

IN THE MATTER OF section 71 of the Canterbury Earthquake Recovery Act 2011 and the Canterbury Earthquake (Christchurch Replacement District Plan) Order 2014

AND

IN THE MATTER OF proposals notified for incorporation into a Christchurch Replacement District Plan

Date of hearing: 24–26 February, 29 June 2016

Date of decision: 3 November 2016

Hearing Panel: Environment Judge Hassan (Chair), Ms Sarah Dawson, Mr John Illingsworth, Ms Jane Huria

DECISION 53

Chapter 5: Natural Hazards - Stage 3

(and relevant definitions and associated planning maps)

Outcomes: Proposal changed as per Schedule 1

COUNSEL APPEARANCES

Mr Winchester, Ms Meares and Ms McCallum	Christchurch City Council
Mr Randal, Ms Bazalo and Ms Silcock	The Crown
Mr Hughes-Johnson	Case Family

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INTRODUCTION

[1] This decision (‘decision’) continues the series of decisions made by the Independent Hearings Panel (‘Hearings Panel’/‘Panel’) concerning the formulation of a replacement district plan for Christchurch City (including Banks Peninsula) (‘CRDP’). It concerns a hearing on Chapter 5 – Natural Hazards (Part), which was notified in Stage 3 of our hearings process.¹

[2] In this decision, the phrase ‘Notified Version’ describes the version notified by the Christchurch City Council (‘the Council’/‘CCC’) and to which, subsequent to consideration of submissions and conferencing, a number of changes were made. This was then ultimately produced in closing by the CCC as a red-line version (‘Revised Version’).²

[3] Where we refer to ‘Decision Version’, it is our redrafting of the Revised Version, as set out in Schedule 1, which will become operative upon release of this decision and the expiry of the appeal period.

[4] This decision follows our hearing of submissions and evidence. Further background on the review process, pursuant to the Canterbury Earthquake (Christchurch Replacement District Plan) Order 2014 (‘OIC’) is set out in the introduction to Decision 1, concerning Strategic Directions and Strategic Outcomes (and relevant definitions) (‘Strategic Directions decision’).³

Effect of decision and rights of appeal

[5] Our procedure and the rights of appeal are set out in our earlier decisions.⁴ We concur in those.

Identification of parts of Existing Plan to be replaced

[6] The OIC requires that our decision also identifies the parts of the Existing Plan⁵ that are to be replaced by the Chapter. The decision replaces all of the natural hazards provisions (including the Planning Maps) of the Existing Plan.

¹ Members of the Hearings Panel who heard and determined this proposal are set out on the cover sheet.

² CCC (3723) closing legal submissions Appendix A, 27 July 2016.

³ Strategic directions and strategic outcomes (and relevant definitions), 26 February 2015.

⁴ Strategic Directions decision at [5]–[9].

⁵ Comprising the existing Christchurch City District Plan and Banks Peninsula District Plan.

Conflicts of interest

[7] We have posted notice of any potential conflicts of interest on the Independent Hearings Panel website.⁶ In the course of the hearing, it was identified on various occasions that submitters were known to members of the Panel either through previous business associations or through current or former personal associations. Those disclosures (and, on some matters, member recusals) were recorded in the transcript, which was again available daily on the Hearings Panel’s website. No submitter raised any issue in relation to this.

REASONS

Statutory framework

[8] The OIC directs that we hold a hearing on submissions on a proposal and make a decision on that proposal.⁷ Our Stage 1 Residential decision set out the relevant statutory framework which also applies to this decision.⁸ We concur in that decision’s interpretation of these matters. No issue was taken with any of the Higher Order Documents relevant to this decision.⁹

Background

[9] Chapter 5 Natural Hazards provides for the management of various natural hazards through the use of overlay maps within which different or additional objectives, policies and rules apply to those of the various CRDP zones. The Panel’s Stage 1 Decision 6 partly

⁶ The website address is www.chchplan.ihp.govt.nz.

⁷ OIC, cl 12(1).

⁸ At [9]–[10]. Our decision does not set out the text of various statutory provisions it refers to, as this would significantly lengthen it. However, the electronic version of our decision includes hyperlinks to the New Zealand Legislation website. By clicking the hyperlink, you will be taken to the section referred to on that website. The repeal of the CER Act by the Greater Christchurch Regeneration Act 2016 (‘GCRA’) does not materially alter that position. That is because s 147 of the GCRA provides that the OIC continues in force. Further, Schedule 1 of the GCRA (setting out transitional, savings and related provisions) specifies, in cl 10, that nothing in that Part affects or limits the application of the Interpretation Act 1999 which, in turn, provides that the OIC continues in force under the now-repealed CER Act (s 20) and preserves our related duties (s 17).

⁹ These include the New Zealand Coastal Policy Statement 2010 (‘NZCPS’) and the Canterbury Regional Policy Statement 2013 (‘CRPS’), to which the CRDP must give effect, contain relevant natural hazards provisions. They also include OIC, Sch 4, which specifies the Ministers’ Statement of Expectations, to which we must have particular regard.

implemented Chapter 5.¹⁰ It deals with slope stability (rockfall, cliff collapse and mass movement), liquefaction and the Flood Management Area ('FMA'). It also maps the Flood Ponding Management Area ('FPMA') but does not include related provisions for that overlay.

[10] This decision¹¹ completes Chapter 5. It extends the FMA to other parts of the city and adds some specific FMA rules for particular locations (Waimakariri, Te Waihora/Lake Ellesmere, and Wairewa/Lake Forsyth). It adds provisions for FPMA and provides for the High Flood Hazard Management Area ('HFHMA'). It deals with liquefaction in the Central City. It also determines a CCC request (of 4 October 2016)¹² that we update the mapping of certain areas made subject to the Mass Movement Hazard Management Area ('MMHMA') overlay by Decision 6.

[11] Although the Notified Version also originally proposed provisions concerning coastal hazards, this decision does not deal with that because those provisions were withdrawn from the Panel's jurisdiction by cl 5A of the OIC, on 16 October 2015.¹³

[12] The CRDP must give effect to the Canterbury Regional Policy Statement 2013 ('CRPS') and the New Zealand Coastal Policy Statement 2010 ('NZCPS') both of which include relevant provisions on natural hazard matters. We deal with those provisions where these arise in this decision. Decision 6 sets out relevant findings on the flooding hazard provisions of the CRPS (at [22]-[28]). We concur in those findings, subject to noting that Policy 11.3.1 of the CRPS was updated under a review of the Land Use Recovery Plan ('LURP'), and the changes took legal effect on 12 June 2015.¹⁴ Our findings on the updated provisions are at [75] to [92].

Issues raised in submissions

[13] While we do not mention all submissions and further submissions on the Notified Version, we have considered all of them in making this decision. That includes the related representations and evidence of those who attended the hearing. The matters they raise pertain

¹⁰ Decision 6, 17 July 2015.

¹¹ The Notified Version was notified as part of Stage 3. However, no changes were proposed to Chapter 5 in Stage 2.

¹² Memo of Counsel re further evidence of Ian Wright, 4 October 2016.

¹³ By clause 6 of the Canterbury Earthquake (Christchurch Replacement District Plan) Amendment Order (No 2) 2015 (LI 2015/235); CCC (3723) opening legal submissions at 5.4.

¹⁴ Amendments to Canterbury Regional Policy Statement – Under the Land Use Recovery Plan (LURP) and the Canterbury Earthquake Recovery (CER) Act.

to our obligations under ss 32 and 32AA, RMA and that is where we address those matters. In those cases where we have not accepted relief sought by a submitter, it is because on the evidence of the Council, we find the approach of the Notified Version more appropriate than the relief sought.

Key remaining matters in contention

[14] The issues identified by the Council for the Natural Hazards Stage 3 hearing were set out in its memorandum of counsel dated 4 November 2015.

[15] As it emerged during the course of the hearing (held on 24 – 26 February and 29 June 2016), the following key matters remained in contention:

- (a) Whether existing Objective 5.1.1 should be amended and whether it should supplement or replace existing Strategic Objective 3.3.6;
- (b) Whether replacement and repair of existing buildings should be a permitted activity in the FMA and, if so, on what basis;
- (c) Whether the permitted activity limits for filling or excavation in a FMA are too onerous;
- (d) What FPMA controls should apply to rural and residential land, including:
 - (i) whether provision should be made for buildings to be a permitted activity subject to certification; and
 - (ii) what extent of permitted rural activities should be allowed for;
- (e) What account if any should be taken of Council flood management works and priorities;
- (f) Whether sea-level rise and other effects of climate change should be inputs into the HFHMA;

- (g) Whether the restrictions on the use, subdivision and development of residential land under the HFHMA are too onerous;
- (h) What extent of permitted activity provision can be made for rural activities in the HFHMA;
- (i) Whether ‘rebuild’ should be allowed for, together with repair and maintenance, as a permitted activity in relation to critical infrastructure in the HFHMA; and
- (j) Whether land in the Henderson Basin and the Cashmere rural floodplain should be removed from the HFHMA.

[16] Our s 32AA evaluation sets out our findings on these issues, together with some other general matters.

S 32AA EVALUATION

Whether existing Objective 5.1.1 should be amended and whether it should supplement or replace existing Strategic Objective 3.3.6

[17] Strategic Objective 3.3.6 was included in the CRDP by Decision 1¹⁵ and is as follows:

3.3.6 Objective Natural hazards

- (a) New subdivision, use and development, shall:
 - (i) be avoided in areas where the risks of natural hazards to people, property and infrastructure are assessed as being unacceptable; and
 - (ii) otherwise be undertaken in a manner that ensures the risks of natural hazards to people, property and infrastructure are appropriately mitigated;
- (b) Except that new strategic infrastructure may be located in areas where the risks of natural hazards to people, property and other infrastructure are assessed as being unacceptable, provided that:
 - (i) there is no reasonable alternative; and
 - (ii) the strategic infrastructure has been designed to maintain, as far as practicable, its integrity and form during natural hazard events.

¹⁵ Decision 1, 26 February 2015 at [176]-[200].

[18] That decision noted, however, that the requirement for further or alternative strategic direction in respect of Natural Hazards would be reconsidered by the Panel as part of considering the Chapter 5 Proposal.

[19] Objective 5.1.1 was included in the CRDP by Decision 6¹⁶ and is as follows:

5.1.1 Objective – Natural hazards

- a. New subdivision, use and development (other than new critical or strategic infrastructure to which paragraph b. applies):
 - i. Is to be avoided in areas where the risks from natural hazards to people, property and infrastructure are assessed as being unacceptable; and
 - ii. In all other areas, is undertaken in a manner that ensures the risks of natural hazards to people, property and infrastructure are appropriately mitigated.
- b. New critical or strategic infrastructure may be located in areas where the risks of natural hazards to people, property and infrastructure are otherwise assessed as being unacceptable, but only where:
 - i. there is no reasonable alternative; and
 - ii. the strategic or critical infrastructure has been designed to maintain, as far as practicable, its integrity and form during natural hazard events; and
 - iii. the natural hazard risks to people, property and infrastructure are appropriately mitigated.
- c. There is increased public awareness of the range and scale of natural hazard events that can affect Christchurch District.
- d. The repair of earthquake damaged land is facilitated as part of the recovery.

[20] Similar to Decision 1, Decision 6 noted that we may later determine that Objective 5.1.1 will replace Strategic Objective 3.3.6, to ensure that the CRDP is coherent and consistent. Neither objective was appealed. As noted, both are part of the CRDP.

[21] As can be seen, Objective 5.1.1 largely replicates Strategic Objective 3.3.6 but:

¹⁶ Decision 6, 17 July 2015.

- (a) Revises the expression of some of it to clarify the approach in relation to new critical or strategic infrastructure in areas of otherwise unacceptable risk from natural hazards, including consideration of mitigation measures; and
- (b) Adds two elements in sub-paragraphs (c) and (d) to highlight the importance of increased public awareness of potential natural hazard events and the facilitation of repair of earthquake damaged land.

[22] The Council initially proposed that we address the potential duplication of the same objective in two chapters of the CRDP by effectively replacing the content of Strategic Objective 3.3.6 with what is in Objective 5.1.1. Having further considered that approach, however, the Council submitted that the additional elements in (c) and (d) were not of sufficient strategic importance to be part of Strategic Objective 3.3.6. To address that, the Council proposed that we re-cast elements (c) and (d) into the sole objectives in Sub-chapter 5.1, on the basis that we also include a cross reference to Strategic Objective 3.3.6.¹⁷ That approach was initially supported by the Crown. In its second closing submission however, the Crown proposed that we make consequential amendments to Strategic Objective 3.3.6 so that it matched the wording of Objective 5.1.1 as set out in Decision 6.¹⁸ In essence, therefore, the Crown ultimately preferred what the Council had initially proposed.

[23] The issues that arise in this particular debate are:

- (a) How the primacy of objectives that give strategic directions bears on the different choices including whether those objectives can appropriately include elements which are not “strategic”; and
- (b) Whether it is appropriate, in terms of efficiency, clarity and certainty, to have duplication in provisions.

[24] Ultimately, our evaluation of those issues is in terms of what is most appropriate for achieving the RMA’s purpose. That includes the practical matter of ensuring that objectives

¹⁷ CCC (3723) closing legal submissions 27 July 2016 at 6.1 to 6.3; rebuttal evidence of Ruth Evans, 11 February 2016 at 4.2-4.3; Crown (3721) closing legal submissions. 23 February 2016 at 11 to 18; evidence of Wendy Saunders, 2 February 2016 at 7.6.

¹⁸ Crown (3721) closing submissions 22 July 2016 at 6 – 8.

are expressed to be helpful to plan users. Those are not simply professionals. They include those who may be inexperienced in this field and may be using this CRDP for the first time.

[25] The findings in Decision 6, on the evidence, informed the expression of that objective. That included a finding that Objective 5.5.1 may replace Strategic Directions Objective 3.3.6. We do not revisit those findings now other than to confirm that we find a strategic purpose in all four elements (a. – d.) of Objective 5.1.1. Decision 6 (especially at [57] – [178]) demonstrates that there is strategic importance in both additional elements, i.e. increasing public awareness of the range and scale of natural events that can affect the city and facilitating the repair of damaged land as part of recovery.

[26] Natural hazards stand apart from other resource management issues as having particular strategic significance. Objective 3.3.6 on natural hazards sits with several other objectives that reference related themes of resilience (3.3.5) and recovery (3.3.1, 3.3.10, 3.3.11, 3.3.13, 3.3.15).

[27] Those findings support keeping all elements of the objective together, relocated to Chapter 3.

[28] In terms of the OIC Statement of Expectations, duplication can lead to uncertainty and the associated costs, including in arguments as to interpretation. We find it would be inappropriate, in terms of these considerations, to duplicate the substance of the objective in two objectives, whether in the same or different chapters. We find that cross-referencing is a preferable way of assisting plan users to navigate and understand the CRDP. In particular, the plan user would value guidance on how the Chapter 5 policies relate to Strategic Objective 3.3.6.

[29] For those reasons, being satisfied that this is the most appropriate for achieving the RMA's purpose concerning this matter, the Decision Version now includes:

- (a) A new Strategic Objective 3.3.6 whose content is the same as former Objective 5.1.1;
- (b) A cross-reference to that objective, as we have described.

Whether replacement and repair of existing buildings should be permitted in the FMA and on what basis

[30] The Case Family own an approximately 2.3 ha block of land at 340 Cranford Street, St Albans. It was originally part of a 32 ha block the balance of which was acquired by the Council for roading and stormwater purposes.¹⁹ The Case Family are seeking to develop their land and have had consultants prepare a concept plan showing a number of lots accessing Cranford Street off a right of way. Part of their land is within the FMA, FPMA and HFHMA. The Case Family is concerned that:²⁰

A subdivision that creates a new allotment or allotments partly within the overlay areas and creates buildable areas outside the overlay areas would maintain flood storage capacity consistent with the critical policy 5.2.2.1d and accordingly should not be treated as a non-complying activity.

[31] In their closing submissions, the Case Family explain that the rules that govern replacement and repair of existing buildings in the FMA is one of two live issues that remain between them and the Council.²¹

[32] The Case Family seek²² the same permitted activity provision be made in the FMA as the Council has proposed in the FPMA (proposed Rule 5.4.5.1 P13) and the HFHMA (proposed Rule 5.4.6.1 P1). In seeking the same related activity specific standards, they note the particular importance of the following standard:

The replaced or repaired building is located in a position on the site that is no lower than the existing building.

[33] The Case Family called a planning witness, Mr Paul Thompson, in support of their relief (including on the related matter of certification that we address at [43] to [55]). He explained that he had referred to the various Higher Order Documents, the Council's s 32 report and the Council's evidence for the Stage 1 Natural Hazards proposal in reaching his view that this relief was appropriate. In particular, that was because he considered the relief to:

¹⁹ GF Case, MM Case and MGM Case, submission 3280.

²⁰ Case Family submission (3280), Attachments 3 and 4; Case Family opening submissions, 24 February 2016, at 2.

²¹ Case Family closing submissions, section 1. The other issue is the Case Family's request for a certification process to be available for new buildings and accessory structures in the FPMA, which is addressed at [44] – [49].

²² Case Family closing legal submissions at section 2.

...better achieve the purpose of the RMA and, the Statement of Expectations in particular in relation to reducing reliance on resource consent processes and setting a clear direction on the use and development of land for the purpose of avoiding or mitigating the natural hazards, in relation to flooding.²³

[34] In his closing submissions for the Case Family, Mr Hughes-Johnson QC explained that, unless this change is made, the related permitted activity rules for the FPMA and HFHMA would be rendered otiose. That is because land within the FPMA and/or the HFHMA is also always in the FMA. Hence, the restricted discretionary activity ('RDA') classification of replacement and repair of buildings in the FMA would always overtake the permitted activity classification provided under the FPMA and HFHMA rules.

[35] In his planning evidence in support of the Case Family's submission, Mr Thompson does not consider the purposes served by the different hazard overlays. His evidence explains that he considered the Council's s32 report and the Council's evidence for the Stage 1 Natural Hazards proposal in preparing his evidence. However, neither the s32 report nor the evidence supports the relief that the Case Family seeks. It is correct that the FPMA and the HFHMA are always located inside the FMA. However, contrary to what Mr Thompson and the Case Family would appear to have assumed, they serve substantially different purposes.

[36] The controls in the FMA provide a benchmark position to ensure that rebuilt buildings, as well as new buildings, are constructed with better protection from potential flood hazards. This benchmark approach is based on minimum floor levels which must be demonstrated through the certification requirement. This method provides an appropriate means of enabling development within the FMA.

[37] Primarily, the FPMA is for flood storage. The primary role of the HFHMA is to address the higher degree of risk likely to occur in the localities within it. The circumstances of topography may mean that the two overlays could overlap, but this does not derogate from the different reasons for identifying them.

[38] Because of those purposes that the FPMA and HFHMA serve, permitted activity certification is not a suitable method for addressing new development or rebuilding in them. In light of this, for those overlays, the Revised Version makes specific provision for the

²³ Evidence of P Thompson on behalf on behalf of Gavin Frederick Case, Margaret Mary Case and Michael Gavin Maurice Case, 2 February 2016 at 3.5.

replacement and repair of buildings as permitted activities, subject to specific standards. This is to address the potential inequity of the 12 month limit on existing use rights in the context of earthquake damaged properties and to recognise the potential for relocation to areas of a site that might be higher than the original location.

[39] Notwithstanding that general approach, a degree of grandfathering was provided in Decision 6 for the replacement of earthquake-damaged buildings within specified timeframes in the FMA. Those specific exemptions recognise the importance of not putting in jeopardy the significant investment that has been made in new buildings that were most of the way through the design process. However, that remedial exemption does not mean that the rules for the FPMA and HFHMA must be the same.

[40] Further, as the Council's planning witness Ms Ruth Evans pointed out, while an allotment may be created that is outside of the FPMA, it may not necessarily be unaffected by the FPMA. For example, the access may still be subject to the FPMA.²⁴

[41] For those reasons, we find there is no sound evidential basis to revisit the findings that the Panel made in Decision 6 on these matters, nor to amend the related Chapter 5 Natural Hazards provisions in the manner sought by the Case Family.

[42] Our related findings concerning the appropriateness of related FMA rules of the Council's Revised Version are at [56]-[63], [142] and [143].

What FPMA controls should apply to rural and residential land

- *whether provision should be made for buildings to be a permitted activity subject to certification*
- *what extent of permitted rural activities should be allowed for*

[43] We now return to the second aspect of the relief sought by the Case Family, namely to allow for permitted activity certification of new buildings and accessory structures.²⁵ That is a

²⁴ Rebuttal evidence of Ruth Christine Cameron Evans for the Council, dated 11 February 2016, at 3.4.

²⁵ Case Family (3280) closing legal submissions at section 3.

subset of a broader issue concerning how controls under the FPMA restrict not only the subdivision and development of rural and residential land but also its use. Other submitters also raised the issue of the extent to which controls should restrict farming activities.²⁶

[44] In essence, the Case Family ask that we carry into the FPMA, and adapt, the permitted activity certification regime that Decision 6 included in Chapter 5 for new buildings in the FMA. That regime allows for new buildings as a permitted activity subject to a standard that minimum floor levels are to a level specified in a 'Minimum Floor Level Certificate'. The Case Family seek a 'Minimum Ground Level Certificate' according to similar requirements. A core aspect of the rules is an obligation on the Council to issue a Certificate (which is valid for 2 years from issuance) and which specifies 'the design floor level for a building calculated as the highest of' one of three specified levels (i – iii). Proposing that the regime be adapted to a Minimum Ground Level Certificate, the Case family seeks the following adapted wording:

ii flooding predicted to occur in a 0.5% AEP (1 in 200-year) tidal event concurrent with a 5% AEP (1 in 20-year) rainfall event, including 1m sea level rise, ~~plus 400mm freeboard~~, as predicted by the most up to date Christchurch City Council model and any relevant field information; or

[45] The Council continued to oppose a general certification process within the FPMA.²⁷

[46] As we have noted, the Case Family relied on the evidence of Mr Thompson,²⁸ a planning witness. This included Mr Thompson's assertions around flooding matters. No practical examples of the circumstances described were provided. No engineering evidence was called.

