the request to remove the flood hazards from the Natural Hazards Overlay within the Plan and instead provide this

information in a GIS viewer sitting outside of the Plan. The reporting officer is not supportive of flood information sitting outside the Plan because changes to that information would not be subject to public participation, or any formal testing as would otherwise happen with a Schedule 1 process.

- 5.4 I disagree with the recommendation within the s42A report and I support the submission of Kāinga Ora to include flood hazard mapping in a GIS viewer that sits outside the Plan. In my view separate maps of this nature are a useful tool to set out information the Council holds on different matters relevant to provisions in the PDP where there is insufficient certainty and consistency over time to provide this information in a mapped District Plan overlay. The use of information outside the PDP serves purely as information or guidance in the context of certain rules in a plan.

Dynamic Nature of Flood Hazard Information

- 5.5 Having maps sitting outside of the Plan for information purposes is appropriate in the context of flood hazard information as this information is dynamic and subject to change over time. Changes may be due to improved understanding of the natural hazard, to interventions that change the location of natural hazard, or to changing real world conditions including climate change. Therefore, it is difficult to map flood hazards within the planning maps in a way where the information will stay accurate and relevant over time.
- 5.6 I acknowledge the evidence of Ms Nitsche for the Council is that the flood hazard areas have been identified through comprehensive modelling, data collection, and community engagement. While I acknowledge that the modelling is based on best information and expertise, it can also be subject to inaccuracies or errors that either overestimate or underestimate the actual flood hazard risk on a particular site or location. Ground levels are also prone to change, for example through land development site works. Other physical features, such as culverts or other water conveying vectors can be inaccurately plotted or upgraded, diminishing the accuracy of the hazard profiling. In this regard, I note that the evidence of Ms Nitsche accepts that in some cases, the flood modelling information has not reflected accurate information and her evidence accordingly suggests some

amendments to the spatial extent of identified flooding areas in response to matters raised by submitters.

- 5.7 I also draw on the evidence of Mr Liggett, which outlines the significant stormwater infrastructure upgrade works that are proposed in eastern Porirua as part of the wider Eastern Porirua Regeneration Programme. The evidence of Mr Liggett is that these works will considerably alter the existing flood hazard profile in this area, providing a more resilient and safer environment to existing residents and enabling further development.
- 5.8 In further demonstrating that the available information about flood hazard areas is uncertain, incomplete, and subject to change over the life of the plan, I note that parts of the city, at the time of the PDP being notified, were not yet modelled. In this regard, Section 8.2.5 of the Council's Section 32 Evaluation Report Part 1 – Overview to s32 Evaluation 1 notes that *“Due to budget and modelling capacity constraints, various catchments were prioritised for modelling based on growth pressures, known flood risk, and presence of existing flood information held by Council. There are catchments where modelling is yet to be completed by Wellington Water including: Aotea, Papakowhai, Paremata and Whitby. These flood maps will need to be incorporated into the PDP at a later date, possibly by variation”*.
- 5.9 In my opinion, the above matters demonstrate the often incomplete and dynamic nature of flooding information, which despite all efforts, can contain inaccuracies and rapidly be out-of-date. In my view the approach of applying overlays within district plans to map natural hazards is best applied for matters that are well defined and less subject to constant change, as may be the case for seismic and coastal hazards for example.
- 5.10 I agree with the evidence of Mr Liggett that requiring changes to flood hazard information to reflect changes in the environment, such as improvement works proposed at scale within eastern Porirua, through a Schedule 1 process is not an efficient planning process. The mismatch between the maps and true position will likely add cost to any consenting process until a Schedule 1 process is undertaken to update the maps.
- 5.11 As noted in the submission by Kāinga Ora, and the evidence of Mr Liggett, the Auckland Unitary Plan (**AUP**) provides an example of a plan which adopts a set of

flood hazard overlay maps which sit outside the plan and operate as interactive maps on the Council's 'Geo Maps' website – a separate mapping viewer to the statutory maps. This approach is different to that of the traditional means of displaying hazard overlays on district plan maps and reflects that these maps do not have regulatory effect.

- 5.12 A GIS viewer outside the Plan can assist plan users in determining whether a site may be subject to a particular flooding hazard. The fact that this GIS viewer can be updated as new information becomes available outside of a formal plan change process will make it a more reliable starting point for further assessments over time, than a spatial layer within the Plan that is unable to be easily updated. Further, I have suggested that new definitions be incorporated into the Plan, to reflect the rules in relation to Flood Hazard – Stream Corridor, Flood Hazard – Overland Flow, and Flood Hazard – Inundation². This will ensure that proposals upon land that is subject to these hazards will be considered against the relevant rules. The flood maps will provide the basis for this determination but will not be the exclusive determining factor. This is similar to how flood hazards are managed in the AUP and endorsed by Council planners in Tauranga City's Plan Change 27 (Flooding from Intense Rainfall), which is currently at the hearing stage.
- 5.13 In my opinion, this alternative approach provides greater flexibility, while appropriately ensuring that natural hazard risks are adequately understood and managed.

Public Participation

- 5.14 The reporting officer raises concerns regarding a lack of public participation in regard to updates to maps outside of the Plan. In my opinion, removal of the overlay from the Plan *could* result in less public engagement but it does not follow that there is no public engagement.
- 5.15 In my opinion, public engagement can and should remain an integral method in enhancing the accuracy of the flood hazard profile and spatial extent, despite this engagement sitting outside the formal Schedule 1 process. Indeed, the evidence of Ms Nitsche discusses the public engagement that is undertaken as part of the flood hazard modelling process generally. This is also outlined as a requisite step

² The latter reflecting the change in terminology from "ponding" to "inundation", as recommended by both Ms Nitsche and the Council's s42A reporting planner.

in the Flood Hazard Modelling Standard (Cardno NZ): Greater Wellington Regional Council (2021).

- 5.16 Ultimately, relocating the flooding maps outside to of the Plan would allow for a more agile response to updates and reflecting new information, but would not obviate the Council from engaging with owners of affected properties.