[47] The provision that Decision 6 makes for certification in the FMA was based on findings on a significant body of evidence. On that basis, the Council's planning witness, Ruth Evans, recommended that it be applied to the further areas of land that the Notified Version proposes to include in the FMA, and we accept her evidence on that. However, she recommended against extending it to the FPMA, commenting that:²⁹

The proposed amendment does not address the purpose of the FPMA, which is to maintain flood storage. Even if the proposed building was elevated to a specified

²⁶ Memorandum on behalf of Cashmere Fields (3954), 26 February 2016.

²⁷ CCC (3723) closing legal submissions at 4.6-4.7.

²⁸ Case Family (3280) closing legal submissions at pages 14-15; evidence of Paul Thompson (3280) 2 February 2016.

²⁹ Rebuttal evidence of Ruth Evans for the Council, dated 11 February 2016, at 3.5.

ground level, this may not necessarily mitigate the loss of storage capacity as the building footprint could still take up storage.

[48] We accept Ms Evans' opinion on that matter as soundly based on the evidence. That evidence shows that the purpose of the FPMA is different to other flooding hazards, with a higher potential to give rise to adverse off site effects. The Case Family did not call any evidence to satisfy us that the risk of off-site effects from certification would be tolerable.

[49] We must assess the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the provisions (RMA s 32(2)(c)). On the evidence, in view of the potential risks, we find that permitted activity certification for buildings in FPMA is inappropriate. We find that the most appropriate rules' regime is one that ensures that evidence on the risks posed by particular new buildings in the FPMA can be properly assessed on the evidence in a resource consent process. On that basis, we find the Revised Version more appropriate than the relief pursued by the Case Family.

[50] We now address the issue of the extent to which controls should restrict farming activities. An issue that arose during the hearing of the submission by Cashmere Fields (3954) was whether the Notified Version made sufficient permitted activity provision for such activities within the FPMA. After having heard from the submitter's representative witness, Mr Warren Lewis,³⁰ we invited him to provide a list of farming type activities that do not appear in the Notified Version's proposed permitted activity list and do not give rise to risk to human life.³¹ On behalf of the submitter, Mr Lewis filed a memorandum on these matters on 26 February 2016.³² It listed three categories of activities the submitter considered should be permitted:

- (a) Under the heading 'buildings', the list included a workers' dwelling (up to 200m²) and a range of typical ancillary farm buildings (e.g. vehicle, implement, storage, pump, 'boutique dairy' animal handling and other sheds, stables, horse training dressage arenas and swimming pools, greenhouses, crop supporting structures, silage facilities, silos, feed in hoppers, fuel stores), on-site produce shops and 'eco farm demonstration for tourist facilities'. This list included activity specific

³⁰ Evidence of Warren Richard Lewis on behalf of Cashmere Fields, dated 2 February 2016.

³¹ Transcript, page 190, lines 3 – 28.

³² Memorandum on behalf of Cashmere Fields (3954), 26 February 2016.

standards pertaining to flood storage issues, including a 200mm floor level for the dwelling and a specification that concrete floors be built ‘on the highest quarter of the site’.

- (b) Under ‘any excavation and filling for farm purposes’, it specified five proposed activity specific standards also intended to address flood storage management matters.
- (c) Under ‘other Farm or Horticulture activity’ it specified a standard that the activity ‘doesn’t involve buildings, excavation, filling, or change to the existing flow of surface water’.

[51] The Council conceded that some farming activities could be permitted in the FPMA,³³ and proposed that we add the following permitted activities:³⁴

- (a) One residential unit per site, either on piles to meet the minimum floor level specified in Rule 5.4.1 or having a maximum floor area of 200m²;
- (b) Accessory buildings either without floors or limited to one per 20ha and either on piles to meet the minimum floor level specified in Rule 5.4.1 or having a maximum floor area of 200m²;
- (c) Swimming pools either below ground or limited to one per 20ha and not larger than 200m².

[52] We find that it is appropriate that the permitted activities be expanded such as to make sensible provision for residential units and the range of typical farm buildings, as the Council intends. Comparing what the Council has proposed with the list proposed by Mr Lewis, we find that the material differences are very confined. We find that the Council’s proposed accessory buildings do not entirely capture the various types of farm building as these may not always be ‘accessory’ in the strict sense. However, that is a technical issue that is readily able to be addressed in the drafting. We address this by specifically listing farm buildings without

³³ CCC (3723) closing legal submissions at 4.1-4.2 and the supplementary statements of evidence of Graham Harrington dated 21 March 2016 and of Ruth Evans dated 21 March 2016.

³⁴ Rule 5.4.5.1, activities P14 – P19.

the prior tag of ‘accessory’. This minor change has no material consequence for achieving the related objectives and avoids uncertainty. Therefore, it is more appropriate.

[53] The remaining substantive issues concern the submitters’ request that we make permitted activity provision for types of commercial activities (on-site produce shops and ‘eco farm demonstration for tourist facilities’) and their preference for different activity specific standards. Their request for additional permitted activities was not supported by expert evidence, particularly as to whether it would have any implications for achieving the relevant objectives. On that basis, and accepting the Council’s evidence on these matters, we have declined to make such provision.

[54] On the matter of activity specific standards, we accept the Council’s expert evidence over that of Mr Lewis. We find the Council’s evidence to support what the Revised Version proposes as more appropriate than what the submitters prefer.

[55] For those reasons, subject to the drafting refinements we have discussed, we find these provisions of the Revised Version the most appropriate for responding to the Higher Order Documents and achieving related objectives. Accordingly, we have included the provisions as refined in the Decision Version.

Whether the permitted activity limits for filling or excavation in the FMA are too onerous

[56] Decision 6, the Stage 1 Natural Hazards decision, specifies permitted activity limits for earthworks within FMAs in Commercial, Industrial and Residential zones.

[57] The Revised Version proposes to supplement this by having those, and other proposed permitted activities for various categories of filling or excavation, apply to other zones. Generally, the proposed additional activities are subject to related activity standards specifying the maximum above ground height of fill and below ground depth of excavation.

[58] In Rural zones, the Revised Version proposes to enable up to 100m³ of filling per site in any continuous 10 year period.³⁵ This is to remediate a gap in the Decision 6 provisions

³⁵ Supplementary evidence of Ruth Evans, for the Council, dated 21 March 2016, at 4.18 – 4.19.

concerning earthworks in Rural zones. On the basis of Ms Evans' explanation, we are satisfied that this is a minor and appropriate remedial change, and we have provided for it in the Decision Version. In most other respects, the Council's proposals, as reflected in the Revised Version, were not contentious. On the Council's evidence, we find those proposals appropriate and have provided for them in the Decision Version.

[59] There was some contention about the proposed earthworks provisions for Residential zones. The Notified Version proposed the following (consistent with Decision 6):

A maximum volume of filling above ground level of 20m³ per site, and a maximum cumulative volume of filling and excavation of 50m³ per site in each case within a continuous period of 10 years.

[60] Submitter, Christian Jordan (3955), who owns properties in the city that have been brought into the FMA at Stage 3, has asked that the restrictions on filling be removed. Giving evidence in support of his submission, he calculated the amount of fill over a 500m² site as being a few centimetres or "virtually zero, ... a very, very small amount." He noted how the FMA areas were typically very flat, and cited the example of a property he owns in Worcester Street which he said was higher than the neighbouring property even though the rebuttal evidence of Ms Iris Brookland, for the Council, indicated it was lower. His point in this example was not to take issue with Ms Brookland's evidence as such but to emphasise that relative levels between properties inside and outside the FMA can be variable, yet these restrictions only apply inside the FMA. Given the 400mm freeboard already included in the minimum floor level restrictions, he argued that we could dispense with the volumetric control as serving no purpose.³⁶

[61] While that simple example may well be correct, we observe there are many ways in which excavation or filling on a property could occur on a different basis, with different effects.

[62] In his rebuttal evidence for the Council, Mr Graham Harrington explained that the main purpose of the control was to limit progressive reduction in natural storage and ensure filling is not giving rise to off-site effects such as blocking natural drainage paths or diverting surface water to the detriment of neighbours.³⁷

³⁶ Transcript, page 171, lines 15 – 45; page 172, lines 1 – 19 (Mr Jordan).

³⁷ Rebuttal evidence of Mr Graham Harrington, for the Council, at 5.4.

[63] We accept that evidence, and that of Ms Brooklands, in being satisfied that the relevant activity standards, as now expressed in the Decision Version, are the most appropriate for achieving related objectives.

What account if any should be taken of Council's flood management works and priorities

[64] Various submitters whose land is within overlays, particularly the FPMA, raised concerns that they were having to bear a regulatory burden that could be avoided or mitigated by the Council investing in and taking a more proactive approach to regular stream bank management and other flood management works. We mean no disrespect to various submitters by addressing this by particular reference to one submitter, Mr James Marshall (3003).

[65] Mr Marshall has a property on a reasonably large section at 11 Kaiwara Street, Hoon Hay. Presently, there is a three bedroom house on the property, but Mr Marshall would like to be able to build on it or sell this land to a developer. He is concerned that, as a consequence of the Council's approach to modelling, and the related implications arising from the Council's approach to flood management, his property is within the Cashmere FPMA.³⁸ Most of this FPMA is on Rural land, but it also extends onto Residential land, including over Mr Marshall's property.

[66] He explained that his property sits some 200mm below the road, and that it has periodically experienced flooding, even prior to his purchase of the property in 2003. To mitigate this, he secured a drainage easement through to 198 Cashmere Road, so as to connect to a drain that runs along the boundary of that property and is on rural land.³⁹

[67] He told us of his significant experience as a news cameraman assigned particularly to cover heavy weather events including "many 100 year floods in the last 17 years". In that context, he observed:⁴⁰

I have noted that our area, end of Cashmere Road/Hendersons Road, has not started flooding until the subdivisions in Halswell started to come on line, so they have built all these subdivisions and they have made no plans to mitigate any of that storm water.

³⁸ Transcript, page 483, lines 27 – 44 (Mr Marshall).

³⁹ Transcript, page 484, lines 18 – 26 (Mr Marshall).

⁴⁰ Transcript, page 484, lines 30 – 40 (Mr Marshall).

[68] He made a related observation that, overseas, spillways were deliberately constructed, kept free of plantings and otherwise not treated as “scenic reserves or nature areas” that get in the way of “a functional system of getting water out to the ocean”. He contrasted what he observed in the vicinity of Princess Margaret Hospital of “major obstructions in terms of river plantings” which create “bottlenecks”. He was concerned about an apparent lack of maintenance with the Heathcote, a “major spillway”. Hence, he considered that the Council was “putting the cart before the horse” by seeking to impose a FPMA while also approving major subdivisions that aggravated flooding and failing to maintain its waterways for their intended flood management purpose.⁴¹

[69] Having heard from Mr Marshall, and other submitters, we directed the Council to provide further information on the matters raised, particularly as to the effect of the Council’s management of waterways on FPMAs and how management affects the Council’s FPMA modelling.⁴²

[70] In a supplementary brief of evidence, the Council’s Surface Water Planner, Mr Graham Harrington, provided further explanation of these matters.⁴³ He informed us that the FPMA concept arose from a broad strategic overview of how best to manage the Heathcote Catchment. This was a joint study undertaken in conjunction with the Regional Council and is documented in the 1998 Heathcote Floodplain Management Strategy. He explained that the study specifically considered the economics and practicality of enlarging the river channel. It was excluded as impractical in view of the fact that historic settlement and development of the catchment started at the river mouth and extended up through its mid-reaches. That informed the preferred solution, namely to ensure that natural ponding areas were protected.⁴⁴

[71] Mr Harrington also explained that the channel capacities of Christchurch rivers are insufficient for a 1 in 200 year event (i.e. the relevant event for planning purposes, as per the CRPS). Hence, in such events, water flow will always extend onto floodplains. He illustrated that point with an aerial photograph, taken in March 2014, and showing spillage of the Heathcote River onto its floodplain in what was understood to be a 1 in 30 year event. The

⁴¹ Transcript, page 484, lines 40 – 46; page 485, lines 1 – 34 (Mr Marshall).

⁴² Minute in relation to the Natural Hazards (Stage 3) proposal, dated 3 March 2016; further Minute dated 8 March 2016.

⁴³ Supplementary statement of evidence of Graham Harrington, on behalf of the Council, dated 21 March 2016.

⁴⁴ Ibid at 4.2.

photograph also showed trees lining the channel and developments on the floodplain, both restricting flow.⁴⁵

[72] Mr Harrington also explained how waterways are represented in the modelling. Significantly, he told us that Council management or maintenance of the normal channel of a waterway is a secondary consideration, compared with the “roughness” of the floodplain. That is because, in a 1 in 200 or 1 in 500 year event, a significant portion of the flow is across the floodplain, such that these flows begin to dominate the level to which the flood level rises, rather than the roughness in the normal channel. Hence, he said “there should be little chance that a property is within the FPMA simply as a result of alleged lack of waterway management”. Rather, properties are within the FPMA mainly because of the way the water flows across the floodplain, rather than because of the capacity of the normal waterway to take flow in regular conditions.⁴⁶ He noted that the Council models rivers in their “normal state” without any significant obstructions or excessive weed growth. In any event, he said that the Council was very conscious of the need to maintain the floodplain in the setback areas of rivers free from infilling and other obstructions, as these matters cumulatively impact such as to largely determine the extent of the flood hazard overlays.⁴⁷

[73] We accept Mr Harrington’s evidence on these matters. It satisfies us that the position is not as perceived by Mr Marshall and others. In particular, we find it is not the case that properties are caught in FPMAs or other overlays as a consequence either of Council funding priorities or its response to maintenance of flood management infrastructure.

[74] The Council’s evidence satisfies us that the extent of the FPMA is the most appropriate.

⁴⁵ Supplementary statement of evidence of Graham Harrington, on behalf of the Council, dated 21 March 2016, at 4.6, 4.7.

⁴⁶ “Roughness” is determined by comparing the actual recorded river levels for a measured flow rate with model predictions for the same flow rate. Together with the cross-sectional area, it is a determiner of how much water can flow down a channel (or on a floodplain): Supplementary statement of evidence of Graham Harrington, on behalf of the Council, dated 21 March 2016, at 4.10, 4.11.

⁴⁷ Supplementary statement of evidence of Graham Harrington, on behalf of the Council, dated 21 March 2016, at 4.17 – 4.22.

Whether sea-level rise and other effects of climate change should be inputs into the HFHMA

[75] There was contention between some submitters and the Council as to whether sea-level rise and other effects of climate change, such as increased rainfall, should be included as inputs into the HFHMA.⁴⁸

[76] In the NZCPS, to which the CRDP must give effect⁴⁹, the relevant objective is Objective 5. It states:

To ensure that coastal hazard risks taking account of climate change, are managed by:

- locating new development away from areas prone to such risks;
- considering responses, including managed retreat, for existing development in this situation; and
- protecting or restoring natural defences to coastal hazards.

[77] The related NZCPS Policy 24 states:

24 Identification of coastal hazards

- (1) Identify areas in the coastal environment that are potentially affected by coastal hazards (including tsunami), giving priority to the identification of areas at high risk of being affected. Hazard risks, over at least 100 years, are to be assessed having regard to:
 - (a) physical drivers and processes that cause coastal change including sea level rise;
 - (b) short-term and long-term natural dynamic fluctuations of erosion and accretion;
 - (c) geomorphological character;
 - (d) the potential for inundation of the coastal environment, taking into account potential sources, inundation pathways and overland extent;
 - (e) cumulative effects of sea level rise, storm surge and wave height under storm conditions;

⁴⁸ CCC (3723) closing legal submissions at 5.4-5.9; see also closing submissions from South Brighton Residents Association (3945) and Empowered Christchurch (8296) supporting recognition of sea-level rise, and Christchurch Coastal Residents United (3686) and T and J Sintes (3735, 3736) opposing consideration of sea-level rise in flood modeling.

⁴⁹ Section 75(3)(b) Resource Management Act 1991.

- (f) influences that humans have had or are having on the coast;
- (g) the extent and permanence of built development; and
- (h) the effects of climate change on:
 - (i) matters (a) to (g) above;
 - (ii) storm frequency, intensity and surges; and
 - (iii) coastal sediment dynamics;

taking into account national guidance and the best available information on the likely effects of climate change on the region or district.

[78] Other NZCPS provisions of relevance are Policy 3 - Precautionary approach; Policy 25 - Subdivision, use and development in areas of coastal hazard risk; and Policy 27 - Strategies for protecting significant existing development from coastal hazard risk, and its consequences.

[79] In the CRPS, to which the CRDP must give effect⁵⁰:

- (a) Objective 6.2.1(8) states:

Recovery framework

Recovery, rebuilding and development are enabled within Greater Christchurch through a land use and infrastructure framework that: ...

- (8) protects people from unacceptable risk from natural hazards and the effects of sea-level rise ...

- (b) Objective 11.2.3 states:

Climate change and natural hazards

The effects of climate change, and its influence on sea levels and the frequency and severity of natural hazards, are recognised and provided for.

- (c) Policy 11.3.8 states:

Climate change

When considering natural hazards, and in determining if new subdivision, use or development is appropriate and sustainable in relation to potential risks from

⁵⁰ Resource Management Act 1991 Section 75(3)(c).

natural hazard events, local authorities shall have particular regard to the effects of climate change.

(d) Policy 11.3.9(3) states:

Integrated management of, and preparedness for, natural hazards

To undertake natural hazard management and preparedness for natural hazard events in a coordinated and integrated manner by ensuring that the lead agencies have particular regard to: ...

(3) the effects of climate change and resulting sea level rise; ...

[80] It follows that sea-level rise and other effects of climate change must be recognised, had regard to and provided for in the CRDP in order to protect people from unacceptable risk. There remains scope for consideration of the degree to which these matters are provided for. The nature and extent of that scope is an important consideration in relation to the extent of controls on subdivision, use and development in the CRDP.

[81] The CRPS defines ‘high hazard area’ as follows:

High hazard areas are:

1. flood hazard areas subject to inundation events 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 exceedence probability flood event;
2. land subject to coastal erosion over the next 100 years; and
3. land subject to sea water inundation (excluding tsunami).

When determining high hazard areas, projections on the effects of climate change will be taken into account.

[82] The relevant objective and policy for such areas in the CRPS are Objective 11.2.1 and Policy 11.3.1, which state:

Objective 11.2.1 – Avoid new subdivision, use and development of land that increases risks associated with natural hazards

New subdivision, use and development of land which increases the risk of natural hazards to people, property and infrastructure is avoided or, where avoidance is not possible, mitigation measures minimise such risks.

Policy 11.3.1 – Avoidance of inappropriate development in high hazard areas⁵¹

To avoid new subdivision, use and development (except as provided for in Policy 11.3.4) of land in high hazard areas, unless the subdivision, use or development:

- (1) is not likely to result in loss of life or serious injuries in the event of a natural hazard occurrence; and
- (2) is not likely to suffer significant damage or loss in the event of a natural hazard occurrence; and
- (3) is not likely to require new or upgraded hazard mitigation works to mitigate or avoid the natural hazard; and
- (4) is not likely to exacerbate the effects of the natural hazard; or
- (5) outside of greater Christchurch, is proposed to be located in an area zoned or identified in a district plan for urban residential, industrial or commercial use, at the date of notification of the CRPS, in which case the effects of the natural hazard must be mitigated; or
- (6) within greater Christchurch, is proposed to be located in an area zoned in a district plan for urban residential, industrial or commercial use, or identified as a "Greenfield Priority Area" on Map A of Chapter 6, both at the date the Land Use Recovery Plan was notified in the Gazette, in which case the effects of the natural hazard must be avoided or appropriately mitigated; or
- (7) within greater Christchurch, relates to the maintenance and/or upgrading of existing critical or significant infrastructure.

[83] How predicted sea level risk should be accounted for in the Chapter 5 Natural Hazards provisions was addressed in the Stage 1 hearing and related findings are made in Decision 6 (at [8], [153] - [160]). The Council's witness, Mr Mark Ivamy, a senior coastal scientist with Tonkin & Taylor Ltd, provided expert evidence that a sea level rise ('SLR') projection of 1.0m to 2115 is a mid-range projection in accordance with the latest national and international guidance documents.⁵² Experts in caucusing agreed with Mr Ivamy on that. The experts also agreed that "1m SLR to 2115 is suitable for use in the plan".⁵³ The Panel accepted that unchallenged evidence as the basis of an input of a 1 metre sea-level rise for the purpose of calculating flooding hazards for use in the CRDP.⁵⁴

⁵¹ As amended by the LURP, as noted.

⁵² Evidence of Mark Ivamy (3723) 13 February 2015 at 3.3.

⁵³ Decision 6, 17 July 2015, at [155], referring to Experts' Joint Statement: Natural Hazards – Flooding – Joint Statement for District Plan Review, 19 January 2015 at 2.

⁵⁴ Decision 6, 17 July 2015, at [153]-[156].

[84] An associated issue was the use of inputs for 16% increased rainfall over the next 100 years, and the likelihood of high tide and storm events occurring at the same time. These matters were also the subject of expert evidence in Stage 1 and Decision 6 makes related findings.⁵⁵

[85] The Council, together with the South Brighton Residents Association (3945) and Empowered Christchurch (2498), supported both the inclusion of sea-level rise as an input and the adoption of a 1m rise over the next 100 years.

[86] In this Stage 3 hearing, however, there were several challenges from other submitters to those inputs, particularly by Christchurch Coastal Residents United (CCRU)(3686) and T and J Sintes (3735, 3736). They were concerned about the implications of these matters for communities in the eastern part of the city and sought to ensure that the assumptions about sea-level rise were properly tested. Their arguments may be summarised as follows:

- (a) The issue was uncontested at Stage 1 and an assumption of 1m is at the extreme end of the IPCC scenarios and generally considered to be unlikely.
- (b) The Council's choice of 1m was not supported by independent assessment.
- (c) The Stage 1 assessment was inconsistent with higher level policy.
- (d) The hazard of sea-level rise is not urgent and could be addressed in a more considered way, perhaps by adaptive management, if it were deferred and addressed as part of the coastal hazards provisions.
- (e) The risks of avoiding development now include loss of use of the land and loss of equity for owners.
- (f) The risks of allowing development now are offset by increasingly rapid obsolescence of houses.

⁵⁵ Decision 6 at [157]-[160] and Policy 5.2.2.1(a)(ii) in the Schedules at page 142.

[87] These arguments, to be successful, would need to be supported by evidence which demonstrated that the evidence of Mr Ivamy (and the national policy and international assessments on which he relied) was incorrect. No party called any evidence of sufficient probative value at the hearing which did that, or which would otherwise justify us re-visiting our earlier decision.

[88] In saying that, we acknowledge the affidavit of Mr Simon Arnold produced by CCRU.⁵⁶ Mr Arnold holds the degree of BA(Hons) in mathematics and has done post-graduate study in management and policy analysis. In his affidavit, he produced his own review of what he called the “fitness for purpose” of the evidence of Mr Ivamy. In summary, Mr Arnold challenged:

- (a) The ways in which Mr Ivamy had considered or applied the NZCPS, especially Policy 3 – Precautionary approach and Policy 24 – Identification of coastal hazards; and
- (b) The calculation of the risk of sea-level rise and its comparison to other risks.

[89] In relation to the policy framework, we do not accept that Mr Ivamy’s approach is inconsistent with the relevant objectives and policies in either the NZCPS or the CRPS. In particular, we do not accept Mr Arnold’s proposition that, as it is for the Council (or the Panel) to apply a precautionary approach, it is not valid for an expert such as Mr Ivamy to refer to such an approach in his analysis. Such a proposition misunderstands the nature of Mr Ivamy’s evidence and the purpose it serves. As Decision 6 explains, Mr Ivamy’s short brief was in support of the use of a 1m sea level rise assumption. As is proper, he explained the basis of his opinion. That basis was not his primary scientific research or risk analysis. Rather, as he clearly explained, he drew from IPCC (2014) and his understanding of the relevance of NZCPS Policy 3. Given that it is part of our task to evaluate regulatory responses to climate change in light of relevant statutory policies, including NZCPS Policy 3, it is quite proper for an expert such as Mr Ivamy to refer to that policy as a basis for his opinion. In essence, his evidence was relevant to our task and properly given for our purposes. As with any other expert evidence, Mr Ivamy’s evidence was a matter any submitter could have called rebuttal evidence on. Yet,

⁵⁶ Evidence of Simon Arnold (3686), 23 February 2016 including correction dated 1 August 2016.

as is recorded at [154] of Decision 6, the position he took on this matter was agreed to by the other experts in caucusing, and was not seriously challenged by any submitter.⁵⁷

[90] In relation to the calculation of risk, we consider that the possible differences between Mr Ivamy and Mr Arnold are not sufficiently great to overcome the policies in the CRPS which direct that risks in high hazard areas are to be avoided. Those policies are clearly based on the risks of enabling new development in high hazard areas and in particular the risk of significant damage or loss of property in the event of a natural hazard occurrence. While one might reasonably argue about the relative merits of enabling current development and avoiding future risks, the statutory requirement is that the CRDP give effect to the NZCPS and the CRPS and that effectively means that the CRDP should generally avoid future risks in high hazard areas.

[91] As well, Mr Arnold did not attend to give evidence, and there was no opportunity for the Council to cross-examine him. Nor does he appear to have any qualifications or experience that would provide a basis for him to be considered as a peer of Mr Ivamy in the field of coastal science. In these circumstances we are not satisfied that we can rely on Mr Arnold's tabled statement, whether in affidavit form or otherwise, over the evidence of Mr Ivamy. For those reasons we do not give his evidence significant weight or accept its criticisms of Mr Ivamy's evidence.

[92] For these reasons, we find there is no sound reason why we should revisit the findings in Decision 6 on these matters nor make any related changes to relevant provisions determined by Decision 6 (or, for that matter, to the Revised Version).

Whether the restrictions on the use, subdivision and development of residential land under the HFHMA are too onerous

[93] Like the FPMAs, the HFHMA restricts not only subdivision and development of land but its use. A number of residents and residents' associations opposed the Notified Version, particularly by reason of the restrictions it would impose on the subdivision, development and use of land in well-established residential communities, including at New Brighton, Southshore and Redcliffs. Our findings on sea level rise do not address the activity status issue. The

⁵⁷ Footnoting the Experts' Joint Statement: Natural Hazards – Flooding – Joint Statement for District Plan Review, 19 January 2015 at 2 and his evidence at 4.2.

evidence we heard described the significant consequences that had arisen, in red-zoned and other areas where there was severe damage and disruption. A common theme in evidence from these submitters was a wish to have a regime that allowed for their residential communities to recover and rejuvenate.

[94] In summary, the Revised Version relevantly proposes the following:

- (a) The replacement and repair of buildings is a permitted activity, subject to standards that include that the ground floor area be no greater than the existing building and that the replaced or repaired building is located on site no lower than the existing building (proposed Rule 5.4.6.1, P1);
- (b) The replacement and repair of buildings that does not comply with those standards is a non-complying activity (proposed Rule 5.4.6.4, NC3);
- (c) A new building within a HFHMA is a non-complying activity (proposed Rule 5.4.6.4, NC2);
- (d) Subdivision which creates additional vacant allotment(s) from a site within a HFHMA is a non-complying activity (subject to confined exceptions) (proposed Rule 5.4.6.4, NC1); and
- (e) Change in use of a site that increases its occupancy (except as provided by proposed Rule 5.4.6.1, P1) is a non-complying activity (proposed Rule 5.4.6.4, NC4).

[95] A number of coastal community residents and residents' association members told us about their concerns about the equivalent provisions of the Notified Version. Again, we mean no disrespect to the many submitters who spoke at the hearing to give the following examples of what submitters told us;

- (a) Spokesperson for Christchurch Coastal Residents United (CCRU) (3686), Mr Warwick Schaffer, told us that the significant restrictions that the Notified Version proposed on subdivision and new building would have a devastating effect in the

east of the city. He expressed the view that it would stop the recovery and exacerbate social problems.⁵⁸

- (b) Ms Karina Hay, a long term coastal resident⁵⁹, expressed concern about the ‘psycho social’ impact of the controls on her Southshore community of some 500 residents. She understood that 70 percent of the properties of those households would be caught by the non-complying activity rule. She said that, while they may be able to rebuild those houses in the suburb, many are choosing not to do so “because they are seeing the suburb as having no future, vacant land is worthless, and even if you do live in a house there you cannot extend your house footprint should your family grow.”⁶⁰
- (c) Mr Dennis Harwood has been a resident of New Brighton since the 1970s, and chairs the New Brighton Business Association and New Brighton Landowners Association. He explained that, in those roles, he has met many residents who have ongoing concern about the practicality and potential for their community to recover and develop. He wanted to see relaxation of the non-complying activity restrictions on both new buildings and subdivision. He specifically commented:⁶¹

This hazard line puts a jinx over the community. People see the community as somewhere that is never going to be developed, never going to be finished and, I guess, it is a difficult task. It is a wonderful suburb. We are committed to seeing it improved.

- (d) Ms Jan Sintes who, with her husband Tim, have lived in a large family home at 18 Tern Street Southshore since 1990, told us she felt an injustice had been done by the Notified Version.⁶² She expressed the view that the community had lost confidence in the Council’s credibility and transparency, and that the Council had not properly taken account of the community’s wellbeing.⁶³ She considered the Notified Version was overly-restrictive in not allowing property owners to use their properties in appropriate ways.⁶⁴ Speaking to her personal situation, she said that

⁵⁸ Transcript, page 198, lines 14 – 16 (Mr Schaffer).

⁵⁹ Transcript, page 216, line 12 – 14 (Ms Hay).

⁶⁰ Transcript, p 220, lines 15 – 22; P 222, lines 10 – 11 (Ms Hay).

⁶¹ Transcript p 234 lines 4 – 5, 30 – 46; page 236, lines 1 – 10 (Mr Harwood).

⁶² Transcript, p 496, lines 21 – 35 (Ms Sintes).

⁶³ Transcript, p 498, lines 44 – 46 (Ms Sintes).

⁶⁴ Transcript, p 499, lines 5 – 7 (Ms Sintes).

she and her husband wanted to continue to live where they are into their retirement. However, to do that, they needed the ability to subdivide their large block of land so that they could build a smaller, easier care, dwelling now that their children had left home.⁶⁵

[96] We are mindful that some of these observations were representations, not evidence and those that were given in evidence also included lay opinion. On matters concerning the wider community and wellbeing, we are mindful that the statements are not based on formal surveys or other sources of reliable foundation for opinion. Even so, we find the various statements to indicate genuine, and reasonably widespread, views. Prominent in those is a sense that the Notified Version is unrealistically harsh in how it regulates ordinary use and enjoyment of residential land. There is also a strong loyalty to the communities and a desire to see community confidence and vibrancy restored, including through appropriately balanced CRDP rules.

[97] Overarching those concerns is a belief that the assumptions on sea level rise that underpin the Notified Version are flawed. However, as we explain at [75] – [92], that is a matter strongly directed by the NZCPS and CRPS, and properly the matter of expert assessment rather than lay opinion.

[98] To its credit, the Council called economist, Geoffrey Butcher⁶⁶ to present his opinion of the potential costs and benefits of the Notified Version's rules. He calculated the likely cost of the Notified Version's HFHMA rules to be in a reduction in the use of sections in the order of \$80,000 per site.⁶⁷ As for wider social impacts, he noted that they would reduce section availability and, hence, hamper recovery of the eastern side of the city.⁶⁸ However, he noted that he was not in a position to say whether benefits exceed costs. That was because the rarity of a 1 in 500 year flood meant he could not safely estimate the likely annual average damage cost and hence the Net Present Value of damage costs that would be avoided by the proposed rules (i.e. the benefits).⁶⁹

⁶⁵ Transcript, page 499, lines 18 – 26 (Ms Sintes)

⁶⁶ Evidence of Geoffrey Vernon Butcher, for the Council, dated 21 January 2016.

⁶⁷ Evidence of Geoffrey Butcher, for the Council, at 6.4.

⁶⁸ Evidence of Geoffrey Butcher, for the Council, at 7.4.

⁶⁹ Evidence of Geoffrey Butcher, for the Council, at 6.6.

[99] As uncontested opinion, we accept Mr Butcher’s evidence on these matters.

[100] The Council’s expert in relation to the modelling and mapping of flood hazards was Mr Harrington, who also gave evidence in the Stage 1 Natural Hazards hearing. The model used various inputs. Our main area of interest in questioning was the area that was primarily affected by sea level rise.

[101] We asked him about the nature and effects of flooding in the HFHMA. While he was cautious to ensure that his answers were confined to the parameters of his investigations, he confirmed that the overwhelming majority of land was included in the HFHMA on the modelled depth of floodwaters rather than on a calculation of depth multiplied by velocity (being the first limb of the definition of “high hazard areas” in the CRPS). He also acknowledged that the CRDP’s framework for the management areas was based on a progression from lifting floor levels (to keep habitable areas dry in the FMA) to preventing further development from occurring in areas that could be subject to deeper swifter water. However, he said that the modelling had not been assessed in a way that would differentiate between areas on that basis. Even so, he accepted that velocities were likely to be higher the closer land was to a river and that this provided a basis for different policies to address the different risks.⁷⁰

[102] We accept Mr Harrington’s evidence on these matters. It demonstrated to us, amongst other things, that the characteristic of the risk for coastal areas such as at New Brighton, Southshore and Redcliffs, differs from that for other more inland parts of the HFHMA also susceptible to water velocity risks.

[103] Coinciding with this, we received a large number of submissions from residents of New Brighton, Southshore and Redcliffs, each of which are long established residential communities. As Decision 6 explains, those are communities that also suffered significant earthquake damage.

[104] Following the testing of evidence during the hearing, we raised the issue of whether there might be lesser restrictions on activities within some or all of the HFHMA than the non-complying status proposed by the Council. Specifically, we noted that we were considering

⁷⁰ Transcript for 24 February 2016 at pages 115-122.

the potential for an alternative restricted discretionary activity (RDA) regime in the areas of New Brighton, Southshore and Redcliffs where the predominant influence is sea level rise.⁷¹

[105] Reserving its position that RDA classification was not appropriate the Council assisted us by providing a rule drafting and mapping service. At our request, it provided maps showing the different areas affected using inputs of 0, 0.5 and 1 metres of sea-level rise. By memorandum, on 19 July 2016, it provided our requested draft RDA rule.⁷² It followed this by providing to us an associated map, prepared as requested, in the same manner as the various CRDP overlays, denoting the area at New Brighton, Southshore and Redcliffs that we considered a potential candidate for application of any such rule. CCRU expressed support for such a proposed rule. For convenience, we now refer to this area by the name we give it in the Decision Version, namely the ‘Residential Unit Overlay’.

[106] As was explained to the parties, our making of these requests was in order to assist our s 32AA evaluation of options and did not necessarily represent our firm findings on the evidence.

[107] Having now fully considered the evidence, we disagree with Mr Harwood and others in finding that non-complying activity classification for subdivision is the most appropriate for achieving related objectives. Explicitly, Objective 3.3.6 relevantly specifies that “New subdivision, use and development ... is to be avoided in areas where the risks from natural hazards to people, property and infrastructure are assessed as being unacceptable”. Subdivision is an entry point to development and further intensification. Even on those areas where the predominant risk is predicted sea level rise, a more permissive regime for subdivision than proposed in the Revised Version would give rise to additional long term risks to people, property and infrastructure that we find, on the evidence, to be unacceptable.

[108] We have some sympathy for residents such as the Sintes who seek to subdivide their large property in order to allow them to continue to live in their neighbourhood, in a more suitable retirement dwelling. However, were we to design a subdivision regime to cater for their circumstances, we would also open the door for potentially significant intensification and other development that we find, on the evidence and in light of the Higher Order Documents,

⁷¹ Minute of the Panel dated 7 July 2016; CCC (3723) closing legal submissions at 5.10.

⁷² CCC (3723) closing legal submissions at 5.10.

would be imprudent and inappropriate. The Sintes and others will not be precluded from subdivision, in that it will be classified as a non-complying activity. However, we find that activity classification is the most appropriate as it ensures careful scrutiny of such applications against the relevant objectives and policies.

[109] We reach the same finding, on that evidence, for the various other proposed non-complying activities in the Revised Version, with the exception we now describe.

[110] That exception concerns the degree of restriction that is appropriate for ‘residential units’ in the HFHMA. As we have noted, the Revised Version allows for these as permitted activities where they are ‘the replacement and repair of buildings’ and they meet the specified standards. Specifically, the ground floor area must be no greater than the existing building and the replaced or repaired building must be located on a site no lower than the existing building.

[111] Replacement and repair of buildings can, of course, involve the construction of a new building. Even so, the Council is satisfied, as are we, that this permitted activity is appropriate for achieving what is now Strategic Objective 3.3.6. As a type of new use, it does not give rise to unacceptable risk. Given that, we also find that this extent of allowance for the replacement and repair of buildings would assist to achieve Strategic Objectives 3.3.1 (on enabling recovery and facilitating the future enhancement of the district), 3.3.4 (on housing capacity and choice) and 3.3.5 (on business and economic prosperity).

[112] The remaining issue concerns whether a greater degree of leniency can be provided for the building of new residential units on existing residentially zoned land.

[113] On the evidence, we find it would not be appropriate to do so except in the Residential Unit Overlay. What distinguishes those areas of New Brighton, Southshore and Redcliffs is the evidence that the flooding risk they face is predominantly from sea level rise (by contrast to inland areas within the HFHMA). Peppered through the residential communities of the Residential Unit Overlay are sections where once there were families and other members of these once-vibrant communities. In a number of cases, those sections have remained vacant since the earthquakes destroyed dwellings on them. For those properties, existing use rights may have lapsed, but the evidence satisfies us that appropriate mitigation of flood risks is possible.

[114] We find nothing in the Higher Order Documents that dictates that we must adopt the approach of the Revised Version. CRPS Policy 11.3.1 (as amended under the LURP and CER Act) gives us these choices:

- (a) Avoid new subdivision, use and development of land in high hazard areas unless the risk is below the thresholds of clauses (1)-(4) of that policy; or
- (b) Where the subdivision, use or development is proposed to be located in an area zoned for urban residential, industrial or commercial use, or identified as a "Greenfield Priority Area" on Map A of Chapter 6, both at the date the Land Use Recovery Plan was notified in the Gazette, avoid or appropriately mitigate the effects of the natural hazard (11.3.1(6)).

[115] Therefore, the CRPS does not dictate that we must specify non-complying activity status for new buildings in high hazard areas. It allows for an approach of mitigation of risk and the evidence demonstrates that this can be by rules as to floor levels and such matters. Nor does the NZCPS dictate that we must specify non-complying activity status for new buildings in high hazard areas.

[116] In terms of our obligation to evaluate options for achieving related objectives on the evidence, we reject as inappropriate the options of reducing the size of the HFHMA or providing for new residential units or other such activities as additional permitted activities or as a new controlled activity. On the evidence, none of those options would give effect to the CRPS or achieve Strategic Objective 3.3.6. We find, on the evidence, that available choices for these coastal communities are as between:

- (a) The Revised Version which consigns all other residential unit building on existing residentially zoned land to a non-complying activity classification; or
- (b) The less restrictive approach we raised with the parties (restricted discretionary activity).

[117] It is important to stress that an application for resource consent for an activity classified as restricted discretionary may be refused.⁷³ It is quite incorrect to regard the activity status of restricted discretionary as being somehow very close to that of a controlled activity. While the restrictions on the exercise of discretion should make the assessment of an application more focussed, any failure of a proposal to meet the requirements of the CRDP within the scope of those restrictions which are incapable of being addressed by reasonable conditions should result in such an application being declined.

[118] The Council's planning witness, Ms Ruth Evans, assisted the Panel on the limited basis we have described, on the possible drafting of a restricted discretionary activity rule. The drafting she offered, reserving her overall opinion, included matters of discretion (including specified criteria). That drafting approach was consistent with the drafting of similar RDA rules determined by Decision 6 and we found it to properly capture all matters that the evidence demonstrates as relevant.

[119] Assessing costs and benefits, on our evidential findings, we find that the Revised Version is unduly onerous. Specifically, in terms of the natural hazard risk in issue, we find no material difference between it and the option of a restricted discretionary activity classification for residential units subject to the matters of discretion that Ms Evans has offered. We find RDA classification would give relatively greater certainty and confidence to both the landowner and the community. Hence, we find it superior on our assessment of costs and benefits.

[120] On the evidence, we find that the natural hazard matters in issue are all readily capable of being addressed by the Council on a non-notified application basis. As such, we find no material cost to the community, and significant benefit for applicants, in providing for non-notification in the RDA rule. We have modified the rule proposed by Ms Evans to provide for this. We have also made minor drafting consistency changes.

[121] It is important to bear in mind that further subdivision and additional development would still be classified as non-complying, to limit the extent to which new uses might increase the level of risk. But given all the other constraints on these areas, we do not think it is appropriate to add additional planning burdens to those which the landowners already bear.

⁷³ Resource Management Act 1991 Section 104C(2).

[122] For those reasons, being satisfied that it is the most appropriate for responding to the Higher Order Documents and achieving related objectives, we have included in the Decision Version the modifications we have described to these rules of the Revised Version. Accompanying these, we have directed the Council to provide to us a related Appendix that depicts, in a map, the Residential Unity Overlay to which the additional RDA rule (including non-notification) applies.

What extent of permitted activity provision can be made for rural activities under the HFHMA

[123] On a similar basis to our request concerning the FPMA, we asked the Council to further consider its proposed permitted activity list for rural activities in the HFHMA.

[124] In its closing submissions, the Council proposed⁷⁴ the following additional permitted activities:⁷⁵

- (a) Accessory buildings either without floors or limited to one per 20ha and either on piles to meet the minimum floor level specified in Rule 5.4.1 or having a maximum floor area of 200m²; and
- (b) Swimming pools either below ground or limited to one per 20ha and not larger than 200m².

[125] While given the opportunity, the submitters did not identify any further activities that should be added to this range.

[126] We find the Council's position on these additional permitted activities is well supported on the evidence, subject to one confined matter of drafting. This concerns the Council's use of the qualifying word 'ancillary'. In the context of farming in a Rural zone, we find it clearer to make permitted activity provision for farm buildings of the kinds proposed but without using the qualifier 'ancillary'.

⁷⁴ CCC (3723) closing legal submissions at 5.1, 27 July 2016; supplementary statement of evidence of Graham Harrington, 21 March 2016; supplementary statement of evidence of Ruth Evans, 21 March 2016.
⁷⁵ Rule 5.4.6.1, Page 4 – 8.