Statutory Framework

- 5.17 The relevant statutory framework for the Natural Hazards chapter has been addressed in the Natural Hazards s32 Report. This section of my evidence focuses only on whether the relief sought in the submission of Kāinga Ora is adequately aligned with the direction set down in the Wellington Regional Policy Statement (“RPS”). The RPS advocates a precautionary and risk-based approach to the management of natural hazard risk. It seeks to avoid inappropriate subdivision and development in areas of high risk from natural hazards and to promote the resilience of communities to the impact of natural hazards and climate changes.
- 5.18 In the context of Kāinga Ora submissions seeking that the flooding natural hazard overlays be removed from the Plan I consider Objective 21 and Policies 29 and 51 of the RPS to be of the most relevance to that issue.
- 5.19 Objective 21 requires that *Communities are more resilient to natural hazards, including the impacts of climate change, and people are better prepared for the consequences of natural hazard events*. Policy 29 seeks to *avoid inappropriate subdivision and development in areas at high risk from natural hazards*. Policy 29 requires District Plans to identify areas at high risk from natural hazards and include policies and rules to avoid inappropriate subdivision and development in those areas. Policy 29 does not require that high hazard areas are mapped in District Plans but rather that the provisions in District Plans within the Wellington region will identify high hazard areas. APP10-Table 3 and Table 4 identify the high-risk hazard areas. In the context of natural hazards in the PDP, this relates only to Stream Corridors and the Ohariu Fault Rupture Zone. It is my understanding that stream corridors consist of a buffer of five metres either side of the centre of the stream, where flood water exceeds 1m in depth and the velocity is faster than 2m per second.
- 5.20 In my opinion, the submission of Kāinga Ora to remove flood hazard overlays from the Plan does not conflict with the directive of Objective 21 and Policy 29 of the

RPS. For completeness, it does not seek to remove the Ohariu Fault Rupture Zone from the Plan overlay. The PDP accords with the aforementioned RPS provisions through the identification of high-hazard areas within APP10-Table 3 and Table 4 and the Plan provisions (including those recommended for change in the s42A report) ensuring inappropriate development in these areas will be avoided.

- 5.21 Notwithstanding my conclusions reached above, I consider that a further mechanism that could provide assurance that Plan continues to appropriately recognise the direction set down by Objective 21 and Policy 29 of the RPS to identify high risk natural hazards would be through the creation of a new definition for “High Hazard Area”. This consequential amendment is discussed further in the section on definitions below.
- 5.22 For completeness, I note that Policy 51 of the RPS seeks, in summary, that the risks and consequences of natural hazards be minimised. In my opinion, the risk-based framework taken throughout the Natural Hazards chapter will do so.
- 5.23 Based on the above, it is my overall opinion that removing flood hazard overlays from the Plan would not undermine or conflict with any requirements set down by the RPS in terms of managing the risks of natural hazards.

Qualifying Matters

- 5.24 The s42A report surmises that the Resource Management (Enabling Housing Supply and Other Matters) Amendment Bill may require flood hazards to be included in the Plan as a spatial layer in order to be able to determine that the site is subject to a qualifying matter (thereby limiting the degree of intensification). It is anticipated, although not certain, that an assessment of a qualifying matter in the context of this Bill will be consistent in practice with the National Policy Statement on Urban Development 2020 (“**NPS-UD**”).
- 5.25 The degree and extent as to what is appropriate in the identification of qualifying matters in relation to natural hazards under the NPS-UD remains somewhat unclear. To avoid any doubt on this issue, I acknowledge that natural hazards will, in some form, be a relevant matter for consideration when determining whether a site is subject to qualifying matters. Certainly, natural hazards presenting a significant risk can be considered as a qualifying matter under Clause 3.3.2(1)(a) of Subpart 6 of the NPS-UD. This could arguably correlate to “High Hazard Areas” discussed in my evidence above. Further, Coastal Hazards can be considered as

qualifying matters under Clause 3.3.2(1)(b) in giving effect to the NZCPS. Otherwise, where a natural hazard is present, but not assessed to be significant, the consideration of whether it meets the threshold of a qualifying matter will be subject to site-specific assessments under Clause 3.3.2(1)(h). Locating flood hazard information outside of the Plan would not limit opportunity to undertake this assessment.

Definitions

5.26 Consequential to its submission that flood hazard mapping be a non-statutory GIS tool, Kāinga Ora also sought the deletion of the definition of “Natural Hazard Overlay” (81.113). The s42A report disagrees with this deletion, setting out the reasoning at section 3.10 of the report.

5.27 Rather than deleting the definition, I support modifying the position set out in Kāinga Ora’s submission and instead recommend a change to this definition. In my opinion, an appropriate change can be made to this definition that would achieve the intent of the submission by Kāinga Ora, while also retaining a definition for the reason(s) outlined in the s42A report. Such a change would alter the definition from “Natural Hazards Overlay” to “Natural Hazards Areas”, with related clarification of content within. The recommended revisions to the definition are set out in Appendix 1 of my evidence and included below.

<p>Natural Hazard Area Overlay</p>	<p>means the areas identified in Table 3 Natural Hazards and Areas Overlays in APP10 - Natural Hazard Risk Assessment and shown on the mapped Natural Hazard overlays in the District Plan and flood hazard maps held with Council. Council's planning maps</p>
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5.28 Further consequential changes are required throughout the Natural Hazard provisions, to recognise and give effect to the recommended change. These are discussed further in my evidence below.

5.29 I note that Kāinga Ora supports the recommended changes made in the s42A report to the definitions of “Potentially-Hazard-Sensitive Activities”, and “Less-Hazard-Sensitive Activities”. While these changes weren’t sought in the submissions by Kāinga Ora (81.96 and 81.129), in my opinion the changes and reasons set out in the s42A report are appropriate.

5.30 With regard to the definition of “Hazard Sensitive Activities”, the submission by Kāinga Ora (81.73) sought to remove reference to *multi-unit housing* within the definition, consistent with and consequential to its broader submissions on the

residential provisions. Appendix B to the s42A report, which outlines the recommended responses to submissions and further submissions on natural hazards, states that this submission point (81.73) is agreed with and that changes have been made to the definition. However, these have not been carried through to the recommended revisions set out at Appendix A of the s42A report. The s42A report is otherwise silent on this matter. I agree with the submission by Kāinga Ora that reference to *multi-unit housing* should be deleted from the definition of “Hazard Sensitive Activities”. In my opinion, this is redundant, noting that “residential units” are embedded within the definition, which is appropriate. I otherwise support the changes suggested in the s42A report in relation to the definition of “Hazard Sensitive Activities”.