[127] Subject to the refinements we have made, we find that the modified permitted activity list proposed by the Council is the most appropriate for achieving related objectives. Hence, we have provided for this in the Decision Version.

Whether ‘rebuild’ should be allowed for, together with repair and maintenance, as a permitted activity in relation to critical infrastructure in the HFHMA

[128] Also in relation to activities in the HFHMA, the Crown sought the inclusion of the word "rebuild" in Rule 5.4.6.1 activity P3⁷⁶ so that it would read:

Repair, rebuild and maintenance of critical infrastructure and associated ancillary structures.

[129] The Council raised these issues:

- (a) Whether “rebuild” should be removed to be consistent with relevant policies (in particular, Policy 5.2.1.3(c)); and
- (b) Whether “associated ancillary earthworks” should be permitted by this rule.⁷⁷

[130] In relation to the use of the word "rebuild", one issue is consistency with Policy 5.2.1.3(c). It reads:

Recognise the benefits of infrastructure and the need for its repair, maintenance and ongoing use in areas affected by natural hazards.

[131] It is also pertinent to note that Rule 5.4.6.1 starts with the sentence:

All activities in the High Flood Hazard Management Areas are a permitted activity unless specified in 5.4.6.3, 5.4.6.4, or as otherwise specified elsewhere in the [CRDP].

[132] We start by observing that, in ordinary circumstances, the use of a building includes its repair and maintenance. Further, there is a right to rebuild contained within the scope of existing use rights in relation to land which is protected by s 10, RMA. In s 10(3), the term used is “reconstruction” which we understand to be synonymous with “rebuilding”. The right

⁷⁶ Originally proposed as Rule 5.8.8.1.

⁷⁷ Crown (3721) closing legal submissions at 10 to 15; CCC (3723) closing legal submissions at para 5.2-5.3

is subject to certain limits, most relevantly that the right lapses if the use has been discontinued for a continuous period of more than 12 months.

[133] The circumstances in Christchurch are not ordinary. The context of the CRDP, as expressed in its Strategic Directions, is for rebuilding the city. Considered in that context, we do not think that the absence of the word “rebuild” in Policy 5.2.1.3(c) means that the concept of rebuilding is inconsistent with that policy.

[134] We note that activity P1 permits “the replacement or repair of buildings” subject only to constraints on ground floor area and location which are similar to the constraints on existing use rights in s 10 of the RMA. There does not appear to be any reason why critical infrastructure should not be able to be rebuilt or replaced in the same way. Rather than leave the matter for potential debate, we agree with the Crown that the word “rebuild” should remain in Rule 5.4.6.1 P3.

[135] On the second issue, we agree with the Council that the reference to “associated ancillary earthworks” should not be included. Earthworks should be properly dealt with on an integrated basis in Chapter 8 - Subdivision, Development and Earthworks. It is not apparent that the permitted activity standards for earthworks would create unreasonable requirements to obtain resource consent for repair and maintenance work, or even rebuilding where that occurs within the existing footprint of the relevant infrastructure. To cover ancillary earthworks as part of Rule 5.4.6.1 P3 could give rise to extensive earthworks being undertaken. The position put forward by the Crown is loose, uncertain and could give rise to significant adverse effects that should be considered under the general earthworks provisions.

[136] It is more consistent and clear, and in line with the Strategic Objective 3.3.2 as to clarity of language and efficiency, to address earthworks in Chapter 8.

[137] Being satisfied, therefore, that this approach is the most appropriate for achieving related objectives, we have provided for it in the Decision Version.

Whether land in the Henderson Basin and the Cashmere rural floodplain should be removed from the HFHMA

[138] Cashmere Park Trust (3306) and Cashmere Fields (3954), both represented by Mr Warren Lewis, sought that we remove or reduce the extent of the HFHMA overlay in the Henderson Basin and on the Cashmere rural floodplain (as shown on Map 45). Mr Lewis explained that this was on the basis that flood levels would in fact drop rather than rise, such that the HFHMA overlay is not required.⁷⁸

[139] In opposing this relief, the Council argued that the submitters were also predicated their case on the basis that the relevant land could be rezoned from Rural to Residential New Neighbourhood. The Council submits that such an assumption is unrealistic,⁷⁹ given that the relevant land has not been accepted by the Panel for such rezoning.⁸⁰

[140] In any case, we find that removal or reduction of the HFHMA is not appropriate, on the evidence. The HFHMA overlay is supported over this land on the Council's evidence. While we understand that Mr Lewis has a different opinion about that, we prefer the Council's evidence as being more reliably informed by assessment and given by independent experts. In saying that, we mean no criticism of Mr Lewis but in fact his evidence is as a representative with related interests in this matter.

[141] The submitters did not make closing submissions. For the reasons we have given, we agree with the Council's position and confirm the overlay over the relevant land.

Confirmation of the FMA, FPMA and HFHMA geographic boundaries

[142] For the reasons we have given, on the evidence, we find the mapped geographic FMA, FPMA and HFHMA boundaries as provided for in the Revised Version the most appropriate for achieving the related objectives and we confirm them in the Decision Version. Therefore, we decline the relief sought by way of removal or reduction of these overlays sought in various submissions.

⁷⁸ Evidence of Warren Lewis (3306, 3954), 2 February 2016.

⁷⁹ CCC (3723) closing legal submissions at 3.4 –3.5.

⁸⁰ Decision 29, 17 July 2016, at [82].

Confirmation of the Revised Version provisions as otherwise most appropriate

[143] Subject to the various changes and refinements we have discussed, we find on the Council's evidence that remaining aspects of the Revised Version are the most appropriate in responding to the statutory principles and Higher Order Documents and achieving the RMA purpose and related objectives. Therefore, this is reflected in the Decision Version.

Other matters

Amendments to definitions

[144] Certain amendments were proposed to the definitions of 'high flood hazard' and 'utility waterway' arising from changes made to Chapter 5 as a result of the Council's submissions.⁸¹ These are not contentious but require review for merit.

[145] As originally proposed, 'high flood hazard' was defined by reference to events. Now the Natural Hazards chapter has been recast to identify HFHMA. As a consequence, it is appropriate to amend the definition to reflect this change.

[146] This amendment can be made quite simply by adding words which make it clear that it is the area that is the subject of the definition rather than the event, as follows (additions shown in underlined text):

High Flood Hazard Management Area

Means an area subject to inundation events 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% AEP (1 in 500-year) flood event (as identified in the Canterbury Regional Policy Statement, Chapter 11) and shown on the planning maps.

[147] This amendment is appropriate, to be consistent with the other changes made in relation to HFHMA.

⁸¹ CCC (3723) closing legal submissions at 7.1 – 7.3.

Interaction between Natural Hazards and Earthworks chapters

[148] As we identified in Decision 28,⁸² the main rule controlling permitted earthworks, Rule 8.5A.2.1 P1, is confined to locations outside the FMA on the basis that earthworks within those areas (which include the FPMA and HFHMA) would be controlled by rules in Chapter 5. We invited the Council to address this issue. In its closing submissions, the Council expressed the view that both Chapter 5 and Chapter 8 should be amended to address this issue, as follows:

- (a) Amend Rule 8.5A.2.1 P1(a) so that the rule applies in a FMA;
- (b) Insert a note to Rule 8.5A.2.1 P2 stating that the rules in Chapter 5 apply where the land to be repaired is located in a FMA; and
- (c) Otherwise treat Rule 5.3.1.2 as clearly stating that Chapter 8 must still be complied with where any rule in Chapter 5 might also apply.⁸³

[149] By memorandum of counsel, in response to Decision 28 (Subdivision, Development and Earthworks), the Council asked us to make a consequential change to Chapter 5 Natural Hazards.⁸⁴ We are satisfied, on the basis of the explanations given by the Council in its memorandum that the changes it requests are appropriately able to be made as minor consequential changes, under the OIC. We find that, in substance, the Council's requested changes are appropriate, although we differ on some aspects of drafting as shown in the Decision Version and as we now explain.

[150] As requested, we find it appropriate and have deleted from Rule 8.5A.2.3 P1 its exclusion for earthworks in a FMA or FPMA. We have included an explanatory statement that Chapter 5 Natural Hazards includes the earthworks provisions (on this, differing from the Council's proposed approach of referencing only the provisions for the repair of earthquake damaged land). As also requested, we find it appropriate and have deleted from Rule 8.5A.2.3 P2 earthworks for earthquake repairs in a FMA, given that these are addressed by Rule 5.5.4. We have also included the Council's proposed cross-referencing text.

[151] In its closing submissions, the Crown pointed out a regulatory gap between the earthworks rules in Chapter 8 and the rules in Chapter 5 relating to earthworks in the FMA. It

⁸² Decision 28, 15 July 2016 at [128] – [129].

⁸³ CCC (3723) closing legal submissions at 8.1 – 8.2.

⁸⁴ Memorandum of counsel for Christchurch City Council requesting corrections to Decision 28, Subdivision (Stage 2), dated 5 August 2016.

pointed to Rule 8.5A.2.2, providing for earthworks that exceed the permitted limits in Table 9 as a restricted discretionary activity. As the rule does not apply in any FMA, the Crown noted that there might be no provision for assessment where a FMA overlays an Outstanding Natural Feature or Outstanding Natural Landscape such as at Te Waihora / Lake Ellesmere and Te Wairewa / Lake Forsyth.⁸⁵

[152] The Council supports the Crown's position. We find appropriate the Council's proposal that we add assessment criteria to what is now Rule 5.5.2.4 RD2(b)(iv) to ensure that any adverse effects or benefits with regard to access, character, ecology and amenity are considered.⁸⁶ Therefore, we have provided for this in the Decision Version.

[153] In all respects, we are satisfied that we have the jurisdiction to make these changes under cl 13(2), (5) and (6). In particular, we find the changes we have made are minor remedial changes that assist to bring greater clarity and consistency, and do not impinge materially on the rights and interests of those who may not have made a submission on these matters.

Update of Mass Movement Hazard Management Areas overlay

[154] As we have noted, the Council has asked that we make a change to alter the boundaries of or remove the Mass Movement Hazard Management Area (MMHMA) overlay in relation to specified properties. The request was made by memorandum of counsel, dated 4 October 2016, and supported by an affidavit of Dr Ian Wright. Dr Wright also gave evidence to the Panel in the hearing on the Stage 1 Natural Hazards proposal, as recorded in Decision 6 which confirmed the MMHMA overlay boundaries.

[155] The requested changes, all supported by Dr Wright, are as follows:

Property	Requested change
Defender Lane/Egnot Heights (Maps A1 (pre-mitigation) and A2 (post-mitigation))	Change parts of the former source area for the MMHMA1 along Egnot Heights and Defender Lane to MMHMA2. Remove the former run-out area below and across Egnot Heights.

⁸⁵ Crown closing submissions at 16 – 19.

⁸⁶ CCC closing legal submissions at 8.3.

	Change the MMHMA1 run-out area below Egnot Heights including the bund and downslope area below the bund to MMHMA2.
Maffey's Bund – Maffey's and McCormack Bay Roads Maps B1 (pre-mitigation) and B2 (post-mitigation)	Change the former MMHMA1 area, which includes the bund footprint and the former run-out area below the bund, to MMHMA2
Quarry Road – The Brae Earthworks (Maps C1 (pre-mitigation) and C2 (post-mitigation))	Remove the original MMHMA1 and MMHMA3 classifications for The Brae. Change the area to MMHMA2 and 'the remainder of the Port Hills' as shown on the post-mitigation map C2.
Quarry Road – St Andrews and Main Road Earthworks (Maps C1 (pre-mitigation) and C2 (post-mitigation))	Remove the former run-out area from the original MMHMA1 area. Include the remainder of the former MMHMA1 source area into the adjacent MMHMA2

[156] Dr Wright's affidavit is in addition to his supplementary evidence dated 4 February 2016 filed in the Stage 3 Natural Hazards proposal hearing. In his affidavit, Dr Wright sets out progress on mass movement remediation work and risk removal or reduction in four specific locations in Mt Pleasant and Redcliffs. His evidence states that, in these four locations, the Council commissioned detailed hazard mitigation designs which were subject to peer review. The designed works were then undertaken and completed subject to appropriate professional supervision. On that basis, Dr Wright recommends the specific amendments to the MMHMA overlay as shown on the maps attached as exhibits to his affidavit and described in the above table.

[157] We have reviewed this material and accept it together with Dr Wright's recommendations. While the provisions are now operative as part of the CRDP, we agree that the recommended changes are desirable for the purpose of ensuring that the CRDP is coherent and consistent. On the evidence, we find they are no more than minor effect given that they are based on hazard mitigation which the Chapter 5 provisions are intended to promote and on works that have now been carried out. Given the nature of what is recommended, we are

satisfied there are no issues calling for notification of these changes such as to enable submissions or further submissions. Inherently, we find them to be the most appropriate for achieving the related objectives.

[158] We amend the Natural Hazards Stage 1 Decision 6 accordingly, directing that the Council provide us with an updated set of related overlay maps for inclusion in the CRDP.

Clarity and consistency changes to provisions in Decision 6

[159] Cl 13(5) OIC provides that, when considering a proposal, we may reconsider any decision the Panel has already made if we consider that necessary or desirable to ensure that the CRDP is coherent and consistent. In various respects, we find that aspects of the drafting of Chapter 5 provisions of Decision 6 could be made clearer and more consistent with the drafting of other Chapters determined by the Panel. We make those related changes in the Decision Version.

[160] We note the following matters in particular:

- (a) We make consequential changes to the Residential Chapter to refer to the exception for daylight recession planes in the FMA.
- (b) We include a new rule 5.4b to exclude the application of the general FMA rules in the Waimakariri and Wairewa/Lake Forsyth and Waihora⁸⁷/Lake Ellesmere FMAs.
- (c) We clarify references in activity status rules to "other filling", so that this is defined with reference to the other permitted filling activities (for example, see Rule 5.5.1.1 P13 - P15).
- (d) We remove reference to repair of land in the FPMA, as the provision for repair of land only relates to exemption from the FMA provisions.
- (e) We make various other clarity, consistency, and numbering changes. Those include:

⁸⁷ We have also corrected the Revised Version's reference to 'Te Waihora'.

- (i) a new 'how to interpret and apply the rules' section;
- (ii) new rules RD4 and RD5 for the Waimakariri FMA, as there was no default if activity standards are not met (as is done for the FMA and Te Waihora and Wairewa FMAs);
- (iii) we amend the repair of land provisions to correctly reference natural and cultural heritage listings (Rule 5.5.4.1 P1 and P2 Activity Specific Standards).

CONCLUSION

[161] The Council and any other party seeking that we make any minor corrections to this decision must file a memorandum for those purposes **within 5 working days of the date of this decision.**

[162] We direct that the Council file, **within 10 working days of the date of this decision:**

- (a) An updated set of plan and overlay maps, reflecting this decision and for the purposes of our approval for inclusion in the CRDP; and
- (b) An appendix to show, by way of a plan, the Residential Unit Overlay area to which the related rule we have determined applies.

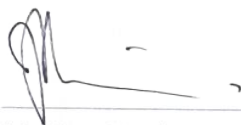
For the Hearings Panel:



Environment Judge Hassan (Chair)
Chair



Ms Sarah Dawson
Panel Member



Ms Jane Huria
Panel Member



Mr John Illingsworth
Panel Member

SCHEDULE 1

Changes our decision makes to the following chapters:

Chapter 2 Definitions

Chapter 3 Strategic Directions

Chapter 5 Natural Hazards

Chapter 8 Subdivision, Development and Earthworks

Chapter 14 Residential

Chapter 2 Definitions

The following amendments are made to Chapter 2 Definitions (added text underlined and deleted text struck through).

High Flood Hazard Management Area

~~M~~ means an area subject to inundation events 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% AEP (1 in 500-year) flood event (as identified in the Canterbury Regional Policy Statement, Chapter 11) and shown on the Planning Maps.

Chapter 3 Strategic Directions

The following amendments are made to Chapter 3 Strategic Directions (added text underlined and ~~deleted text struck through~~).

3.3.6 Objective — Natural hazards

~~[The requirement for further or alternative strategic direction in respect of “Natural hazards” will be reconsidered by the Panel as part of considering the Chapter 5 Proposal.]~~

~~a. — New subdivision, use and development, shall:~~

- ~~i. be avoided in areas where the risks of natural hazards to people, property and infrastructure are assessed as being unacceptable; and~~
- ~~ii. otherwise be undertaken in a manner that ensures the risks of natural hazards to people, property and infrastructure are appropriately mitigated;~~

~~b. — Except that new strategic infrastructure may be located in areas where the risks of natural hazards to people, property and other infrastructure are assessed as being unacceptable, provided that:~~

- ~~i. there is no reasonable alternative; and~~
- ~~ii. the strategic infrastructure has been designed to maintain, as far as practicable, its integrity and form during natural hazard events.~~

a. New subdivision, use and development (other than new critical or strategic infrastructure to which paragraph b. applies):

- i. is to be avoided in areas where the risks from natural hazards to people, property and infrastructure are assessed as being unacceptable; and
- ii. in all other areas, is undertaken in a manner that ensures the risks of natural hazards to people, property and infrastructure are appropriately mitigated.

b. New critical or strategic infrastructure may be located in areas where the risks of natural hazards to people, property and infrastructure are otherwise assessed as being unacceptable, but only where:

- i. there is no reasonable alternative; and
- ii. the strategic or critical infrastructure has been designed to maintain, as far as practicable, its integrity and form during natural hazard events; and
- iii. the natural hazard risks to people, property and infrastructure are appropriately mitigated.

c. There is increased public awareness of the range and scale of natural hazard events that can affect Christchurch District.

d. The repair of earthquake damaged land is facilitated as part of the recovery.

Chapter 5 Natural Hazards (Stage 3 Decision)

The chapter is amended by our Decision as follows.

This Version is based on Decisions 6 and 15 Natural Hazards (Part) - Stage 1, and includes minor corrections to Decision 15.

All provisions **shaded grey** are the subject of our earlier decisions.

To ensure clarity and certainty of provisions, and consistency with the Plan's drafting style, a number of changes have been made to our earlier decisions. Our additions are coloured **red** (deletions are not shown).

Text that is black and not shaded is the Natural Hazards Stage 3 Decision text.

Chapter 5 Natural Hazards

5.1 Introduction

This introduction is to assist the lay reader to understand how this chapter works and what it applies to. It is not an aid to interpretation in a legal sense.

The provisions in this chapter give effect to the Chapter 3 Strategic Directions Objectives.

Natural hazards are defined in the Resource Management Act 1991 as:

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

This chapter identifies the ways in which the impacts from a range of natural hazards are managed, particularly in relation to the use, development and maintenance of land, buildings and infrastructure.

Natural hazard risk can arise from:

- intense rainfall events causing flooding from rivers, streams, overland flow and lakes;
- earthquakes;
- liquefaction;
- slope instability, being cliff collapse, rockfall or boulder roll, and mass movement;
- tsunami;
- inundation from the sea and storm surge;
- coastal erosion;
- fire;
- exacerbation of some of the hazards above through climate change and sea level rise; and
- multiple hazards consisting of combinations of the above.

The primary approach to managing natural hazards in this Plan is to take what is called a “risk-based” approach. Such an approach considers various scales of a particular natural hazard event (for example different magnitude earthquakes and different intensities and durations of rainfall events), together with the likelihood of that particular event occurring and the effects that it would cause, particularly on people and property.

In this chapter, risk is expressed in a number of ways. For example, in areas at risk from slope instability such as cliff collapse, rockfall, or mass movement, it is the degree of risk to people’s lives

that is of primary concern. In most areas at risk from flooding, the primary concern relates to damage to property and how often this may occur.

In areas of slope instability, risk is expressed as an “Annual Individual Fatality Risk” or AIFR, being the probability of a fatality for an individual occupying a specific site in any one year as a result of slope instability. Calculating this risk involves a number of underlying assumptions such as the percentage of time an individual is on site or in a dwelling, the level of seismicity (taking into account that the Canterbury earthquakes are expected to decrease over time) and whether or not people would be evacuated following a major seismic event. Given the range of inputs into AIFR, there is an uncertainty in the calculated value of the AIFR which can mean there is a higher or lower level of actual risk. Recognising this, and the area-wide scale of the slope instability mapping, a process has been included that allows for rockfall risk to be recalculated on a site-specific basis through an independent risk assessment that has been supported by an independent peer review.

In areas of flooding, the term “Annual Exceedance Probability” or AEP is used to describe the likelihood of a flooding event of a certain size occurring. This is a different way of expressing the commonly used term “return period” – for example a storm with a return period of 200 years has an AEP of 1/200 (i.e. the reciprocal of the return period) or 0.5%, and means there is a 0.5% chance of a storm of that size happening in any one year.

In areas where there is likely to be a liquefaction risk to property, no specific measure of risk is applied. The area mapped is based on whether liquefaction is more likely to occur than not. Within that area, liquefaction risk and appropriate mitigation is assessed on a site specific basis using best practice geotechnical and engineering methods to determine the performance of infrastructure and buildings.

The level of control over activities in the plan is related to the consequence of the various natural hazards and whether such risks are considered to be acceptable or not. There is also a category in between where following proper assessment risk may be able to be managed such that the risk is reduced to acceptable levels.

In locations where the risk from natural hazards is considered to be unacceptable and such risks cannot practically be reduced to acceptable levels, new activities in those areas are generally to be avoided. This includes areas such as Cliff Collapse Management Area 1, Cliff Collapse Management Area 2 and Rockfall Management Area 1, but also includes adjacent areas where risk cannot be adequately remedied or mitigated.

Where risk from natural hazards is able to be managed to acceptable levels, the Council may require assessment and mitigation in relation to potential effects on development from natural hazards in order to reduce risk to a level that is deemed acceptable in the circumstances. Examples are Rockfall Management Area 2, the Flood Management Area and the Liquefaction Management Area. The Planning Maps also include Flood Ponding **Management Areas** which are required for flood storage capacity, thereby reducing impacts of downstream flooding, and the function of these is recognised in the plan.

Where risk is considered to be acceptable without any interventions, and is similar to the levels of many everyday risks that people face and accept each day, there is no intervention required by the Plan.

5.2 Natural hazards objective

5.2.1 Objective — Natural hazards

- a. The Objective for this chapter is Strategic Objective 3.3.6.

5.3 Natural hazards policies

5.3.1 General natural hazards policies

5.3.1.1 Policy — Avoid new development where there is unacceptable risk

- a. Avoid new subdivision, use and development, including new urban zonings, where the risk from a natural hazard is assessed as being unacceptable.

5.3.1.2 Policy — Manage activities to address natural hazard risks

- a. Manage activities in all areas subject to natural hazards in a manner that is commensurate with the likelihood and consequences of a natural hazard event on life and property.

5.3.1.3 Policy — Infrastructure

- a. Avoid locating new critical infrastructure where it is at risk of being significantly affected by a natural hazard unless, considering functional and operational requirements, there is no reasonable alternative location or method.
- b. Enable critical infrastructure to be designed, maintained and managed to function to the extent practicable during and after natural hazard events.
- c. Recognise the benefits of infrastructure and the need for its repair, maintenance and ongoing use in areas affected by natural hazards.

5.3.1.4 Policy — No transferring of natural hazard risk

- a. Ensure that subdivision, use and development (including proposals for hazard mitigation works or hazard removal) do not transfer or create unacceptable natural hazard risk to other people, property, infrastructure or the natural environment.

5.3.1.5 Policy — Natural features providing hazard resilience

- a. Protect natural features which assist in avoiding or reducing the risk of natural hazards, such as natural ponding areas, coastal dunes, wetlands, waterway margins and riparian vegetation from

inappropriate subdivision, use and development and where appropriate restore, maintain or enhance the functioning of these features.

5.3.1.6 Policy — Awareness of natural hazards

- a. Ensure people are informed about the natural hazards relating to their properties and surrounding area, including through provision of relevant information on Land Information Memoranda and hazard mapping on the Council's website.
- b. Encourage property owners to incorporate measures into buildings including earthquake damaged buildings beyond existing use rights or minimum building standards to avoid or mitigate natural hazards affecting their property.

5.3.1.7 Policy — Repair of earthquake damaged land

- a. Facilitate recovery by enabling property owners to make repairs to earthquake damaged land for residential purposes, where these repairs will appropriately manage adverse effects on people, property or the natural environment.
- b. Recognise that the repair of other earthquake damaged land is necessary as part of recovery.

5.3.1.8 Policy – Assessment of hazards

- a. Ensure that the level of assessment undertaken for plan changes, subdivision or development reflects the potential scale and significance of the hazard; and the nature and scale of the re-zoning, subdivision or development and its susceptibility to those hazards.

5.3.2 Policy for managing risk from flooding

5.3.2.1 Policy — Flooding

- a. Map hazard risk for the Flood Management Area based on:
 - i. a modelled 0.5% AEP (1 in 200-year) rainfall event plus a 5% AEP (1 in 20-year) tide event plus 250mm freeboard; OR a modelled 5% AEP (1 in 20-year flood event) plus a 0.5% AEP (1 in 200-year) tide event plus 250mm freeboard; OR 11.9m above Christchurch City Datum (the maximum 200-year tidal contour) plus 250mm freeboard; whichever is the greater; and
 - ii. allowance for 1 metre of sea level rise and an increase in rainfall intensity by 16% through to 2115 as a result of climate change; and
 - iii. a maximum buffer extension of the modelled rainfall event areas by 60 metres in a north/south and east/west direction.
- b. Avoid subdivision, use or development in areas where there is a high flood hazard where it will increase the potential risk to people's safety, well-being and property.

- c. Avoid activities locating where they could undermine the integrity of the Waimakariri River primary stopbank system, and restrict activities locating where they could undermine the integrity of the Waimakariri River secondary stopbank system.
- d. Maintain the flood storage capacity and function of natural floodplains, wetlands and ponding areas, including the Hendersons Basin, Cashmere Stream Floodplain, Hoon Hay Valley, Cashmere-Worsleys Ponding Area, Cranford Basin, and Lower Styx Ponding Area¹.
- e. Except for filling required to meet minimum floor levels, ensure that filling in urban areas at risk of flooding in a major flood event does not transfer flooding risk to other people, property, infrastructure or the natural environment.
- f. Reduce potential flood damage by ensuring floor levels for new buildings or additions to buildings, except those unlikely to suffer material damage, are above flooding predicted to occur in a major flood event, including an allowance for appropriate freeboard.

5.3.3 Policy for managing risk from liquefaction

5.3.3.1 Policy — Management of liquefaction risk

- a. Map the Liquefaction Management Area based on a district-wide assessment of where damaging liquefaction is more likely to occur.
- b. Provide for re-zoning, subdivision, use and development on flat land where liquefaction risk has been appropriately identified and assessed, and can be adequately remedied or mitigated.

5.3.4 Policies for managing risk from slope instability

5.3.4.1 Policy — Slope instability

- a. Map areas of slope instability risk at an area-wide scale using the following fixed inputs into calculations² that establish the Annual Individual Fatality Risk (AIFR) for a typical residential site³:

Slope instability hazard management area	Inputs	Mapped risk (AIFR)
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¹ This policy does not foreclose compensatory storage being provided for where filling is required.

² Using the method and parameters described in GNS Science Consultancy Report 2011/311 Canterbury Earthquakes Port Hills Slope Stability: Pilot study for assessing life-safety risk from rockfalls (boulder rolls) and GNS Science Consultancy Reports 2012/57 Canterbury Earthquakes Port Hills Slope Stability: Pilot study for assessing life-safety risk from cliff collapse and 2012/124 Port Hills Slope Stability: Life-safety risk from cliff collapse in the Port Hills, and any subsequent updates to those reports by GNS Science. Calculations also include modelling and estimates such as probability of a rockfall/cliff collapse event, vulnerability, rock/debris volumes, and rockfall run-out. The mapping does not take account of hazard mitigation works. Rocks can, and will, fall outside of the mapped hazard risk areas, however the risk of a fatality is lower.

³ Except Mass Movement Management Areas 2 & 3 which are mapped based on potential effect on property, not Annual Individual Fatality Risk.

	Percentage of a day the property is assumed to be occupied (%)	Year of predicted seismic activity used in modelling	Whether or not the property is evacuated immediately following a Natural Hazard Event	
Cliff Collapse Management Area 1	100	2012	No	$\geq 10^{-2}$
Cliff Collapse Management Area 2	100	2012	No	$\geq 10^{-4}$
Rockfall Management Area 1	67	2016	Yes	$\geq 10^{-4}$
Rockfall Management Area 2	100	2016	No	$\geq 10^{-4}$
Mass Movement Management Area 1	67	2016	Yes	$\geq 10^{-4}$
Mass Movement Management Areas 2 & 3	Refer to natural hazard maps			

b. In slope instability hazard management areas in the Port Hills and across Banks Peninsula:

- i. avoid subdivision, use and development where the activity will result in an unacceptable risk to life safety (AIFR $\geq 10^{-4}$ using the GNS Science method and parameters for establishing life safety risk), taking into account all relevant site-specific information and any hazard mitigation works proposed; and
- ii. otherwise, manage subdivision, use and development so that risk of damage to property and infrastructure is mitigated to an acceptable extent.

5.3.4.2 Policy — Site-specific risk assessment for AIFR Certificates⁴ in certain areas potentially affected by rockfall and/or cliff collapse

- a. Provide for site-specific assessment of risk from rockfall and/or cliff collapse, in Rockfall Management Area 1, Rockfall Management Area 2, and/or Cliff Collapse Management Area 2, where appropriate in accordance with the method and parameters described in Policy 5.3.4.1⁵ (along with all relevant site-specific information) in order to allow for the issue of AIFR certificates.
- b. Make information from site-specific assessments of risk from rockfall and/or cliff collapse (which have been certified by the Council) readily publicly available.
- c. Regularly notify changes to the Plan, as required to change the Planning Maps, in order to reflect updated information from site-specific assessments of life-safety risk from rockfall and/or cliff collapse which have been certified by the Council.

⁴ Refer to Rule 5.7.1.2

⁵ This method does not take account of hazard mitigation works

5.3.4.3 Policy — Slope instability for all of the Port Hills and Banks Peninsula

- a. In areas not already identified in Policy 5.3.4.1a as being subject to cliff collapse, rockfall or mass movement, but where the land may be subject to slope instability:
 - i. to the extent appropriate require proposals for subdivision, use and development to be assessed by a geotechnical specialist to evaluate the presence of hazards and level of risk to people and property (including infrastructure) from slope instability hazards; and
 - ii. only allow subdivision, use and development where risk can be reduced to an acceptable level.
- b. Avoid hazard mitigation works in areas of the Port Hills and across Banks Peninsula where cliff collapse or mass movement is likely to destroy or significantly damage such works, or where construction or maintenance of hazard mitigation works creates a safety hazard, unless reasonably required to protect critical infrastructure.
- c. Control hazard mitigation works and hazard removal works for slope instability across all other areas of the Port Hills and Banks Peninsula, to ensure that works:
 - i. are effective;
 - ii. do not worsen any existing natural hazard; and
 - iii. do not transfer or increase the risk to other people, property, including critical infrastructure or the natural environment.

5.4 How to interpret and apply the rules

- a. The rules that apply in the natural hazard overlay areas in the Planning Maps are listed in:
 - i. Rule 5.5 – Flood hazard:
 - A. Rule 5.5.1 – Activities and earthworks in the Flood Management Area;
 - B. Rule 5.5.2 – Activities and earthworks in the Te Waihora/Lake Ellesmere and Wairewa/Lake Forsyth Flood Management Areas;
 - C. Rule 5.5.3 – Activities and earthworks in the Waimakariri Flood Management Area;
 - D. Rule 5.5.4 – Repair of land used for residential purposes damaged by earthquakes within the Flood Management Areas in rural and residential zones;
 - E. Rule 5.5.5 – Activities and earthworks in the Flood Ponding Management Area; and
 - F. Rule 5.5.6 – Activities in the High Flood Hazard Management Area.
 - ii. Rule 5.6 – Liquefaction hazard; and
 - iii. Rules 5.7 – Slope instability.
- b. The Flood Management Areas have separate, specific provisions in identified geographical areas identified on the Planning Maps as set out below. Rule 5.5.1 does not apply to areas subject to Rules 5.5.2 or 5.5.3:
 - i. Rule 5.5.1 – Activities and earthworks in the Flood Management Area;
 - ii. Rule 5.5.2 – Activities and earthworks in the Te Waihora/Lake Ellesmere and Wairewa/Lake Forsyth Flood Management Areas;
 - iii. Rule 5.5.3 – Activities and earthworks in the Waimakariri Flood Management Area.
- c. The information requirements for resource consent applications are set out in Rule 5.8.
- d. The activities covered by the rules in this chapter are also subject to the rules in the relevant zone chapters.
- e. The activity status tables, rules and standards in the following chapters also apply:
 - 6** General Rules and Procedures
 - 7** Transport
 - 8** Subdivision, Development and Earthworks
 - 9** Natural and Cultural Heritage
 - 11** Utilities and Energy
 - 12** Hazardous Substances and Contaminated Land

5.5 Rules - Flood hazard

Areas identified as being subject to high hazard flooding⁶ are identified on the Planning Maps as High Flood Hazard Management Area.

Areas identified as being subject to inundation in a major flooding event are identified as Flood Management Area. Within this area, where the required floors levels are certain and already established by the Council, they are identified on the Planning Maps as being within the Fixed Minimum Floor Level Overlay. Where they are not accurately modelled and further modelling is required, the Council will, on request, review its current information and issue a Minimum Floor Level Certificate that will certify the floor level necessary for that site based on available information.

Areas that are important for stormwater retention are also identified on the Planning Maps as Flood Ponding Management Area.

5.5.1 Activities and earthworks in the Flood Management Area

5.5.1.1 Permitted activities

The activities listed below are permitted activities where the activity is located in the area shown on the Planning Maps as Flood Management Area, if they meet the activity specific standards set out in Table 5.5.1.1b.

Activities may also be restricted discretionary as specified in Rule 5.5.1.5.

Exemptions relating to this rule can be found in Rule 5.5.1.4.

For filling or excavation (before 31 December 2018) for repair of land used for residential purposes and damaged by earthquakes, see Rule 5.5.4.

For the purpose of determining appropriate floor levels for P1 and P2, the following models will be used:

Table 5.5.1.1a.

Flood Management Area Catchment	Model	Version
Styx	Styx River Hydrologic and Hydraulic Model	R004
Avon	Avon River Hydrologic and Hydraulic Model	D13
Heathcote	Heathcote River Hydrologic and Hydraulic Model	2012 Design
Sumner	Sumner Floodplain Hydrologic and Hydraulic Model	12N

⁶ High hazard flooding includes areas that flood to a depth greater than 1 metre, or the depth (m) x velocity (ms⁻¹) of the over land flow is greater than 1 in a 0.2% AEP (1 in 500-year) flood event

Table 5.5.1.1b.

Activity		Activity specific standards
P1	New buildings located within the Fixed Minimum Floor Level Overlay, unless specified in P5, P6, P7, P8 or P9 in Rule 5.5.1.1.	a. Minimum floor levels shall be the highest of the following: i. flooding predicted to occur in a 0.5% AEP (1 in 200-year) rainfall event concurrent with a 5% AEP (1 in 20-year) tidal event, including 1m sea level rise plus 400mm freeboard, as predicted by the relevant Christchurch City Council model and version identified in Table 5.5.1.1a.; or ii. flooding predicted to occur in a 0.5% AEP (1 in 200-year) tidal event concurrent with a 5% (1 in 20-year) rainfall event, including 1m sea level rise plus 400mm freeboard, as predicted by the relevant Christchurch City Council model and version identified in Table 5.5.1.1a.; or iii. 12.3 metres above Christchurch City Council Datum. (Link to table with floor levels)
P2	Additions to existing buildings which increase the ground floor area of the building located within the Fixed Minimum Floor Level Overlay, unless specified in P6, P7, P8 or P9 in Rule 5.5.1.1.	
P3	New buildings outside the Fixed Minimum Floor Level Overlay unless specified in P5, P6, P7, P8 or P9 in Rule 5.5.1.1.	a. Minimum floor levels shall be the level specified in the Minimum Floor Level Certificate (refer to Rule 5.5.1.2)
P4	Additions to existing buildings which increase the ground floor area of the building outside the Fixed Minimum Floor Level Overlay unless specified in P6, P7, P8 or P9 in Rule 5.5.1.1.	a. Minimum floor levels shall be the level specified in the Minimum Floor Level Certificate (refer to Rule 5.5.1.2)
P5	Additions to existing buildings that do not increase the ground floor area of the building.	Nil
P6	Additions other than garages provided for in Rule 5.5.1.1 P7 which do not increase the ground floor area of an existing building by more than 25 m ² within any continuous period of 10 years.	Nil
P7	Garages of 40 m ² or less in area, and any other accessory buildings without floors.	Nil
P8	Decks, swimming pools, and unenclosed buildings without floors.	Nil
P9	Utilities and LPG storage tanks.	Nil
P10	Filling or excavation for residential building platforms only to the extent necessary to achieve the minimum floor levels specified for P1, P2, P3 and P4 in Rule 5.5.1.1 for new	Nil

Activity	Activity specific standards
P11	Nil
P12	Nil
P13	Filling or excavation in zones other than commercial, industrial and rural zones that is not provided for under Rule 5.5.1.1 P10-P12 or P17. a. A maximum height of 0.3m of fill above ground and 0.6m depth of excavation below ground; and b. A maximum volume of filling above ground level of 10m³ per site, and a maximum cumulative volume of filling and excavation of 25m³ per site, in each case within any continuous period of 10 years. Or c. The excavation and filling is associated with the maintenance and/or replacement of underground petroleum storage systems and where, following reinstatement of the underground petroleum storage systems, the site will have a finished contour that is equivalent to the ground level at the commencement of the works.
P14	Filling or excavation in commercial and industrial zones that is not provided for under Rule 5.5.1.1 P10-P12 or P17. a. A maximum height of 0.3 metres of fill above ground and 0.6 metres depth of excavation below ground; and b. A maximum volume of filling above ground level of 20m³ per site, and a maximum cumulative volume of filling and excavation of 50m³ per site, in each case within any continuous period of 10 years. Or c. The excavation and filling is associated with the maintenance and/or replacement of underground petroleum storage systems and where, following reinstatement of the underground petroleum storage systems, the site will have a finished contour that is equivalent to the ground level at the commencement of the works.
P15	Filling or excavation in rural zones that is not provided for under Rule 5.5.1.1 P10-P12 or P17. a. A maximum height of 0.2 metres of fill above ground and 0.6 metres depth of excavation below ground; and b. A maximum volume of filling above ground level of 100m³ per site within any continuous period of 10 years. Or c. The excavation and filling is associated with the maintenance and/or replacement of underground petroleum storage systems and where, following reinstatement of the underground petroleum storage

Activity		Activity specific standards
		systems, the site will have a finished contour that is equivalent to the ground level at the commencement of the works.
P16	Outdoor storage of transiting shipping containers in commercial and industrial zones.	Nil
P17	Excavation and filling within the area identified in Appendix 8.6.7d - Cashmere/Worsleys Development Plan.	a. The excavation and filling will not result in the reduction in the existing potential storage volume of water that is able to be retained within the development plan area, prior to any residential zone development, in a 0.2% AEP event up to the existing Worsleys Road minimum centreline level of 18.89 metres (Christchurch City Council Datum). The design shall also accommodate additional storage for any additional stormwater that could be discharged from the development of the residential zones and roads in a 0.2% AEP event. b. All roads are filled so that the crown of the road is no lower than RL 18.7 metres (Christchurch City Council Datum), except for the realigned Worsleys Road required in the Development Plan. The crown of Worsleys Road shall be no lower than RL 18.89 metres (Christchurch City Council Datum). c. The side slopes of all areas filled or excavated in accordance with a. and b. above shall not exceed an angle of 1 in 5.

5.5.1.2 Minimum floor level certificate

- a. For P3 and P4 in Table 5.5.1.1b, new buildings or additions to existing buildings within the Flood Management Area, but outside of the Fixed Minimum Floor Level Overlay shall have a floor level that is greater than or equal to that specified in a Minimum Floor Level Certificate. The Council will issue a Minimum Floor Level Certificate (which will be valid for 2 years from the date of issue) which specifies the design floor level for a building calculated as the highest of the following:
- i. flooding predicted to occur in a 0.5% AEP (1 in 200-year) rainfall event concurrent with a 5% AEP (1 in 20-year) tidal event, including 1m sea level rise plus 400mm freeboard, as predicted by the most up to date Christchurch City Council model and any relevant field information; or
 - ii. flooding predicted to occur in a 0.5% AEP (1 in 200-year) tidal event concurrent with a 5% AEP (1 in 20-year) rainfall event, including 1m sea level rise plus 400mm freeboard, as predicted by the most up to date Christchurch City Council model and any relevant field information; or
 - iii. 12.3 metres above Christchurch City Council Datum.

5.5.1.3 Exemptions for daylight recession planes in the Flood Management Area

- a. For P1 and P2 in Rule 5.5.1.1, the applicable daylight recession plane in residential zones shall be determined as if the ground level at the relevant boundary was the minimum floor level set in the activity specific standards in Rule 5.5.1.1, or natural ground level, whichever is higher.
- b. For P3 and P4 in Rule 5.5.1.1, the applicable daylight recession plane in residential zones shall be determined as if the ground level at the relevant boundary was the minimum floor level specified in the Minimum Floor Level Certificate issued under Rule 5.5.1.2, or natural ground level, whichever is higher.
- c. For the purposes of a. and b. above, the applicable daylight recession plane in residential zones are:
 - i. Rule 14.2.3.6 Daylight recession planes - Residential Suburban Zone and Residential Suburban Density Transition Zone;
 - ii. Rule 14.3.3.6 Daylight recession planes - Residential Medium Density Zone;
 - iii. Rule 14.4.3.5 Daylight recession planes – Residential Banks Peninsula Zone;
 - iv. Rule 14.5.3.4 Daylight recession planes – Residential Hills Zone;
 - v. Rule 14.7.3.4 Daylight recession planes – Residential Large Lot Zone;
 - vi. Rule 14.8.3.4 Daylight recession planes – Residential Small Settlement;
 - vii. Rule 14.9.3.4 Daylight recession planes - Residential New Neighbourhood Zone;
 - viii. Rule 14.10.3.6 Daylight recession planes – Residential Guest Accommodation Zone;
 - ix. Rule 14.11.4.2 Daylight recession planes - Enhanced development mechanism;
 - x. Rule 14.12.3.2 Daylight recession planes - Community housing redevelopment mechanism; and
 - xi. Rule 14.13.3.2 Daylight recession planes – Residential Central City Zone.

5.5.1.4 Exemption for buildings in certain circumstances where a PIM or building consent has been issued

- a. Replacement of earthquake-damaged buildings (including partial replacement) in the Flood Management Area are exempt from compliance with the requirements of P1-P4 in Rule 5.5.1.1, provided that:
 - i. for Flood Management Areas made operative on 7 June 2016, on or before the date at which those Flood Management Areas became operative, the Council has received an application for a Project Information Memorandum (PIM) for a building on a specific site; or
 - ii. for Flood Management Areas made operative on [insert Stage 3 operative date], on or before the date at which those Flood Management Areas became operative, the Council has received an application for a Project Information Memorandum (PIM) for a building on a specific site;

AND

- iii. in response to that application, the Council has issued a PIM that confirms the minimum floor level for the building on that site.