5.31 Kāinga Ora also sought a change to the definition of “Natural Hazard Mitigation Activity” (81.112), which was rejected for the reasons set out at section 3.10 of the Council’s s42A report. In my opinion, the wording sought by Kāinga Ora in its submission is clearer and succinct, while maintaining the intent of the original definition. For this reason, I support the submission by Kāinga Ora to amend the wording as follows:

<p>Natural hazard mitigation activity</p>	<p>means hazard mitigation earthworks, hazard mitigation structures, repair and maintenance of hazard mitigation structures, features or earthworks and emergency natural hazard mitigation activities.</p> <p><u>means earthworks, structures, repair and maintenance, and emergency work to reduce or eliminate risks caused by natural hazards.</u></p>
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5.32 As discussed within para 5.21 above, it is my opinion that a further consequential change should be made to the PDP to recognise the submission points of Kāinga Ora while ensuring that the Plan comprehensively recognises the RPS direction at Policy 29 to identify high risk natural hazards in the Plan. In my opinion, this can be achieved through the creation of a new definition for “High Hazard Area”, as follows.

<p><u>High Hazard Area</u></p>	<p><u>Land within any of the following Natural Hazard Areas:</u></p> <ul style="list-style-type: none"> a. <u>Tsunami Hazard – 1:100 year inundation extent; or</u> b. <u>Coastal Hazard – Current Inundation; or</u> c. <u>Coastal Hazard – Current Erosion; or</u> d. <u>Stream corridor consisting of a buffer of five metres either side of the centre of the stream, where in a 1% AEP flood event (assuming 15% increase in rainfall under climate change) the water depth exceeds 1m and the water velocity is greater than 2m per second</u>
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5.33 While this definition is not specifically sought in the primary or further submissions of Kāinga Ora, I consider that this definition is an appropriate

consequential amendment giving effect to the wider relief sought by submissions 81.402, 81.404 and 81.928.

5.34 Further to this, it is recommended that additional definitions be included in the Plan to clearly articulate what constitutes flooding hazards of “Flood Hazard – Stream Corridor”, “Flood Hazard – Overland Flow”, and “Flooding Hazard – Inundation³”, as referenced in the Plan provisions and APP-10 – Natural Hazards Risk Assessment.

5.35 The suggested new definitions are as follows:

Flood Hazard - Stream Corridor	Stream corridor consisting of a buffer of five metres either side of the centre of the stream, where in a 1% AEP flood event (assuming 15% increase in rainfall under climate change) the water depth exceeds 1m and the water velocity is greater than 2m per second.
Flood Hazard - Overland Flow	Area of land that conveys stormwater when the pipe or stream network capacity is exceeded or blocked in a 1% AEP flood event (assuming 15% increase in rainfall under climate change).
Flood Hazard - Inundation	Area of ponding that is greater than 50mm in depth in 1% AEP flood event (assuming 15% increase in rainfall under climate change) and which has low velocity flows.

5.36 In my opinion, the inclusion of these definitions will help to ensure that the rules are not exclusively linked to the non-statutory flood mapping, which is a concern raised within the s42A report. These definitions are also considered to be appropriate consequential modifications to give effect to the wider relief sought by submissions 81.402, 81.404 and 81.928.

Natural Hazard Overlay vs Natural Hazard Areas

5.37 The submission of Kāinga Ora sought amendments to the majority of provisions within the Natural Hazards Chapter to remove reference to the Natural Hazards Overlay and make consequential changes. Based on the recommendations outlined above, I support modifying the submissions of Kāinga Ora that would result in the removal of “Natural Hazard Overlay” to “Natural Hazard Areas”. This reflects the change to the definition and is a further consequence of seeking the removal of flood hazard overlay from the Plan. These changes accordingly alter the references of the titles of the provisions, where there was original reference to a Natural Hazard Overlay. “Areas” has been used in place of “Overlay”, recognising that overlays are a specific spatial tool within e-plans, as directed by

³ Noting “Inundation” is recommended to replace “Ponding” in the s42A report.

the National Planning Standards. Using the term Natural Hazard Areas in place of Natural Hazard Overlay enables flexibility for the placement of flood hazard maps outside of the Plan.

- 5.38 The altered provisions (identified below) also require other minor consequential changes to the wording of the actual provisions, to reflect the recommended change in the overarching definition(s) and relief sought by Kāinga Ora to have non-statutory flood hazard maps outside of the Plan.
- 5.39 These changes, which are modified as consequential changes sought in submissions by Kāinga Ora, are recommended to be made to Introduction section of the Natural Hazards Chapter, NH-O1, NH-P1, NH-P2, NH-P3, NH-P4, NH-P5, NH-P6, NH-P7, NH-P9, NH-P10, NH-R1, NH-R2, NH-R3, NH-R4, NH-R5, NH-R6, NH-R7, NH-R8, and APP-10 – Natural Hazards Risk Assessment. It is noted that the majority of the submission points⁴ by Kāinga Ora seeking consequential changes have not been addressed in the s42A report. I support the modified changes recommended.
- 5.40 These changes are outlined in the recommended changes to the provisions set out in Appendix 1 of my evidence.

Other Amendments Sought to Provisions

- 5.41 This section clarifies my position on the submissions that were made by Kāinga Ora on the provisions that go beyond the consequential changes discussed above. As outlined below, in many cases these submission points have not been cited or addressed in the s42A report. Unless otherwise noted below, for the most-part, I agree with the position arrived at in the s42A report on these matters.

NH-P2 Hazard-Sensitive Activities and Potentially-Hazard-Sensitive Activities within the High Hazard Areas

- 5.42 Kāinga Ora’s submission (**81.407**) sought amendments to NH-P2 to remove the term “avoided” and replace this with “mitigated”. As outlined in the s42A report, a number of other submitters sought similar relief. The Council’s s42A Report has not addressed this submission point by Kāinga Ora; but I note that changes are recommended at section 3.7 of the s42A report in recognition of other

⁴ 81.402, 81.403, 81.404, 81.405, 81.406, 81.407, 81.408, 81.409, 81.410, 81.411, 81.412, 81.413, 81.414, 81.415, 81.416, 81.417, 81.418, 81.419, 81.420, 81.421, 81.422, 81.423, 81.884, and 81.928.

submissions on this matter. I agree with and support the amendments proposed by the Council, and their reasoning for those amendments, as set out in section 3.7.2 the s42A report.

NH-P3 Hazard-Sensitive Activities and Potentially-Hazard-Sensitive Activities within the Medium Hazard Areas

- 5.43 Kāinga Ora’s submission (81.408) sought amendments to NH-P3 to remove the term “avoided” and replace this with “mitigated”. The Council’s s42A Report has not proposed any amendments to NH-P3 in relation to the submission by Kāinga Ora; however, changes are recommended at section 3.7 of the s42A report in recognition of other submissions on this matter. I agree with the s42A report to alter the language to “minimised”.

NH-P4 Hazard-Sensitive Activities and Potentially-Hazard-Sensitive Activities within the Low Hazard Areas

- 5.44 Kāinga Ora’s submission (81.409) sought a change to NH-P4 to remove the term “avoided” and replace it with the term “mitigated”. The Council’s s42A Report has not addressed this submission point and has not recommended any amendments to this policy. I support the change sought by Kāinga Ora but suggest a modification to instead use the term “minimised”. This policy relates to low hazard areas, and in my opinion the use of the term “minimised” is more consistent with the direction provided by Policy 51 in the RPS. The change in terminology to “minimised” is also consistent with changes otherwise recommended by the s42A report with regard to NH-P2 and NH-P3.
- 5.45 In my opinion, the amendments recommended to NH-P4 are more appropriate in terms of achieving the objectives of the PDP than the notified provision.

NH-R6 Any Hazard-Sensitive Activity and Potentially-Hazard-Sensitive Activity and associated buildings in Low Hazard Areas in a Natural Hazard Overlay

- 5.46 Kāinga Ora’s submission (81.410) sought amendments to NH-R6 as follows:
- Amend NH-R6-1.a to “located above the 1:100 year flood level, where this level is the bottom of below the floor joists”;
 - Preclude limited notification as well as full notification; and
 - Discretionary activity status for proposals that are unable to comply with NH-R6-1.b.

5.47 I have reviewed the s42A report (section 3.13.3) and support the amendments proposed by the Council, and the stated reasoning. I acknowledge the position that the s42A reporting planner has come to with the non-notification clause and the rationale in maintaining the higher activity status for proposals unable to comply with NH-R6-1.b. I accept this reasoning and suggest no further amendments.

6 Conclusion

6.1 In conclusion, I am of the opinion that the amendments sought by Kāinga Ora (as discussed in this evidence) are appropriate.

6.2 Overall, I generally support the Natural Hazards chapter and consider the amendments I have recommended will provide greater flexibility to the identification of flooding hazards, while maintaining an appropriate risk-based planning response to natural hazards.

6.3 I consider that the amendments to the structure of the Natural Hazard provisions outlined within my evidence, will be efficient and effective in achieving the purpose of the RMA, the relevant objectives of the PDP and other relevant statutory documents.

Date: 19 November 2021



.....
Karen Tracy Williams

Appendix 1. Consolidated Set of Recommended Amendments

Recommend changes shown as follows:

- Notified PDP text in black text
- S42A Report amendments in red text
- Amendments proposed on behalf of Kāinga Ora in blue text

Definitions

Hard engineering measures

Engineering works that use structural materials such as concrete, steel, timber or rock armour to provide a hard, inflexible edge between the land-water interface along rivers, shorelines or lake edges. Typical structures include groynes, seawalls, revetments or bulkheads that are designed to prevent erosion of the land."

Hazard-Sensitive Activities

means activities that are sensitive to natural hazards, including:

- childcare services;
- community facilities; activity
- educational facilities; facility;
- emergency service facilities;
- healthcare activity;
- hospital;
- marae;
- multi-unit housing;
- places of worship; and
- residential units and minor residential units (including those associated with Papakāinga);
- retirement villages; and
- visitor accommodation.

Potentially-Hazard-Sensitive Activities

means activities that are potentially sensitive to natural hazards, including:

- buildings associated with primary production (excluding residential units, minor residential units, residential activities or buildings identified as Less-Hazard-Sensitive Activities);
- commercial activity;
- commercial service activity;
- community corrections activity;
- entertainment facilities; facility;
- food and beverage activity;
- industrial activity; activities
- large format retail activity;
- major sports facilities; facility;
- offices;
- retail activity; and activities
- retirement village; and
- rural industry.

It excludes Hazard-Sensitive Activities even if they are ancillary to Potentially-Hazard-Sensitive Activities.

Less-Hazard-Sensitive Activities

means activities that are less sensitive to natural hazards, including:

- a. accessory buildings used for non-habitable purposes;
- b. boating facilities (above MHWS);
- c. buildings and structures that do not have habitable rooms or are used for commercial purposes;
- d. parks facilities;
- e. parks furniture; and
- f. buildings associated with temporary activities.

It excludes Hazard-Sensitive Activities and Potentially-Hazard-Sensitive Activities even if they are ancillary to Less-Hazard-Sensitive Activities.

Natural hazard mitigation activity

means ~~hazard mitigation~~ earthworks, ~~hazard mitigation~~ structures, repair and maintenance ~~of hazard mitigation structures, features or earthworks~~ and emergency work to reduce or eliminate risks caused by natural hazard ~~mitigation activities.~~

Natural Hazard Area Overlay

means the areas identified in Table 3 Natural Hazard Areas Overlays in APP10 - Natural Hazard Risk Assessment and shown on the mapped Natural Hazard overlays in the District Plan and flood hazard maps held with Council. Council's planning maps

Flood Hazard - Stream Corridor

Corridor consisting of a buffer of five metres either side of the centre of the stream, where in a 1% AEP flood event (assuming 15% increase in rainfall under climate change) the water depth exceeds 1m and the water velocity is greater than 2m per second.

Flood Hazard - Overland Flow

Area of land that conveys stormwater when the pipe or stream network capacity is exceeded or blocked in a 1% AEP flood event (assuming 15% increase in rainfall under climate change).