The PIM may be issued before or after the date at which the relevant Flood Management Area became operative, but shall be based on the requirements of the relevant district plan that was operative on the date the PIM was received, or if no rules were relevant under that plan, the New Zealand Building Code as at the date that the application was received.

- b. The exemption to Rule 5.5.1.1 outlined in a. above will cease to apply if construction of the building is not commenced by 30 April 2018.

5.5.1.5 Restricted discretionary activities

The activities listed below are restricted discretionary activities where the activity is located in an area shown on the Planning Maps as a Flood Management Area.

Discretion to grant or decline consent and impose conditions is restricted to the matters of discretion as set out in the following table.

Table 5.5.1.5a

Activity	The Council's discretion shall be limited to the following matters:
RD1 New buildings or additions to buildings which are not permitted by the activity status rules and/or activity specific standards for P1 – P9 set out in Rule 5.5.1.1. Any application arising from this rule shall not be limited or publicly notified.	a. The Council's discretion is limited to the following matters: i. setting of minimum floor levels ii. mitigation of the effects of flooding b. These restricted discretionary activities will be assessed against the following criteria. i. The frequency at which any proposed building or addition is predicted to be flooded and the extent of damage likely to occur in such an event. ii. Whether any mitigation measures are proposed, their effectiveness and environmental effects, and any benefits to the wider area associated with flood management. iii. Whether there are any positive effects from the reduction in floor levels in relation to neighbouring buildings or streetscape.
RD2 Filling or excavation which is not a permitted activity under P10, P11, P12, or P17 set out in Rule 5.5.1.1, or filling or excavation that exceeds the standards in P13 or P14 set out in Rule 5.5.1.1.	a. The Council's discretion is limited to the following matters: i. timing, location, scale and nature of earthworks; ii. earthworks method; and iii. mitigation of effects as they impact flooding and surface drainage. b. These restricted discretionary activities will be assessed against the following criteria.

Activity	The Council's discretion shall be limited to the following matters:
	i. Whether any effects arise from filling or excavation on land stability, flooding, waterways, groundwater and natural ground levels on and/or off site, including: A. any likelihood of exacerbation of flooding, erosion, or siltation either upstream or downstream of the site; B. any likelihood of affecting the stability of adjoining land, including its susceptibility to subsidence or erosion; C. any adverse effects on other properties from disturbances to surface drainage patterns; D. effects on flood storage capacity and function in the immediate area, and any wider effects on the flood storage in the catchment including any compensatory storage proposed; and any effects on existing stormwater and flood protection works; E. any implications for groundwater and the water table, on or off site; and F. any benefits associated with flood management. ii. Whether there are any benefits arising that enable the reasonable use of the site. iii. Whether any mitigation measures are proposed, their effectiveness and whether, and to what extent there is a transfer of adverse effects to other properties.

5.5.2 Activities and earthworks in the Te Waihora/Lake Ellesmere and Wairewa/Lake Forsyth Flood Management Areas

5.5.2.1 Permitted activities

The activities listed below are permitted activities where the activity is located within the areas shown on the Planning Maps as Te Waihora/Lake Ellesmere or Wairewa/Lake Forsyth Flood Management Areas, if they meet the activity specific standards set out in this table.

Activities may also be restricted discretionary as set out in Rule 5.5.2.4.

For filling or excavation (before 31 December 2018) for repair of land used for residential purposes and damaged by earthquakes, see Rule 5.5.4.

Activity		Activity specific standards
P1	New buildings and additions to existing buildings in Flood Management Areas.	a. The minimum floor level shall be no less than 3.0 metres above mean sea level.
P2	Additions to existing buildings that do not increase the ground floor area of the building.	Nil
P3	Additions, other than garages provided for in Rule 5.5.2.1 P4, which do not increase the ground floor area of an existing building by more than 25m ² within any continuous period of 10 years.	
P4	Garages of 40m ² or less in area, accessory buildings which are no more than 200m ² in area, and other accessory buildings without floors.	
P5	Decks, swimming pools, and unenclosed buildings without floors.	
P6	Utilities and LPG storage tanks.	
P7	Filling or excavation for residential building platforms only to the extent necessary to achieve the minimum floor levels specified for P1 in Rule 5.5.2.1 for new buildings and for additions to buildings.	
P8	Filling or excavation associated with the maintenance of flood protection and bank erosion protection works; and the maintenance of existing drains or ponds.	
P9	Filling or excavation associated with utilities, or the replacement, repair or maintenance of existing utilities.	
P10	Filling or excavation that is not provided for under Rule 5.5.2.1 P7-P9 or P13.	a. A maximum height of 0.3 metres of fill above ground and 0.6 metres depth of excavation below ground; and b. A maximum volume of filling above ground level of 20m³ per site, and a maximum cumulative volume of filling and excavation of 50m³ per site, in each case within any continuous period of 10 years. Or c. The excavation and filling is associated with the maintenance and/or replacement of underground petroleum storage systems and where, following reinstatement of the underground petroleum storage systems, the site will have a finished contour that is equivalent to the ground level at the commencement of the works.
P11	New buildings outside the Fixed Minimum Floor Level Overlay unless specified in P2, P3, P4, P5 or P6 in Rule 5.5.2.1.	a. Minimum floor levels shall be the level specified in the Minimum Floor Level Certificate (refer to Rule 5.5.2.2)

Activity		Activity specific standards
P12	Additions to existing buildings which increase the ground floor area of the building outside the Fixed Minimum Floor Level Overlay unless specified in P3, P4, P5 or P6 in Rule 5.5.2.1.	a. Minimum floor levels shall be the level specified in the Minimum Floor Level Certificate (refer to Rule 5.5.2.2)
P13	Filling or excavation for the maintenance or upgrading of existing roads on legal road.	a. The works shall not impede the flow of surface water.

5.5.2.2 Minimum floor level

- a. For P11 and P12 in Rule 5.5.2.1, new buildings or additions to existing buildings within the Te Waihora/Lake Ellesmere and Wairewa/Lake Forsyth Flood Management Areas, but outside the Fixed Minimum Floor Level Overlay, shall have a floor level that is greater than or equal to that specified in a Minimum Floor Level Certificate. The Council will issue a Minimum Floor Level Certificate (which will be valid for 2 years from the date of issue) which specifies the design floor level for a building calculated as the highest of the following:
- flooding predicted to occur in a 0.5% AEP (1 in 200-year) rainfall event concurrent with a 5% AEP (1 in 20-year) tidal event, including 1m sea level rise plus 400mm freeboard, as predicted by the most up to date Christchurch City Council model and any relevant field information; or
 - flooding predicted to occur in a 0.5% AEP (1 in 200-year) tidal event concurrent with a 5% AEP (1 in 20-year) rainfall event, including 1m sea level rise plus 400mm freeboard, as predicted by the most up to date Christchurch City Council model and any relevant field information; or
 - 12.3 metres above Christchurch City Council Datum.

5.5.2.3 Exemptions for daylight recession planes in the Te Waihora/Lake Ellesmere and Wairewa/Lake Forsyth Flood Management Areas

- a. For P11 and P12 in Rule 5.5.2.1, the applicable daylight recession plane in residential zones shall be determined as if the ground level at the relevant boundary was the minimum floor level specified in the Minimum Floor Level Certificate issued under Rule 5.5.1.2, or natural ground level, whichever is higher.
- b. For the purposes of a. above, the applicable daylight recession plane in residential zones is:
- Rule 14.8.3.4 Daylight recession planes - Residential Small Settlement Zone

Note: For filling or excavation (before 31 December 2018) for repair of land used for residential purposes and damaged by earthquakes, see Rule 5.5.4.

5.5.2.4 Restricted discretionary activities

The activities listed below are restricted discretionary activities where the activity is located within the areas shown on the Planning Maps as Te Waihora/Lake Ellesmere or Wairewa/Lake Forsyth Flood Management Areas.

Discretion to grant or decline consent and impose conditions is restricted to the matters of discretion as set out in the following table.

Activity		The Council's discretion shall be limited to the following matters:
RD1	New buildings or additions to buildings which are not permitted by the activity status rules and/or activity specific standards for P1 – P6, P11 and P12 set out in Rule 5.5.2.1. Any application arising from this rule shall not be limited or publicly notified.	a. The Council's discretion is limited to the following matters: i. setting of minimum floor levels; and ii. mitigation of the effects of flooding. b. These restricted discretionary activities will be assessed against the following criteria: i. The frequency at which any proposed building or addition is predicted to be flooded and the extent of damage likely to occur in such an event. ii. Whether any mitigation measures are proposed, their effectiveness and environmental effects, and any benefits to the wider area associated with flood management. iii. Whether there are any positive effects from the reduction in floor levels in relation to neighbouring buildings or streetscape.
RD2	Filling or excavation which is not a permitted activity under P7–P9 or P13 set out in Rule 5.5.2.1, or filling or excavation that does not meet the standards in P10 set out in Rule 5.5.2.1.	a. The Council's discretion is limited to the following matters: i. Timing, location, scale and nature of earthworks ii. Earthworks method iii. Mitigation of effects as they impact flooding and surface drainage b. These restricted discretionary activities will be assessed against the following criteria: i. Whether any effects arise from filling or excavation on land stability, flooding, waterways, groundwater and natural ground levels on and/or off site, including: A. any likelihood of exacerbation of flooding, erosion, or siltation either upstream or downstream of the site. B. any likelihood of affecting the stability of adjoining land, including its susceptibility to subsidence or erosion. C. any adverse effects on other properties from disturbances to surface drainage patterns. D. effects on flood storage capacity and function in the immediate area, and any wider effects on the flood storage in the catchment including any compensatory

		storage proposed; and any effects on existing stormwater and flood protection works. E. any implications for groundwater and the water table, on or off site. F. any benefits associated with flood management. ii. Whether there are any benefits arising that enable the reasonable use of the site. iii. Whether any mitigation measures are proposed, their effectiveness and whether, and to what extent there is a transfer of adverse effects to other properties. iv. Whether any effects arise with regard to access, character, ecology and amenity, including: A. any adverse effects or benefits for public access, natural character or ecology of waterways and wetland areas. B. any adverse effects on amenity values including dust nuisance, visual impact, noise, vibration and traffic associated with the filling or excavation.
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5.5.3 Activities and earthworks in the Waimakariri Flood Management Area

5.5.3.1 Permitted activities

The activities listed below are permitted activities where the activity is located within the area shown on the Planning Maps as the Waimakariri Flood Management Area, if they meet the activity specific standards set out in this table.

Activities may also be restricted discretionary or non-complying as specified in Rules 5.5.3.3 and 5.5.3.4.

For filling or excavation (before 31 December 2018) for repair of land used for residential purposes and damaged by earthquakes, see Rule 5.5.4.

Activity		Activity specific standards
P1	Additions to existing buildings that do not increase the ground floor area of the building.	Nil
P2	Additions other than garages provided for in P3 which do not increase the ground floor area of an existing building by more than 25m ² within any continuous period of 10 years.	

Activity		Activity specific standards
P3	Garages and any other accessory buildings without floors.	a. The maximum area of any garage or other accessory building shall be no greater than 200m ² in Rural Zones and Open Space Zones.
P4	Decks, swimming pools and unenclosed buildings without floors.	Nil
P5	Filling or excavation associated with the maintenance of flood protection and bank erosion protection works; and the maintenance of existing drains or ponds.	
P6	Filling or excavation associated with utilities, or the replacement, repair or maintenance of existing utilities.	
P7	Filling or excavation for post holes for fences and shade cloth structures and tunnel houses, planting holes, and excavation for approved wells.	
P8	Filling or excavation for the maintenance of existing farm tracks and farm yards, or the establishment of new farm tracks and farm yards.	a. The finished ground level shall be maintained to within 200mm of the natural ground level.
P9	Application of fertiliser, lime or other plant growth enhancers such as top soil, bark and trace elements. Note: Consent may be required from Canterbury Regional Council, pursuant to section 15 of the Resource Management Act 1991, for the discharge of plant growth enhancers, including fertiliser, into or onto land.	a. For top soil, the maximum volume of filling shall be 100m ³ per site within any continuous period of 10 years.
P10	Filling or excavation for the purposes of establishing and maintaining accessways to a residential unit.	a. Finished ground level shall be maintained to within 200mm of the natural ground level, and b. Accessways shall be constructed so as not to impede the flow of surface water.
P11	Filling for the purposes of landscaping around a residential unit in association with domestic gardening.	a. The maximum volume of filling shall be 10m ³ per site in each case within any continuous period of 10 years.
P12	Filling or excavation for the maintenance or upgrade of existing roads on legal road.	a. The works shall not impede the flow of surface water.
P13	Filling that is not provided for under Rule 5.5.3.1 P5-P12.	a. Either the maximum depth of filling shall be 200mm; and b. The maximum volume of filling shall be 100m ³ per site; and c. The filling shall not impede the flow of surface water; or d. The filling has consent approval.

Activity		Activity specific standards
P14	Excavation for farm purposes that is not provided for under Rule 5.5.3.1 P5-P12.	a. The excavated area is subsequently filled within the following year so that there is no net effect on flood storage.
P15	New buildings outside the Fixed Minimum Floor Level Overlay unless specified in P1, P2, P3 or P4 in Rule 5.5.3.1.	a. Minimum floor levels shall be the level specified in the Minimum Floor Level Certificate (refer to Rule 5.5.3.2).
P16	Additions to existing buildings which increase the ground floor area of the building outside the Fixed Minimum Floor Level Overlay unless specified in P2, P3 or P4 in Rule 5.5.3.1.	a. Minimum floor levels shall be the level specified in the Minimum Floor Level Certificate (refer to Rule 5.5.1.2).
P17	Utilities	Nil

5.5.3.2 Minimum floor level certificate

- a. For P15 and P16 in Rule 5.5.3.1, new buildings or additions to existing buildings within the Waimakariri Flood Management Area, but outside of the Fixed Minimum Floor Level Overlay shall have a floor level that is greater than or equal to that specified in a Minimum Floor Level Certificate. The Council will issue a Minimum Floor Level Certificate (which will be valid for 2 years from the date of issue) which specifies the design floor level for a building calculated as the highest of the following:
- flooding predicted to occur in a 0.5% AEP (1 in 200-year) rainfall event concurrent with a 5% AEP (1 in 20-year) tidal event, including 1m sea level rise plus 400mm freeboard, as predicted by the most up to date Christchurch City Council model and any relevant field information; or
 - flooding predicted to occur in a 0.5% AEP (1 in 200-year) tidal event concurrent with a 5% AEP (1 in 20-year) rainfall event, including 1m sea level rise plus 400mm freeboard, as predicted by the most up to date Christchurch City Council model and any relevant field information; or
 - 12.3 metres above Christchurch City Council Datum.

5.5.3.3 Restricted discretionary activities

The activities listed below are restricted discretionary activities where the activity is located within the area shown on the Planning Maps as the Waimakariri Flood Management Area.

Discretion to grant or decline consent and impose conditions is restricted to the matters of discretion as set out in the following table.

Activity		The Council's discretion shall be limited to the following matters:
RD1	New buildings not located within the 100 metre wide primary stopbank setback as shown on the Planning Maps and which are not	a. The likely effects of proposed filling, excavation and/or building on the functioning of the Waimakariri River stopbank floodplain during and after flood events, including any

Activity		The Council's discretion shall be limited to the following matters:
	permitted by the activity status rules and/or activity specific standards for P1, P2, P3 or P4 set out in Rule 5.5.3.1.	likelihood of work undertaken exacerbating inundation, erosion, alluvion or avulsion whether upstream or downstream of the site.
RD2	New buildings or new accessory buildings or additions to any accessory building not located within the 50 metre wide secondary stopbank setback as shown on the Planning Maps and not permitted by the activity status rules and/or activity specific standards for P1, P2, P3 or P4 set out in Rule 5.5.3.1. Any application arising from this rule shall not be limited or publicly notified.	b. The frequency at which the building or addition is predicted to be inundated by floodwaters and the extent of damage that is likely to occur in such an event. c. Whether the floor level of any new building/building addition is above the predicted 0.5% Annual Exceedance Probability (AEP) or 1 in 200 year flood event level with a stopbank breach plus an allowance for freeboard not exceeding 400mm. d. Whether the integrity and/or function of either the Primary or Secondary stopbanks will be adversely affected by the method to achieve the floor level set out in (c). e. Where relevant, any adverse effects likely on land as a result of tidal influences during flood periods including the potential for exacerbation of those effects with potential sea level rise.
RD3	Filling or excavation within 50 metres of the secondary stopbank as shown on the Planning Maps unless permitted by Rule 5.5.3.1 P10.	f. The way in which any building is sited and constructed and its intended use. g. Any adverse effects on access for maintenance of flood protection works. h. The effectiveness and environmental impact of any measures that may be proposed to mitigate the effects of filling, excavation or building. i. The extent to which other properties will be adversely affected as a result of disturbances to surface drainage patterns. j. Any benefits associated with flood management, including the provision of public access, or the enhancement of the natural qualities, amenity values or ecology of waterways and wetland area. k. The extent to which development could result in surface water ponding in the event of flooding, and hence and increased risk of birdstrike. l. Any actual or potential effects on the structural integrity of either the primary or secondary stopbanks including those resulting from scour and backwash from increased water in excavated areas during a flood.
RD4	New buildings or additions to buildings which are not permitted by the activity status rules and/or activity specific standards for P1 – P4 or P15 - P17 set out in Rule 5.5.3.1. Any application arising from this rule shall not be limited or publicly notified.	a. The Council's discretion is limited to the following matters: i. setting of minimum floor levels ii. mitigation of the effects of flooding b. These restricted discretionary activities will be assessed against the following criteria. i. The frequency at which any proposed building or addition is predicted to be flooded and the extent of damage likely to occur in such an event. ii. Whether any mitigation measures are proposed, their effectiveness and environmental effects, and any benefits

Activity	The Council's discretion shall be limited to the following matters:
	to the wider area associated with flood management. iii. Whether there are any positive effects from the reduction in floor levels in relation to neighbouring buildings or streetscape.
RD5	Filling or excavation which is not a permitted activity under P5-P7 set out in Rule 5.5.3.1, or filling or excavation that does not meet the standards in P8-P14 set out in Rule 5.5.3.1. a. The Council's discretion is limited to the following matters: i. timing, location, scale and nature of earthworks; ii. earthworks method; and iii. mitigation of effects as they impact flooding and surface drainage. b. These restricted discretionary activities will be assessed against the following criteria. i. Whether any effects arise from filling or excavation on land stability, flooding, waterways, groundwater and natural ground levels on and/or off site, including: A. any likelihood of exacerbation of flooding, erosion, or siltation either upstream or downstream of the site; B. any likelihood of affecting the stability of adjoining land, including its susceptibility to subsidence or erosion; C. any adverse effects on other properties from disturbances to surface drainage patterns; D. effects on flood storage capacity and function in the immediate area, and any wider effects on the flood storage in the catchment including any compensatory storage proposed; and any effects on existing stormwater and flood protection works; E. any implications for groundwater and the water table, on or off site; and F. any benefits associated with flood management. ii. Whether there are any benefits arising that enable the reasonable use of the site. iii. Whether any mitigation measures are proposed, their effectiveness and whether, and to what extent there is a transfer of adverse effects to other properties.

5.5.3.4 Non-complying activities

The activities listed below are non-complying activities where the activity is located within the area shown on the Planning Maps as Waimakariri Flood Management Area.

Activity

NC1	New buildings or accessory buildings or additions to existing buildings or accessory buildings located within the 100 metre wide primary stopbank setback shown on the Planning Maps.
NC2	New buildings or new accessory buildings or additions to any existing building or existing accessory building located within the 50 metre wide secondary stopbank setback shown on the Planning Maps.
NC3	Filling or excavation within the 100 metre wide primary stopbank setback shown on the Planning Maps.

5.5.3.5 Exemptions to Rules 5.5.3.1, 5.5.3.3 and 5.5.3.4

The following are exemptions from Rules 5.5.3.1, 5.5.3.3 and 5.5.3.4:

- a. activities within the Clearwater Golf Resort, because Rule 21.9.4.3.2 Flood Protection – Ground levels at Clearwater Golf Resort, within the Specific Purposes (Golf Resort) Zone, makes provision for ground levels and building floor levels; and
- b. activities within the Rural Quarry Zone (McLeans Island area) provided for in Rules 17.6.2, 17.6.3 and 17.6.4, provided that no excavation shall cut below a surface with a gradient of 3 (horizontal) to 1 (vertical) measure from a point commencing 10 metres from the toe of any existing or consented stopbank (see Appendix 5.9.1 Gradient for excavation near stopbank for Rule 5.5.3.5 b.).

5.5.4 Repair of land used for residential purposes damaged by earthquakes within Flood Management Areas in rural and residential zones

5.5.4.1 Permitted activities

The activities listed below are permitted activities in the **area shown on the Planning Maps as Flood Management Area** (including the Te Waihora/Lake Ellesmere and Wairewa/Lake Forsyth Flood Management Areas) provided the activity:

- a. **complies with all of the activity status rules and activity specific standards in Rule 5.5.4.1; and**
- b. **occurs in a rural or residential zone (except for the Residential Suburban Zone on the corner of Hendersons and Sparks Road); and**
- c. **is commenced prior to the expiry date of this rule on 31 December 2018.**

Activities may also be restricted discretionary as specified in Rule 5.5.4.2.