Flood Hazard - Inundation

Area of ponding that is greater than 50mm in depth in 1% AEP flood event (assuming 15% increase in rainfall under climate change) and which has low velocity flows.

High Hazard Area

Land within any of the following Natural Hazard Areas:

- a. Tsunami Hazard – 1:100 year inundation extent; or
- b. Coastal Hazard – Current Inundation; or
- c. Coastal Hazard – Current Erosion; or
- d. Stream corridor consisting of a buffer of five metres either side of the centre of the stream, where in a 1% AEP flood event (assuming 15% increase in rainfall under climate change) the water depth exceeds 1m and the water velocity is greater than 2m per second.

Overlay

means the spatially identified sites, items, features, settings or areas with distinctive values, risks or other factors within the City which require management in a different manner from underlying zone provisions, as set out in Schedules 2 to 11 and the ~~Natural Hazard Overlay and~~ Coastal Hazard Overlay.

...

NH - Natural Hazards

Natural hazards are addressed in two chapters; the Natural Hazards chapter covers non-coastal hazards and the Coastal Environment chapter covers coastal hazards. Both chapters take the same risk-based approach to natural hazards. To avoid duplication, this chapter provides an overview of all hazards within Porirua City and the [flexible](#) risk-based approach to managing those hazards (both coastal and non-coastal). However, the objectives, policies and rules in the Natural Hazards chapter only deal with non-coastal hazards. The objectives, policies and rules in the Coastal Environment chapter address coastal hazards.

Porirua is susceptible to a wide range of natural hazards. When natural hazards occur, they can result in damage to property and infrastructure, and may lead to a loss of human life. It is therefore important to identify areas susceptible to natural hazards and to restrict or manage subdivision, use and development, including infrastructure, relative to the natural hazard risk posed in order to reduce the damage to property and infrastructure and the potential for loss of human life.

[At this time](#), the District Plan focuses on the following natural hazards as they are the hazards that present the greatest risk to people and property, and whose future effects can be addressed through appropriate land use planning measures:

1. Flooding;
2. Fault rupture;
3. Tsunami;
4. Coastal erosion; and
5. Coastal inundation.

[Porirua City Council hazard \(non-coastal\) areas are identified through mapped Hazard Overlays in the District Plan and Council's flood hazard maps held with Council.](#)

[The Plan requires the use of the best information available to identify land which is proposed for redevelopment which may be subject to natural hazards. This includes hazard maps, databases and reports held by the Council. The level of detail and the quality of this information is variable. This affects the Council's ability to identify and map land that may be subject to natural hazards.](#)

[The Plan has defined the criteria to identify land which may be subject to natural and coastal hazards, outlined in APP10 - Natural Hazard Risk Assessment. Each natural hazard and coastal hazard has been classified as High, Medium or Low depending on the level of relative hazard posed.](#)

Flooding, coastal erosion and sea level rise are influenced by climate change. It is predicted that rainfall events will become more intense, storm events will become more common and sea levels will rise over the next 100 years. The flooding, sea level inundation and coastal erosion hazard layers in the Plan incorporate current climate change predictions.

Slope stability is addressed through the Earthworks provisions which require appropriate measures to be incorporated into Earthworks design to maintain the stability of sloping sites. [Fire risk is addressed through requirements for firefighting water supply and access in various zone provisions and the Transport Chapter.](#)

The City is also susceptible to natural hazards such as severe winds, wildfires, liquefaction and ground shaking from earthquakes. These hazards are managed by other statutory instruments or processes, e.g. the Building Act 2004, Civil Defence Emergency Management Act 2002, the Local Government Acts 1974 and 2002 and the Fire and Emergency Act 2017.

For the purposes of clarity, the ~~proposed~~ natural hazard rules apply to buildings, and activities within the Natural Hazard [Area Overlay](#). If the building or the activity is not partially or fully located within the Natural Hazard [Area Overlay](#), then the natural hazard rules will not be triggered.

There are other natural hazard provisions relating to subdivisions, earthworks, renewable energy generation activities and infrastructure within the District Plan. These provisions are located within their respective chapter. For Subdivision, they take a similar approach as outlined in the Natural Hazard or Coastal Environment chapters. In instances where a combination of activities are proposed (for example earthworks, subdivision and a new building) within the Natural Hazard [Area Overlay](#), the relevant rules from each chapter will apply to the development.

Risk

Risk is a product of both the consequences and likelihood from a natural hazard. A risk-based approach to natural hazards balances allowing for people and communities to use their property and undertake activities, while also ensuring that their lives or significant assets are not harmed or lost as a result of a natural hazard event. When addressing the consequences from natural hazards, priority has been given as follows:

1. Protection of people including loss of life, and injury;
2. Maintaining key infrastructure to ensure the health and safety of communities (such as wastewater treatment systems); and
3. Maintaining functionality of buildings after a natural hazard event and the ability for communities to recover.

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

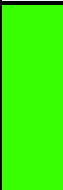
1. Building design (for example minimum floor levels or the ability for buildings to be relocated over time);
2. The introduction, retention or improvement of existing natural systems;
3. Use or size of materials in infrastructure design and building construction;
4. The type of activities within buildings and structures; and
5. The use of soft engineering options (for example sacrificial fill).

Within the High [Natural Hazard Areas of the Natural Hazard Overlay](#), it is ~~unlikely the~~ [challenging to appropriately mitigate the](#) consequences from natural hazards ~~can be appropriately mitigated~~, and therefore ~~the only option available is to avoid~~ new development [will be discouraged](#) in these areas [where it will increase the risk to people's safety, wellbeing and property](#).

APP10 - Natural Hazard Risk Assessment sets out the approach the Council ~~has taken~~ [undertakes](#) to identify ~~ing~~ [Natural Hazard Areas](#) and managing risk [in Natural Hazard Areas](#), including ranking the likelihood of a natural hazard event ~~and~~ hazard sensitivity ~~and the use of Natural Hazard Overlay~~. This Appendix also addresses the identification and management of risk in Coastal Hazard Overlay.

Objectives	
NH- O1	Risk from natural hazards
Subdivision, use and development in the Natural Hazard Areas Overlay do not significantly increase the risk to life, infrastructure or property and do not reduce the ability for communities to recover from a natural hazard event.	
NH- O2	Planned mitigation works
There is reduced risk to life, infrastructure and property from flood hazards through planned mitigation works.	
Policies	
NH- P1	Identification and mapping of natural hazards
Identify and map natural hazards in the Natural Hazard Overlay and take a risk -based approach to the management of subdivision, use and development within the Natural Hazard Areas Overlay based on the approach outlined in APP10 - Natural Hazard Risk Assessment, including: <ol style="list-style-type: none"> 1. The sensitivity of the activity to loss of life, damage from a natural hazard and the ability for communities to recover after a natural hazard event; and 2. The level of risk presented to people and property from a natural hazard. 	
NH- P2	Hazard-Sensitive Activities and Potentially-Hazard-Sensitive Activities within the High Natural Hazard Areas
Avoid the establishment of Hazard-Sensitive Activities and Potentially-Hazard-Sensitive Activities within the High Natural Hazard Areas of the Natural Hazard Overlay unless it can be demonstrated that: <ol style="list-style-type: none"> 1. The activity has a critical operational need and functional need to locate within the High Hazard Area and locating outside the High Hazard Area is not a practicable option; 1. The resulting risk to people's lives and wellbeing will be low; 2. The activity incorporates mitigation measures that demonstrate that risk to people's life and wellbeing; and minimise the risk of damage to buildings damage is avoided; 3. People can safely evacuate the property during a natural hazard event; and 4. The risk to the activity and surrounding properties is either avoided, or due to site-specific factors, and/or the scale, location and design of the activity 5. <u>Other than within Commercial and Mixed Use Zones, the General Industrial Zone and the Hospital Zone, the activity has an operational need and functional need to locate within the High Hazard Area and locating outside the High Hazard is not a practicable option.</u> 	

NH-P3	Hazard-Sensitive Activities and Potentially-Hazard-Sensitive Activities within the Medium <u>Natural</u> Hazard Areas
<p>Only Allow Hazard-Sensitive Activities and Potentially-Hazard-Sensitive Activities within the Medium <u>Natural</u> Hazard Areas of the Natural Hazard Overlay where:</p> <ol style="list-style-type: none"> 1. The activity incorporates mitigation measures that demonstrate that risk to people's lives and wellbeing, and building damage is avoided <u>low, and any damage to buildings is minimised</u>; 2. People can safely evacuate the property during a natural hazard event; and 3. The risk to adjacent properties, activities and people is not increased as a result of the activity proceeding. 	
NH-P4	Hazard-Sensitive Activities and Potentially-Hazard-Sensitive Activities within the Low <u>Natural</u> Hazard Areas
<p>Provide for Hazard-Sensitive Activities and Potentially-Hazard-Sensitive Activities within the Low <u>Natural</u> Hazard Areas of the Natural Hazard Overlays where it can be demonstrated that:</p> <ol style="list-style-type: none"> 1. The activity incorporates mitigation measures that demonstrate that risk to people's lives and wellbeing and building damage is <u>minimised</u>; avoided; and 2. The risk to adjacent properties, activities and people is not increased as a result of the activity proceeding. 	
NH-P5	Less-Hazard-Sensitive Activities within the Natural Hazard <u>Areas Overlay</u>
<p>Allow for Less-Hazard-Sensitive Activities within all of the Hazard Areas of the Natural Hazard <u>Areas, provided Overlay, providing</u>:</p> <ol style="list-style-type: none"> 1. They do not impede or block stream and flood water pathways; 2. Mitigation measures are incorporated, where appropriate, to reduce the risk from the natural hazard to people's lives and wellbeing; and 3. The risk to adjacent properties, activities and people is not increased as a result of the activity proceeding. 	
NH-P6	Less-Hazard-Sensitive Activities within a Flood Hazard - Stream Corridor or Flood Hazard - Overland Flow <u>Overlay</u>
<p>Only allow <u>Allow for</u> buildings associated with Less-Hazard-Sensitive Activities within a Flood Hazard - Stream Corridor or Flood Hazard - Overland Flow <u>Overlay</u> where:</p> <ol style="list-style-type: none"> 1. Flood waters are not displaced onto neighbouring properties and do not increase the risk to people and property; 2. The stream and flood water pathways are not impeded or blocked as a result of the building; 3. Mitigation measures have been incorporated to reduce the potential of damage from flooding over the lifespan of the building; and 4. There is no increase in risk to life as a result of the building being located in a Flood Hazard - Stream Corridor or Flood Hazard - Overland Flow <u>Overlay</u>. 	

NH-P7	Hazard-Sensitive Activities and Potentially-Hazard-Sensitive Activities within a Flood Hazard - Pending-Inundation <u>Areas Overlay</u>
<p>Only allow <u>Allow for</u> the establishment of buildings associated with Hazard-Sensitive Activities and Potentially-Hazard-Sensitive Activities within a Flood Hazard - Pending-Inundation <u>Areas Overlay</u> where the floor level is below the 1:100 flood level and where it can be demonstrated that:</p> <ol style="list-style-type: none"> 1. The nature of the activity means the risk to people’s lives and wellbeing is low or the potential for damage from flooding is reduced to a low level; or 2. Mitigation measures are incorporated into the design of the development so that the risk to people’s lives is low or the potential for damage from flooding is reduced to a low level; and 3. People can safely evacuate from the property during a flood event. 	
NH-P8	Additions to Existing Hazard-Sensitive Activities and Potentially-Hazard-Sensitive Activities
<p>Provide for small-scale additions to buildings that accommodate existing Hazard-Sensitive Activities and Potentially-Hazard-Sensitive Activities where they:</p> <ol style="list-style-type: none"> 1. Provide for the continued use of the existing building; 2. Incorporate mitigation measures to reduce the potential damage to the additions from the natural hazard; 3. The resulting change in risk from the additions to life and property is low; and 4. Do not increase the risks from the natural hazard to adjacent properties, activities and people. 	
NH-P9	Planned mitigation works
<p>Enable natural hazard mitigation or stream or river management works undertaken by a statutory agency or their nominated contractors or agents within identified Natural Hazard <u>Areas Overlay</u> where these decrease the risk to <u>people, infrastructure,</u> and property.</p>	
NH-P10	Soft engineering measures
<p>Encourage soft engineering measures when undertaking planned natural hazard mitigation works within the Natural Hazard <u>Areas Overlay</u> that reduce the risk from natural hazards.</p>	
Rules	
NH-R1	Less-Hazard-Sensitive Activities within the Low and Medium and High <u>Natural</u> Hazard Areas contained in a Natural Hazard Overlay
	<p>All zones</p> <ol style="list-style-type: none"> 1. Activity status: Permitted <p>Where:</p> <ol style="list-style-type: none"> a. Any buildings must not be located in an identified Flood Hazard - Overland Flow or Flood Hazard - Stream Corridor <u>Overlay</u>.