Exemptions from the permitted activity standards are listed in Rule 5.5.4.3.

Table 5.5.4.1a

Activity	Activity specific standards
P1 Any filling or excavation activity undertaken to repair land used for residential purposes and damaged by the earthquakes, where any site or part of a site is located within a Flood Management Area unless specified by P2 in Rule 5.5.4.1.	a. Any filling, excavation or disturbance of soils shall not exceed the standards in Tables 5.5.4.1b or 5.5.4.1c under Rule 5.5.4.1. b. There shall be no filling, excavation or disturbance of soil within 5 metres from any network waterway identified on the Planning Maps and in Appendix 6.11.5.4; Note: The Canterbury Regional Council manages earthworks within 10 metres of other rivers and lakes and 20 metres of the coast and land use consent may be required from that Council. Refer to the Natural Resource Regional Plan rule WQL36A, and the Land and Water Regional Plan Rules 8.5.2, 9.5.6 and 11.5.1.
P2 Any filling or excavation activity undertaken to repair land used for residential purposes and damaged by the earthquakes involving soil mixing, aggregate piers, or grout, where any site or part of a site is located within a Flood Management Area.	c. All filling, excavation or disturbance of soil: i. is not within the dripline of a significant tree listed in Appendix 9.4.7.1; or ii. is not within any Site of Ecological Significance listed in Schedule A of Appendix 9.1.6.1; or iii. is not at or within 5 metres of: A. any heritage item listed in Appendix 9.3.7.2, where the heritage item is on the same site, or B. a Site of Ngāi Tahu Cultural Significance identified in Schedule 9.5.6.1. d. Erosion and sediment control measures are implemented and maintained in accordance with Environment Canterbury's Erosion and Sediment Control Guidelines for Small Sites to minimise erosion and the discharge of sediment laden water to surface water. e. All filling, excavation or disturbance of soil greater than 0.3m in depth shall be in accordance with New Zealand Standard NZS 4431:1989 Code of Practice for Earth Fill for Residential Development. Certification is not required except as specified at activity specific standards k and l in Rule 5.5.4.1. f. All land repair works are to be managed in accordance with New Zealand Standard NZS 6803:1999 Acoustics – Construction Noise and DIN 4150 1999-02 Structural Vibration. g. Land repair works involving mixing or insertion of grout shall not involve: i. mixtures with a flow time greater than 30 seconds when tested in accordance with the grout flow test at NZS 3112: Part 1:1986 (Test 3) or a flowable concrete/grout including cement and inert additives which exceed a diameter of 300mm when tested in accordance with the inverted cone test at NZS 3112: Part 1:1986 (Test 11) except for in-situ mixing; or ii. pressurised injection of grout into the ground. h. Where grout is deposited into land:

Activity	Activity specific standards
	i. using in-situ mixing the grout shall be mixed evenly through the augured soil column and the percentage of grout within the augured soil column shall not exceed 20%; or ii. where grout is deposited into land using methods other than in-situ mixing, the percentage of cement in the dry grout mixture shall not exceed 30%. i. Land repair materials shall consist only of: i. soil, gravel, rocks, concrete, sand, silt (such as exists on site already), or clean, inert material; or ii. cement and/or bentonite grout including inert additives; or iii. timber foundation piles; and shall not iv. include or disturb putrescible, pollutant, inflammable or hazardous components; and/or v. include fill which comprises more than 5% vegetation of any load by volume. j. Land repair works, other than dust and sediment control measures, shall not be undertaken outside of the hours of 7.30am to 6.00pm Monday to Friday and 8.00am to 5.00pm on Saturday. No works shall occur on public holidays. k. Where the land repair and earthworks are designed, supervised or certified by a Chartered Professional Engineer with experience in geotechnical engineering, or Professional Engineering Geologist (IPENZ Registered), at least 3 working days prior to commencing any work on the site, including stockpiling and preparatory works: i. written notice shall be provided to the Council informing it of the location of the land repair and the name and contact details of the supervising engineer; and ii. written notice shall be provided to any occupier of a residential unit adjoining the land repair site to inform them that the works will be taking place, the expected duration of the works and provide contact details of the site supervisor; and iii. a sign shall be erected at the front of the property including the name and contact details of the site supervisor. l. Where the land repair and earthworks are designed, supervised or certified by a Chartered Professional Engineer with experience in geotechnical engineering, or Professional Engineering Geologist (IPENZ Registered), a statement of professional opinion completed by a Chartered Professional Engineer with experience in geotechnical engineering must

Activity	Activity specific standards
	be provided to the Council within 3 months of the land repair being completed to the effect that the works will meet all applicable standards and requirements and be suitable for its intended purpose. This shall include as-built plans of the works.

Standards where the land repair and earthworks are not designed, supervised or certified by a Chartered Professional Engineer with experience in geotechnical engineering. All activity specific standards in Rule 5.5.4.1 must also be met:

Table 5.5.4.1b

	Column A Max. Volume (Cumulative)	Column B Max. depth (m)	Column C Max. depth of fill (m) [below ground level]	Column D Fill (m) [above ground level]	Column E Setback from boundary
P1	50m ³ /site	0.6	0.6	0.3 max. depth; and 10 m ³ /site max. volume	Setback from boundary must be equivalent to or greater than the depth of filling or excavation.
P2	Not more than 10m ³ of grout/site	1.0	1.0	0.3m max. depth	

Standards where the land repair and earthworks are designed, supervised or certified by a Chartered Professional Engineer with experience in geotechnical engineering. All activity specific standards at Rule 5.5.4.1 must also be met:

Table 5.5.4.1c

	Column A Max. Volume (Cumulative)	Column B Max. depth (m)	Column C Max. depth of fill (m) [below ground level]	Column D Fill (m) [above ground level]	Column E Setback from boundary
P1	Nil	Nil	Nil	0.3 max. depth and 10m ³ /site max. volume	Nil
P2	Not more than 80m ³ of grout/site	Nil	Nil	Nil	1m

5.5.4.2 Restricted discretionary activities

The activities listed below are restricted discretionary activities in areas shown on the Planning Maps as a Flood Management Area (including the Te Waihora/Lake Ellesmere and Wairewa/Lake Forsyth Flood Management Areas).

Exemptions from the restricted discretionary activities are listed in Rule 5.5.4.3.

Discretion to grant or decline consent and impose conditions is restricted to the matters of discretion set out in the following table.

Table 5.5.4.2a

Activity		The Council's discretion shall be limited to the following matters:
RD1	Any filling or excavation undertaken to repair land used for residential purposes damaged by earthquakes that does not meet one or more of the activity specific standards for P1 or P2 set out in Rule 5.5.4.1. Any application arising from this rule shall not be limited or publicly notified.	a. The Council's discretion shall be limited to the following matters: i. The matters for discretion reserved for RD2 set out in Rule 5.5.1.5. b. These restricted discretionary activities will be assessed against the following criteria: i. The assessment criteria set out for RD2 in Rule 5.5.1.5

5.5.4.3 Exemptions to Rules 5.5.4.1 and 5.5.4.2

- a. Works involving the establishment, repair or replacement of any permitted utilities or the maintenance of existing drains or ponds by a utility operator.
- b. Works permitted by or exempted from a building consent (including work forming part of foundations for a building) do not require resource consent under Rules 5.5.4.1 or 5.5.4.2 where:
 - i. they **meet** the **standards** in column D of Tables 5.5.4.1b and 5.5.4.1c in Rule 5.5.4.1 controlling fill above ground level in a Flood Management Area; or
 - ii. they are designed, supervised and certified by a Chartered Professional Engineer with experience in geotechnical engineering, including where they exceed the criteria at columns A, B, C or E of Tables 5.5.4.1b and 5.5.4.1c in Rule 5.5.4.1; or
 - iii. they **meet** activity specific standards b. and c. of P1 and P2 in Rule 5.5.4.1.
- c. Testing or investigation preceding land repairs or remediation as a result of land damaged by earthquakes is permitted provided it meets the activity specific standards for P1 and P2 in Rule 5.5.4.1.
- d. Filling or excavation associated with the maintenance of flood protection works.
- e. Post holes for the erection of fences or for permitted or approved buildings and signs.
- f. Planting holes for trees and plants.

Clarification of rule

- a. For the purposes of this rule, the building consent platform extends to a maximum of 2.5m from the exterior wall of an enclosed structure or support structures of open structures.

- b. Measurement of volume shall include only areas which have been disturbed, including by filling, excavation, soil mixing or injection of materials. Soil above or between these areas which remains undisturbed does not form part of the allowable volume, including where those undisturbed soils are compacted or otherwise altered by the works.
- c. For the purposes of this rule, when land repairs are being undertaken over a number of properties at the same time and by the same contractor, the site boundary for the purpose of the setback is the outer perimeter of the properties which are subject to the land repair works.

Advice Notes

1. For the avoidance of doubt, where the earthworks are associated with the repair of land damaged by earthquakes and used for residential purposes in the zones listed in [Rule 5.5.4.1](#), [Rule 5.5.4](#) substitutes for all other earthworks rules in this Plan.
2. For the purposes of this rule, “repair of land used for residential purposes damaged by earthquakes” does not include repair of land on the Port Hills or Banks Peninsula.
3. Those intending to do land repair earthworks are responsible for complying with the National Environmental Standard (NES) for Assessing and Managing Contaminants in Soil to Protect Human Health (2011). Such persons should contact the Christchurch City Council or Environment Canterbury to find out whether their land has been used for hazardous activities which might trigger the need for compliance with the NES.
4. Any vegetation removed during land repairs should not be replaced with pest species as listed in Appendix 1 to the Infrastructure Design Standard (Part 10). The Council prefers that replanting occurs in accordance with its Streamside Planting Guideline to ensure bank stability is not compromised.
5. Information regarding the disposal of excavated material and the Standards and Guidelines referenced in the rule is available from the Council.
6. Archaeological sites are subject to a separate consent process under the Heritage New Zealand Pouhere Taonga Act 2014. The Heritage New Zealand Pouhere Taonga 2014 makes it unlawful for any person to destroy, damage or modify the whole or any part of an archaeological site without the prior authority of the Heritage New Zealand. This is the case regardless of whether the land on which site is located is designated, or the activity is permitted under the District or Regional Plan or a resource or building consent has been granted. The Heritage New Zealand Pouhere Taonga Act 2014 also provides for penalties for unauthorised destruction, damage or modification.

5.5.5 Activities and earthworks in the Flood Ponding Management Area

5.5.5.1 Permitted activities

The activities listed below are permitted activities where the activity is located in the area shown on the Planning Maps as Flood Ponding Management Area, if they meet the activity standards set out in this table.

Activities may also be restricted discretionary or non-complying as specified in Rules 5.5.5.2 and 5.5.5.3.

Note: Consent may be required from Canterbury Regional Council for earthworks in a Flood Ponding Management Area.

Activity		Activity specific standards
P1	Filling or excavation associated with the maintenance of flood protection and bank erosion protection works; and the maintenance of existing drains or ponds.	Nil
P2	Filling or excavation associated with utilities, or the replacement, repair or maintenance of existing utilities.	
P3	Filling or excavation for post holes for fences, planting holes, and excavation for approved wells.	
P4	Filling or excavation for the maintenance of existing farm tracks and farm yards, or the establishment of new farm tracks and farm yards.	a. Finished ground level shall be maintained to within 200mm of the natural ground level.
P5	Application of fertiliser, lime or other plant growth enhancers such as top soil, bark and trace elements. Note: Consent may be required from Canterbury Regional Council, pursuant to section 15 of the Resource Management Act 1991 for the discharge of plant growth enhancers, including fertiliser, into or onto land.	a. Finished ground level shall be maintained to within 200mm of the natural ground level; and b. Filling is limited to a total volume of not more than 100m ³ per ha.; and c. For top soil, the maximum volume of filling shall be 100m ³ per site within any continuous period of 10 years.
P6	Filling or excavation for the purposes of establishing and maintaining accessways to a residential unit.	a. Finished ground level shall be maintained to within 200mm of the natural ground level, and b. Accessways shall be constructed so as not to impede the flow of surface water.
P7	Filling or excavation for the purposes of landscaping around a residential unit in association with domestic gardening.	a. The maximum volume of filling shall be 20m ³ per site and a maximum volume of filling of 100m ³ per site within any continuous period of 10 years.
P8	Filling and excavation for the maintenance or upgrade of existing roads on legal road.	a. The works shall not impede the flow of surface water.
P9	Filling that is not provided for under Rule 5.5.5.1 P 1-8 or P12.	a. Either the maximum depth of filling shall be 200mm, and b. The maximum volume of filling shall be 100m ³ per site within any continuous period of 10 years, and c. Finished ground level shall not exceed the surrounding land; or d. The filling has consent approval.
P10	Excavation for farm purposes that is not provided for under Rule 5.5.5.1 P1-P4, P6-P8 or P12.	a. The excavated area is subsequently filled within the following year so that there is no net effect on flood storage.

Activity		Activity specific standards
P11	Utilities	a. The ground floor area of the utility does not exceed 10m ² (except where the utility is a lattice tower for electricity transmission or electricity distribution purposes).
P12	Excavation and filling within the area identified in Appendix 8.6.7d – Cashmere/Worsleys Development Plan.	a. The excavation and filling will not result in the reduction in the existing potential storage volume of water that is able to be retained within the development plan area, prior to any Residential zone development, in a 0.2% AEP (1 in 500 year) event up to the existing Worsleys Road minimum centreline level of 18.89m (Christchurch City Council Drainage Datum). The design shall also accommodate additional storage for any additional stormwater that could be discharged from the development of the Residential zones and roads in such a 0.2% AEP event. b. All roads are filled so that the crown of the road is no lower than RL 18.7m (Christchurch City Council Drainage Datum), except for the realigned Worsleys Road required in the Development Plan. The crown of Worsleys Road shall be no lower than RL 18.89m (Christchurch City Council Drainage Datum). c. The side slopes of all areas filled or excavated in accordance with (a) and (b) above shall not exceed an angle of 1 in 5.
P13	The replacement or repair of buildings.	a. The ground floor area of the replaced or repaired building is not greater than the ground floor area of the existing building. b. The replaced or repaired building is located in a position on the site that is no lower than the existing building.
P14	Residential unit.	a. The residential unit is either - on piles designed to meet the minimum floor level specified in Rule 5.4.1; or - has a maximum of 200m² ground floor area. b. There is a maximum of one residential unit per site.
P15	Farm buildings without floors.	Nil
P16	Accessory buildings without floors.	
P17	Farm buildings, or accessory buildings, with floors.	a. The building: - is on piles designed to meet the minimum floor level specified in Rule 5.4.1; or - the building has a maximum ground floor

Activity		Activity specific standards
		area of 200m². b. There is a maximum of one accessory building or farm building per site up to 20 hectares and a maximum of one accessory building or farm building per additional 20 hectares of site.
P18	Below ground swimming pools.	Nil
P19	Above ground swimming pools.	a. The swimming pool is not larger than 200m². b. There is no more than one swimming pool per 20 hectares of site.

5.5.5.2 Restricted discretionary activities

The activities listed below are restricted discretionary activities in where the activity is located in the area shown on the Planning Maps as Flood Ponding Management Area.

Discretion to grant or decline consent and impose conditions is restricted to the matters of discretion as set out in the following table.

Activity		The Council's discretion shall be limited to the following matters:
RD1	Filling and excavation within Henderson Basin for the creation and enhancement of: a. waterbodies, wetlands or public accessways associated with the recreation values of the waterways or wetlands within the Basin; and b. stormwater treatment systems including water quality treatment, attenuation and compensatory storage.	a. The likely effects of proposed filling, or excavation or subdivision on the functioning of the ponding area or floodplain during flood periods including any compensatory storage proposed. b. Any potential impacts of excavation or filling or subdivision on the rate, level or volume of flood discharges to the Avon, Heathcote and Styx Rivers and their tributary streams and margins. c. Any adverse effects on the natural qualities, amenity values or ecology of waterways and wetland areas. d. In respect to the Lower Styx Ponding Area, any adverse effects likely on land as a result of tidal influences during flood periods including the potential for exacerbation of those effects with potential sea level rise. e. Any adverse effects on access for maintenance or flood protection works. f. The effectiveness and environmental impact of any measures that may be proposed to mitigate the effects of filling or excavation. g. Any beneficial effects, including the provision of public access, or the enhancement of the natural qualities, amenity values or ecology of waterways and wetland areas.
RD2	Utilities that do not meet the activity specific standard in P11 of Rule 5.5.5.1.	
RD3	Subdivision within the area shown at Appendix 8.6.7(d) – Cashmere/Worsleys Development Plan Area for the following purposes: a. Roading reserve; b. ‘Land to Vest’ areas as shown on Appendix 8.6.7d This allotment will be transferred to the Christchurch City Council.	

5.5.5.3 Non-complying activities

The activities listed below are non-complying activities in where the activity is located in the area shown on the Planning Maps as Flood Ponding Management Area.

Activity	
NC1	Any filling or excavation activity listed in Rule 5.5.5.1 that does not meet one or more of the activity specific standards, or any filling or excavation activity not listed in Rules 5.5.5.1 or 5.5.5.2.
NC2	Any subdivision which creates an additional vacant allotment or allotments from a site within a Flood Ponding Management Area shown on the Planning Maps except where: - the additional allotment or allotments is entirely outside the Flood Ponding Management Area; or - if the additional allotment or allotments is partially within the Flood Ponding Management Area, the additional allotment or allotments contains a net site area capable of containing a complying residential unit entirely outside of the Flood Ponding Management Area.
NC3	New buildings within a Flood Ponding Management Area shown on the Planning Maps, unless specified in P11 and P13-17 in Rule 5.5.5.1 or RD2 in Rule 5.5.5.2.
NC4	The replacement or repair of buildings that do not meet one or more of the activity specific standards in Rule 5.5.5.1.

5.5.6 Activities in the High Flood Hazard Management Area

5.5.6.1 Permitted activities

The activities listed below are permitted activities where the activity is located in the area shown on the Planning Maps as High Flood Hazard Management Area, if they meet the activity specific standards set out in this table.

Activities may also be restricted discretionary or non-complying as specified in Rules 5.5.6.2 and 5.5.6.3.

Activity		Activity specific standards
P1	The replacement or repair of buildings.	- The ground floor area of the replaced or repaired building is not greater than the ground floor area of the existing building. - The replaced or repaired building is located in a position on the site that is no lower than the existing building.
P2	Utilities.	The ground floor area of the utility does not exceed 10m² (except where the utility is a lattice tower for electricity transmission or electricity distribution purposes).

Activity		Activity specific standards
P3	Repair, rebuild and maintenance of critical infrastructure and associated ancillary structures.	Nil
P4	Farm buildings without floors in rural zones.	
P5	Accessory buildings without floors in rural zones.	
P6	Farm buildings, or accessory buildings, with floors in rural zones.	a. The building is: i. on piles designed to meet the minimum floor level specified in Rule 5.3.1; or ii. The building has a maximum ground floor area of 200m². b. There is a maximum of one accessory building or farm building per site up to 20 hectares and a maximum of one accessory building or farm building per additional 20 hectares of site.
P7	Below ground swimming pools in rural zones.	Nil.
P8	Above ground swimming pools in rural zones.	a. The swimming pool is not larger than 200m ² . b. There is no more than one swimming pool per 20 hectares of site.

5.5.6.2 Restricted discretionary activities

The activities listed below are restricted discretionary activities where the activity is located in the area shown on the Planning Maps as High Flood Hazard Management Area.

Discretion to grant or decline consent and impose conditions is restricted to the matters of discretion as set out in the following table.

Activity		The Council's discretion shall be limited to the following matters:
RD1	Subdivision within the area shown at Appendix 8.6.7d – Cashmere/Worsleys Development Plan Area for the following purposes: a. Roading reserve; b. 'Land to Vest' areas as shown on Appendix 8.6.7(d). This allotment will be transferred to the Council.	a. The likely effects of the proposed subdivision on the High Flood Hazard Management Area. b. Any potential impacts of the subdivision on the rate, level or volume of flood within the High Flood Hazard Management Area. c. Whether the subdivision will increase the potential risk to people's safety, well-being and property.
RD2	Residential units within the Residential Unit Overlay identified in Appendix 5.9.2, including: a. any new residential unit; or b. any replacement residential unit; or	a. The Council's discretion is limited to the following matters: i. Setting of minimum floor levels. ii. Building design.

Activity	The Council's discretion shall be limited to the following matters:
c. any addition to an existing residential unit. other than as provided for by Rule 5.5.6.1 P1. Any application arising from this rule shall not be limited or publicly notified.	iii. Mitigation of the effects of flooding. iv. Level of intensification. v. Safe ingress and egress. vi. Reducing the risk to people's safety, wellbeing and property resulting from the development. b. These restricted discretionary activities will be assessed against the following criteria: i. The type of foundation and structure proposed for the residential unit and the likely impact of the building with regard to flood storage and flow of water. ii. The frequency at which any proposed building or addition is predicted to be flooded, the extent of damage likely to occur in such an event and the potential for injury or risk to people's safety, wellbeing and property from such an event. iii. The ability to maintain safe access to and from the residential unit from the transport network with respect to access design and engineering solutions.

5.5.6.3 Non-complying activities

The activities listed below are non-complying activities where the activity is located within the area shown on the Planning Maps as High Flood Hazard Management Area.