All zones	<p>2. Activity status: Restricted discretionary</p> <p>Where:</p> <p>a. Compliance is not achieved with NH-R1-1</p> <p>Matters of discretion are restricted to:</p> <p>1. The matters contained in NH-P6.</p>
NH-R2	<p>Flood mitigation or stream or river management works undertaken by a statutory agency or their nominated contractor or agent within the Flood Hazard Areas Overlays in a Natural Hazard Overlay</p>
All zones	<p>1. Activity status: Permitted</p>
NH-R3	<p>Soft engineering measures undertaken by either a statutory agency or their nominated contractor or agent within a Natural Hazard Areas Overlay</p>
All zones	<p>1. Activity status: Permitted</p>
NH-R4	<p>Additions to existing buildings in <u>Natural</u> Hazard Areas contained in a Natural Hazard Overlay</p>
All zones	<p>1. Activity status: Permitted</p> <p>Where:</p> <p>a. If the additions are for a Hazard-Sensitive Activity or Potentially-Hazard-Sensitive Activity in the Low <u>Natural</u> Hazard Areas of the Natural Hazard Overlay, <u>and</u> the additions:</p> <p>i. Do not establish a new additional Hazard-Sensitive Activity or Potentially-Hazard-Sensitive Activity within the Natural Hazard <u>Area Overlay</u>; or</p> <p>ii. When are located within a Flood Hazard - Ponding Inundation, the finished floor levels are located above the 1:100 year flood level, where this level is the bottom of the floor joists or the base of the concrete floor slab; or</p> <p>b. The additions are for a Less-Hazard-Sensitive Activity in all <u>Natural</u> Hazard Areas of the Natural Hazard Overlay and:</p> <p>i. Are not located within a Flood Hazard - Overland Flow; <u>or</u></p> <p>ii. Are not located within a Flood Hazard - Stream Corridor; <u>or</u></p> <p>c. If the additions are for a Hazard-Sensitive Activity or Potentially-Hazard-Sensitive Activity in the Medium <u>Natural</u> Hazard Areas of the Natural Hazard Overlay, <u>and</u> the additions:</p> <p>i. Do not increase the building footprint by more than 30m²; or</p> <p>ii. Do not establish a new additional Hazard-Sensitive Activity or Potentially-Hazard-Sensitive Activity within the Natural Hazard <u>Area Overlay</u>; or</p> <p>iii. Are not located within a Flood Hazard - Overland Flow; or</p>

	<p>d. If the additions are for a Hazard-Sensitive Activity or Potentially-Hazard-Sensitive Activity in the High Hazard Area of the Natural Hazard Overlay, <u>and</u> the additions:</p> <ul style="list-style-type: none"> i. Do not increase the building footprint by more than 20m²; or ii. Do not establish a new additional Hazard-Sensitive Activity or Potentially-Hazard-Sensitive Activity within the Natural Hazard <u>Area Overlay</u>; or iii. Are not located within a Flood Hazard - Stream Corridor. <p>Note: For the avoidance of doubt, when an addition or alteration to a building establishes a new Hazard-Sensitive Activity or Potentially-Hazard-Sensitive Activity within the Natural Hazard <u>Areas Overlay</u>, then it shall be assessed under the rule framework for Hazard-Sensitive Activities or Potentially-Hazard-Sensitive Activities and not the additions to buildings framework.</p>
All zones	<p>2. Activity status: Restricted discretionary</p> <p>Where:</p> <ul style="list-style-type: none"> a. Compliance is not achieved with NH-R4-1.a, NH-R4-1.b, NH-R6-1.c or NH-R4-1.d. <p>Matters of discretion are restricted to:</p> <ul style="list-style-type: none"> 1. The matters in NH-P8.
NH-R5	<p>Earthworks within a Natural Hazard <u>Areas Overlay</u> associated with hazard mitigation works undertaken by a statutory agency</p>
All zones	<p>1. Activity status: Permitted</p> <p>Where:</p> <ul style="list-style-type: none"> a. Compliance is achieved with: <ul style="list-style-type: none"> i. EW-S3; and ii. EW-S4.
All zones	<p>2. Activity status: Restricted discretionary</p> <p>Where:</p> <ul style="list-style-type: none"> a. Compliance is not achieved with EW-S3 or EW-S4. <p>Matters of discretion are restricted to:</p> <ul style="list-style-type: none"> 1. The matters of discretion of any infringed standard. <p>Notification</p> <p>An application under this rule is precluded from being publicly or limited notified in accordance with sections 95A and 95B of the RMA.</p>
NH-R6	<p>Any Hazard-Sensitive Activity and Potentially-Hazard-Sensitive Activity and associated buildings in Low <u>Natural Hazard Areas</u> in a Natural Hazard Overlay</p>

	<p>All zones 1. Activity status: Restricted discretionary</p> <p>Where:</p> <ul style="list-style-type: none"> a. Any buildings within a Flood Hazard - <u>Ponding Inundation Overlay</u> are located above the 1:100 year flood level, where this level is <u>below the bottom of</u> the floor joists or the base of the concrete floor slab; or b. Any buildings and activities <u>are located within the Pukerua Fault Rupture Zone or the Ohariu Fault Rupture Zone</u> are located no closer than 20m from <u>either fault; side of either</u> c. <u>Any buildings and activities within the Moonshine Fault Rupture Zone are located within 20m of either side of the Moonshine Fault.</u> <p>Matters of discretion are restricted to:</p> <ul style="list-style-type: none"> 1. The matters in NH-P4. <p>Notification: An application under this rule is precluded from being publicly notified in accordance with section 95A of the RMA.</p> <p><u>Note: To avoid doubt, once the Moonshine Fault is located through site-specific investigation, there are areas within the mapped Moonshine Fault Rupture Zone that will be outside of 20m of either side of the Fault Line. These areas are not a Low Hazard Area and are therefore not subject to the Natural Hazard chapter rules (unless affected by another hazard such as a Flood Hazard).</u></p>
	<p>All zones 2. Activity status: Discretionary</p> <p>Where:</p> <ul style="list-style-type: none"> a. Compliance is not achieved with NH-R6-1.a. <p>Notification: An application under this rule is precluded from being publicly notified in accordance with section 95A of the RMA.</p>
	<p>All zones 3. Activity status: Non-complying</p> <p>Where:</p> <ul style="list-style-type: none"> a. Compliance is not achieved with NH-R6-1.b.
NH-R7	<p>Any Hazard-Sensitive Activity and Potentially-Hazard-Sensitive Activity and associated buildings within the Medium <u>Natural Hazard Areas</u> in a Natural Hazard Overlay</p>
	<p>All zones 1. Activity status: Discretionary</p>
NH-R8	<p>Any Hazard-Sensitive Activity and Potentially-Hazard-Sensitive Activity and associated buildings within the High Hazard Areas in a <u>Natural Hazard Overlay</u></p>

All zones

1. Activity status: **Non-complying**

APP10 - Natural Hazard Risk Assessment

Table 1 has been developed to rank the likelihood of a natural hazard event. This likelihood ranking provides guidance on determining the risk associated with a natural hazard event and the corresponding [Natural Hazards Overlays](#) in Table 3 and Table 4.

APP10-Table 1	Likelihood guidance
Likelihood	Likelihood ranking
Less than 1:100 year event (1 in 100 year event) or annual exceedance probability (AEP) 1% or more	Very likely
1:101 – 1:200 year event or AEP range 0.5% to 1%	Likely
1:201 – 1:500 year event or AEP range 0.2% to 0.5%	Unlikely
1:501 – 1:2500 year event or AEP range 0.04% to 0.2%	Very unlikely
More than 1:2500 or AEP 0.04% or less	Extremely unlikely

Hazard provisions sensitivity classification

To assist with determining the consequences associated with natural hazards, buildings and activities have been allocated a sensitivity rating (Table 2). This rating is based on the potential sensitivity to human life and property as a result of those respective activities occurring within an identified Hazard Area.

APP10-Table 2	Hazard sensitivity
Hazard provisions sensitivity classification	Land use activities
Hazard-Sensitive Activities	<ul style="list-style-type: none"> • Childcare services • Community facilities facility • Educational facilities facility • Emergency service facilities • Healthcare activity • Hospital • Marae • Multi-unit housing • Places of worship • Residential units and minor residential units (including those associated with Papakāinga) • Retirement villages • Visitor accommodation
Potentially-Hazard-Sensitive Activities	<ul style="list-style-type: none"> • Buildings associated with primary production (excluding residential units, minor residential units, residential activities or buildings identified as Less-Hazard-Sensitive Activities) • Commercial activity • Commercial service activity • Community corrections activity. • Entertainment facilities facility • Food and beverage activity • Industrial activity activities • Integrated retail activity • Large format retail activity • Major sports facilities • Offices • Retail activity • Retirement village • Rural industry
Less-Hazard-Sensitive Activities	<p>Accessory buildings used for non-habitable purposes</p> <ul style="list-style-type: none"> • Boating facilities (above MHWS) • Buildings and structures that do not have habitable rooms or are used for commercial purposes • Parks facilities • Parks furniture • Buildings associated with temporary activities

Where one or more of the above activities are proposed to be undertaken within a Natural Hazard [Area Overlay](#) on a site, the most sensitive of the activities shall be used to determine the sensitivity of the proposal.

If an activity not identified in Table 2 is proposed in a Natural Hazard [Area Overlay](#), then for the purposes of the application it shall be assessed as a

potentially-hazard-sensitive activity.

Natural Hazard Overlays and Areas

Porirua City Council hazard (non-coastal) areas are identified through mapped Hazard Overlays for the [Fault Rupture Zones in the District Plan and Council's flood hazard maps held with Council](#). The Plan has defined the criteria to identify land which may be subject to natural hazards, summarised in [Table 3 below](#). Each hazard has been classified as High, Medium, or Low, depending on the level of relative hazard posed, following natural hazards:

1. ~~Flooding; and~~
2. ~~Fault rupture.~~

~~The natural hazards within the District Plan have been mapped as Overlays as summarised in Table 3 below. Each Overlay has been classified as High, Medium or Low depending on the level of relative hazard posed.~~

APP10-Table 3 Natural Hazard [s and Areas Overlays](#)

Natural Hazard Overlay	Hazard areas
Flood Hazard – Stream Corridor	High
Fault Rupture Zone – Ohariu (20m or closer either side of the Ohariu Fault)	
Flood Hazard – Overland Flow	Medium
Fault Rupture Zone – Pukerua (20m or closer either side of the Pukerua Fault)	
Flood Hazard – Pending Inundation	Low
Fault Rupture Zone – Moonshine (20m or closer either side of the Moonshine Fault)	
Fault Rupture Zone – Ohariu (excluding 20m either side of Ohariu Fault)	
Fault Rupture Zone – Pukerua (excluding 20m either side of the Pukerua Fault)	

It is acknowledged that risk can be influenced by site or area specific factors, such as topography, elevation, natural features, soil classification etc. When assessing applications, these factors should be taken into account to allow for a site-specific determination of the risk associated with a particular proposal.

APP10-Table 4 Coastal Hazard Overlays

Coastal Hazard Overlay	Hazard areas
Tsunami Hazard – 1:100 year inundation extent	High
Coastal Hazard – Current Inundation; and Coastal Hazard – Current Erosion	
Tsunami Hazard – 1:500 year inundation extent	Medium
Coastal Hazard – Future Inundation (with 1m SLR); and Coastal Hazard – Future Erosion (with 1m SLR)	
Tsunami Hazard – 1:1000 year inundation extent	Low