Activity	
NC1	Any subdivision which creates an additional vacant allotment or allotments from a site within a High Flood Hazard Management Area shown on the Planning Maps except where: a. the additional allotment or allotments is entirely outside the High Flood Hazard Management Area; or b. if the additional allotment or allotments is partially within the High Flood Hazard Management Area, the additional allotment or allotments contains a net site area capable of containing a complying residential unit entirely outside of the High Flood Hazard Management Area.
NC2	New buildings within a High Flood Hazard Management Area shown on the Planning Maps, unless specified in P1 or P4-P6 in Rule 5.4.6.1, or RD2 in Rule 5.5.6.2.
NC3	The replacement or repair of buildings that do not meet one or more of the activity specific standards in Rule 5.5.6.1, unless specified in RD2 in Rule 5.5.6.2.
NC4	Change in use of a site that increases the occupancy of the site, unless specified in P1 in Rule 5.5.6.1, or RD2 in Rule 5.5.6.2.

5.6 Rules - Liquefaction hazard

Liquefaction is a process that can occur during strong earthquake shaking which causes loss of stiffness and strength in generally loosely consolidated fine grained water saturated soils and can result in ground damage from lateral spreading, settlement, ground cracking, sand boils and deposition of sediment, as well as localised flooding.

5.6.1 Permitted activities

All activities in the Liquefaction Management Area are a permitted activity unless specified in Rules 5.6.2 or 5.6.3, or as otherwise specified elsewhere in the Plan.

5.6.2 Controlled activities

The activities listed below are controlled activities within the area shown on the Planning Maps as the Liquefaction Management Area.

Discretion to impose conditions is restricted to the matters over which control is reserved as set out in the following table.

Where subdivision is specified, a subdivision consent is also required under Chapter 8 Subdivision, Development and Earthworks.

There may be other areas that are not identified at the district scale that are susceptible to liquefaction risk based on site specific characteristics – these may require specific geotechnical investigations as part of subdivision to satisfy the Council with respect to Section 104 and Section 106 of the RMA.

Table 5.6.2a

Activity		The matters over which Council reserves its control
C1	Any subdivision which creates an additional vacant allotment or allotments in the Liquefaction Management Area. Note: This rule does not apply to boundary adjustments, amalgamations, or the creation of unit titles. Any resource consent application arising from this rule shall not be limited or publicly notified.	a. The Council's control is limited to the following matters: i. location, size and design of allotments, structures, roads, access, services or foundations as they relate to the liquefaction hazard; ii. timing, location, scale and nature of earthworks as they relate to the liquefaction hazard; and iii. liquefaction hazard remediation methods. b. These controlled activities will be assessed against the following criteria. i. Whether techniques proposed for remediation and/or mitigation of the effects of any liquefaction hazard identified are appropriate, including but not limited to: A. provision for ground-strengthening, foundation design, provision of resilient services and the ability of these to be incorporated into the subdivision

Activity	The matters over which Council reserves its control
	consent as conditions or consent notices; and B. setbacks in relation to any waterway or waterbody, or any sharp change in ground elevation, sloping ground or free face. Alternatively, whether ground-strengthening or other proposed engineering or geotechnical solutions are identified to address any identified potential for lateral spread. ii. The extent to which the layout of the subdivision in relation to the liquefaction hazard is appropriate, including the proposed location of earthworks, roads, access, servicing and building platforms in relation to the liquefaction hazards identified. iii. The effect of the remediation and/or mitigation on the reasonable use of the site.

5.6.3 Restricted discretionary activities

The activities listed below are restricted discretionary activities in any zone within the area shown on the Planning Maps as the Liquefaction Management Area.

Discretion to grant or decline consent and impose conditions is restricted to the matters of discretion set out in the following table.

Table 5.6.3a

Activity	The Council's discretion shall be limited to the following matters:
RD1 Any activity located on a site with an area of 1500m² or more, qualifying as a restricted discretionary activity under any of the following residential rules: - Enhanced Development Mechanism - Rule 14.11.3.3 RD1, RD2; - Community Housing Redevelopment Mechanism - Rule 14.12.2.3 RD1, RD2; - Residential Suburban Zone and Residential Suburban Density Transition Zone - Rule 14.2.2.3 RD7, RD8, RD10;	a. The Council's discretion is limited to the following matters: - Location, siting and layout, design of buildings, car-parking, access, services or foundations as they relate to the liquefaction hazard - Timing, location, scale and nature of earthworks as they relate to the liquefaction hazard - Liquefaction hazard remediation methods b. These restricted discretionary activities will be assessed against the following criteria: - Whether techniques proposed for remediation and mitigation of the effects of any liquefaction hazard identified are appropriate, including but not limited to: - Provision for ground-strengthening, foundation design, and provision of resilient services - Setbacks in relation to any waterway or waterbody, or any sharp change in ground elevation, sloping ground or free face. Alternatively, whether ground-strengthening or other proposed engineering or

Activity	The Council's discretion shall be limited to the following matters:
4. Residential Medium Density Zone - Rule 14.3.2.3 RD2; 5. Residential Banks Peninsula Zone - Rule 14.4.2.3 RD14 6. Residential New Neighbourhood Zone - Rule 14.9.2.2 C1 or Rule 14.9.2.3 RD3; Any application arising from this rule in respect to the Enhanced Development Mechanism or the Community Housing Redevelopment Mechanism shall not be limited or publicly notified.	geotechnical solutions are identified to address any identified potential for lateral spread. ii. The extent to which the siting and layout of the proposal is appropriate, including the proposed location of buildings, earthworks, car-parking areas, servicing, access and building platforms in relation to the liquefaction hazards identified.

5.7 Rules - Slope instability

5.7.1 Activity status for Slope Instability Management Areas

5.7.1.1 Activity status for Slope Instability Management Areas excluding land within the Specific Purpose (Lyttelton Port) Zone

The activities listed below have the activity status listed within each Slope Instability Management Area, and are subject to any activity status, rules and any standards specified elsewhere in the Plan for that activity.

In relation to controlled activities, discretion to impose conditions is restricted to the matters over which control is reserved as set out in Rule 5.7.1.4 and 5.7.1.5 as applicable.

In relation to restricted discretionary activities, discretion to grant or decline consent and impose conditions is restricted to the matters of discretion set out in Rule 5.7.1.6.

Where subdivision is specified, a subdivision consent is also required under the provisions of Chapter 8.

Table 5.7.1.1a

Activity		Cliff Collapse Mgmt Area 1	Cliff Collapse Mgmt Area 2. For exceptions, refer to Rule 5.7.1.2	Rockfall Mgmt Area 1. For exceptions, refer to Rule 5.7.1.2	Rockfall Mgmt Area 2. For exceptions, refer to Rule 5.7.1.2	Mass Mvmt Mgmt Area 1	Mass Mvmt Mgmt Areas 2 & 3	Remainder of Port Hills and Banks Peninsula Slope Instability Mgmt Area
Key: P = Permitted; RD = Restricted Discretionary; D = Discretionary; NC = Non-complying; PR = Prohibited.								
a.	Subdivision	PR1/NC1*	NC2	NC3	RD1	NC4	RD2	RD3
b.	Earthworks except where specifically provided below in Rule 5.7.1.1	PR2	NC5	NC6	RD4	NC7	RD5	Refer to relevant chapters within zone and/or district wide provisions applying to the sites within this area
c.	Hazard mitigation works or hazard removal works, including earthworks associated with	PR3	NC8	RD6	RD7	NC9	RD8	RD9

Activity	Cliff Collapse Mgmt Area 1	Cliff Collapse Mgmt Area 2. For exceptions, refer to Rule 5.7.1.2	Rockfall Mgmt Area 1. For exceptions, refer to Rule 5.7.1.2	Rockfall Mgmt Area 2. For exceptions, refer to Rule 5.7.1.2	Mass Mvmt Mgmt Area 1	Mass Mvmt Mgmt Areas 2 & 3	Remainder of Port Hills and Banks Peninsula Slope Instability Mgmt Area
those works unless provided for in d							
d. Hazard mitigation works to protect infrastructure including earthworks associated with those works	RD10	RD11	RD12	RD13	RD14	RD15	RD16
e. Demolition of buildings	RD17	RD18	RD19	RD20	RD21	RD22	P1
f. Repair and maintenance of existing infrastructure, including minor upgrading of the existing electricity network	P2	P3	P4	P5	P6	P7	P8
g. Earthworks associated with activities listed in f above	C1	C2	C3	C4	C5	C6	P9
h. Upgrading of existing infrastructure or development of new infrastructure (where there is a functional need to locate in the overlay), including earthworks associated with these works.	RD23	RD24	RD25	RD26	RD27	RD28	Refer to relevant chapters within zone and/or district wide provisions applying to the sites within this area
i. Retaining walls which are both less than 6 m ² in area and less than 1.8 metres in height including earthworks associated with those works.	RD29	RD30	RD31	P10	RD32	P11	P12

Activity		Cliff Collapse Mgmt Area 1	Cliff Collapse Mgmt Area 2. For exceptions, refer to Rule 5.7.1.2	Rockfall Mgmt Area 1. For exceptions, refer to Rule 5.7.1.2	Rockfall Mgmt Area 2. For exceptions, refer to Rule 5.7.1.2	Mass Mvmt Mgmt Area 1	Mass Mvmt Mgmt Areas 2 & 3	Remainder of Port Hills and Banks Peninsula Slope Instability Mgmt Area
j.	Signage and fencing for warning or excluding the public including post holes associated with those works.	RD33	P13	P14	P15	P16	P17	Refer to relevant chapters within zone and/or district wide provisions applying to the sites within this area
k.	Hazard mitigation works and associated earthworks and planting in accordance with the Port Hills Parks and Tracks Reopening Process (dated 19 December 2012)	NC10	P18	P19	P20	NC11	P21	P22
l.	Recreation activities within parks and reserves and associated park management and maintenance activities, including grazing and track repair.	NC12	P23	P24	P25	NC13	P26	Refer to relevant chapters within zone and/or district wide provisions applying to the sites within this area
m.	Farm buildings and farm tracks, including earthworks associated with these works.	NC14	NC15	RD34	RD35 except that farm tracks up to 2 metres wide shall be permitted.	NC16	RD36	Refer to relevant chapters within zone and/or district wide provisions applying to the sites within this area
n.	Any building or structure not listed	PR4	NC17	NC18	RD37	NC19	RD38	Refer to relevant chapters

Activity	Cliff Collapse Mgmt Area 1	Cliff Collapse Mgmt Area 2. For exceptions, refer to Rule 5.7.1.2	Rockfall Mgmt Area 1. For exceptions, refer to Rule 5.7.1.2	Rockfall Mgmt Area 2. For exceptions, refer to Rule 5.7.1.2	Mass Mvmt Mgmt Area 1	Mass Mvmt Mgmt Areas 2 & 3	Remainder of Port Hills and Banks Peninsula Slope Instability Mgmt Area
	in activities a to g of Rule 5.7.1.1						within zone and/or district wide provisions applying to the sites within this area
o.	Any other activity not otherwise listed in this table.	NC20	NC21	NC22	RD39	NC23	RD40
							Refer to relevant chapters within zone and/or district wide provisions applying to the sites within this area

* Prohibited where site subject to proposed subdivision is solely located within Cliff Collapse Management Area 1; non-complying activity where it is proposed to subdivide off land within Cliff Collapse Management Area 1 from an area of land not within Cliff Collapse Management Area 1.

Any resource consent application arising from C1-6, or RD1–RD40 set out in Rule 5.7.1.1 above shall not be limited or publicly notified.

5.7.1.2 Exceptions to Rule 5.7.1.1 — AIFR Certificate

a. The Council will issue an AIFR Certificate (which will be valid for 2 years from the date of issue) which specifies the calculated AIFR from i. and ii. below for an identified area of land in Rockfall Management Area 1, Rockfall Management Area 2 and/or Cliff Collapse Management Area 2 only, when the following procedure is undertaken and the requirements of the procedure are satisfied:

i. The Council has received a report, in respect of an identified area of land, prepared by a Chartered Professional Engineer with requisite experience in geotechnical engineering or a Professional Engineering Geologist (IPENZ registered), which calculates the AIFR from rockfall and/or cliff collapse for the identified land in the following manner:⁷

If the land is in **Rockfall Management Area 1:**

⁷ The calculation shall not take account of hazard mitigation works.

1. Apply the method for assessing the risk as set out in the *GNS Science Consultancy Report 2011/311 Port Hills Slope Stability: Pilot Study for assessing life-safety risk from rockfalls (boulder rolls)*, and any subsequent updates to this report by GNS Science, using the parameters listed in the Table in Policy 5.3.4.1.a for Rockfall Management Area 1 along with any relevant site-specific information, and other parameters in the GNS Science report (calculation 1(a)).
2. If the risk (AIFR) resulting from calculation 1(a) is less than that shown in the Table in Policy 5.3.4.1 for Rockfall Management Area 1 ($\geq 10^{-4}$), then using the same method set out in the *GNS Science Consultancy Report 2011/311 Port Hills Slope Stability: Pilot Study for assessing life-safety risk from rockfalls (boulder rolls)*, and any subsequent updates to this report by GNS Science, calculate the AIFR using the parameters listed in the Table in Policy 5.3.4.1.a for Rockfall Management Area 2 along with all relevant site-specific information, and other parameters listed in the GNS Science report (calculation 1(b)).

If the land is in **Rockfall Management Area 2**:

3. Apply the method for assessing the risk as set out in the *GNS Science Consultancy Report 2011/311 Port Hills Slope Stability: Pilot Study for assessing life-safety risk from rockfalls (boulder rolls)*, and any subsequent updates to this report by GNS Science, using the parameters listed in the Table in Policy 5.3.4.1.a for Rockfall Management Area 2 along with all relevant site-specific information, and other parameters in the GNS Science report (calculation 2(a)).

If the land is in **Cliff Collapse Management Area 2**:

4. Apply the method for assessing the risk as set out in the GNS Science Consultancy Reports 2012/57 *Port Hills Slope Stability: Pilot Study for assessing life-safety risk from cliff collapse* and 2012/124 *Port Hills Slope Stability: Life-safety risk from cliff collapse in the Port Hills*, and any subsequent updates to those reports by GNS Science, using the parameters listed in the Table in Policy 5.3.4.1.a for Cliff Collapse Management Area 2 along with all relevant site-specific information, and other parameters in the GNS Science Consultancy Reports (calculation 3(a)).

AND

- ii. The Council has commissioned and received a peer review report from a Chartered Professional Engineer with requisite experience in geotechnical engineering or a Professional Engineering Geologist (IPENZ registered)**, which concurs with the application of the method required in i. above, and with the calculated AIFR(s) for the identified land.

**The peer reviewer must not, at the time of undertaking the review, be employed by either: a) the same company as the company that authored the report received in i. above, or b) the Council.

- b. Where a valid AIFR Certificate has been issued by the Council for an identified area of land, in accordance with the procedure described in Rule 5.7.1.2a. above, the activity status (for activities listed in Table 5.7.1.1a) that applies to that land shall be that which applies to the Slope Instability Management Area specified in Table 5.7.1.2a. below. An AIFR Certificate is valid for 2 years from the date of issue. If the activity is commenced (in the case of a permitted

activity) or a resource consent application is lodged within 2 years from the date of issue of the AIFR Certificate, no further Certificate is required after the 2 year term expires.

Table 5.7.1.2a

Slope instability hazard management area applying to the land on the Planning Maps	AIFR as specified in the site-specific AIFR Certificate		Slope Instability Management Area for the purpose of determining activity status for activities on the land (Table 5.7.1.1a)
Rockfall Management Area 1	Result of calculation 1(a)	$\geq 10^{-4}$	Rockfall Management Area 1
	Result of calculation 1(b) where required	$\geq 10^{-4}$	Rockfall Management Area 2
		$< 10^{-4}$	Remainder of Port Hills and Banks Peninsula
Rockfall Management Area 2	Result of calculation 2(a)	$\geq 10^{-4}$	Rockfall Management Area 2
		$< 10^{-4}$	Remainder of Port Hills and Banks Peninsula
Cliff Collapse Management Area 2	Result of calculation 3(a)	$\geq 10^{-4}$	Cliff Collapse Management Area 2
		$< 10^{-4}$	Remainder of Port Hills and Banks Peninsula

Advice Notes

1. Calculated AIFRs specified in issued, valid AIFR Certificates for identified areas of land, and valid certificates themselves, will be made freely available to the public, recorded in the Council's Geographical Information System and provided in Land Information Memoranda.
2. Changes to the District Plan will be regularly notified, as required to change the Planning Maps, in order to reflect updated information regarding life-safety risk from rockfall and/or cliff collapse from issued AIFR Certificates.

5.7.1.3 Activity status for Slope Instability Management Areas within the Specific Purpose (Lyttelton Port) Zone

The activities listed below have the activity status listed within each Slope Instability Management Area.

In relation to controlled activities, discretion to impose conditions is restricted to the matters over which control is reserved as set out in Rule 5.7.1.4 and 5.7.1.5 as applicable.

In relation to restricted discretionary activities, discretion to grant or decline consent and impose conditions is restricted to the matters of discretion set out in Rule 5.7.1.6.

Where subdivision is specified, a subdivision consent is also required under the provisions of Chapter 8.

Table 5.7.1.3a

	Activity	Cliff Collapse Mgmt Area 1	Cliff Collapse Mgmt Area 2	Rockfall Mgmt Area 1	Rockfall Mgmt Area 2	Remainder of Port Hills and Banks Peninsula
a.	Subdivision	C7	C8	C9	C10	Refer to relevant chapters within zone and/or district wide provisions applying to the sites within this area
b.	Earthworks except as provided for below	NC24	RD41	C11	C12	Refer to relevant chapters within zone and/or district wide provisions applying to the sites within this area
c.	Hazard mitigation works, including earthworks associated with those works	C13	C14	C15	C16	Refer to relevant chapters within zone and/or district wide provisions applying to the sites within this area
d.	Demolition of buildings	C17	C18	C19	C20	Refer to relevant chapters within zone and/or district wide provisions applying to the sites within this area

	Activity	Cliff Collapse Mgmt Area 1	Cliff Collapse Mgmt Area 2	Rockfall Mgmt Area 1	Rockfall Mgmt Area 2	Remainder of Port Hills and Banks Peninsula
e.	Repair and maintenance of existing infrastructure, buildings, and accessways, including minor upgrading of existing infrastructure of electricity network providers.	P1	P2	P3, includes earthworks associated with these works on flat land or where the earthworks are less than 10m ³ cut or fill on sloping land.	P4, includes earthworks associated with these works on flat land or where the earthworks are less than 10m ³ cut or fill on sloping land.	P
f.	Earthworks associated with the activities listed in e above unless identified as permitted.	C21	C22	C23	C24	P
g.	Upgrading of existing infrastructure, buildings, and accessways including associated earthworks, provided such upgrades are limited to an increase in capacity, efficiency or security of an existing structure or route	D1	RD42	RD43	RD44	Refer to relevant chapters within zone and/or district wide provisions applying to the sites within this area
h.	Construction of new non-habitable** buildings or structures used for storage or infrastructure	D2	RD45	RD46	RD47	Refer to relevant chapters within zone and/or district wide provisions applying to the sites within this area

	Activity	Cliff Collapse Mgmt Area 1	Cliff Collapse Mgmt Area 2	Rockfall Mgmt Area 1	Rockfall Mgmt Area 2	Remainder of Port Hills and Banks Peninsula
i.	Construction of new retaining walls	RD48	C25	P5	P6	Refer to relevant chapters within zone and/or district wide provisions applying to the sites within this area
j.	Quarrying and associated haul road formation on land below Sumner Rd	Not applicable	Not applicable	C26	C27	Refer to relevant chapters within zone and/or district wide provisions applying to the sites within this area
k.	Bulk storage of cargo or construction material, outdoors on flat land	RD49	C28	P7	P8	Refer to relevant chapters within zone and/or district wide provisions applying to the sites within this area
l.	Signage and fencing for warning or excluding the public including postholes associated with those works	P9	P10	P11	P12	Refer to relevant chapters within zone and/or district wide provisions applying to the sites within this area

	Activity	Cliff Collapse Mgmt Area 1	Cliff Collapse Mgmt Area 2	Rockfall Mgmt Area 1	Rockfall Mgmt Area 2	Remainder of Port Hills and Banks Peninsula
m.	Minor earthworks associated with tree planting, ecological restoration and the formation and maintenance of pedestrian walking and cycle tracks	D3	P13	P14	P15	Refer to relevant chapters within zone and/or district wide provisions applying to the sites within this area
n.	Any activities not otherwise listed above, including buildings not otherwise provided for under h	NC25	NC26	NC27	D4	Refer to relevant chapters within zone and/or district wide provisions applying to the sites within this area

Any resource consent application arising from any controlled or restricted discretionary activities set out in Rule 5.7.1.3 above shall not be limited or publicly notified.

****Note:** for the purpose of Rule 5.7.1.3h, ‘non-habitable’ buildings means those buildings or structures where the building is not designed for human occupation and will not be used for human occupancy. Examples of such buildings include bulk storage silos, tanks, plant rooms and electricity substations.

5.7.1.4 Slope Instability Management Areas — C1 to C6 matters of control

a. The Council’s control is limited to the following matters:

- i. timing, location, scale and nature of earthworks;
- ii. earthworks method; and
- iii. mitigation of effects as they impact slope instability hazards.

b. Controlled activities C1 to C6 will be assessed against the following criteria:

- i. Whether proposed earthworks could trigger slope instability or exacerbate risk posed by natural hazard(s) to people or property, and any measures required to avoid or mitigate that risk.
- ii. Measures proposed to reinstate the excavated or filled area on completion of the earthworks to reduce the natural hazard risk(s) and ensure long-term land stability.

- iii. Whether the earthworks could have any adverse effects as a result of disturbance to drainage patterns and any measures required to avoid or mitigate such effects.

5.7.1.5 Slope Instability Management Areas — C7 to C28 matters of control

- a. The Council's control is limited to the following matters:
 - i. effects of natural hazards on people and property;
 - ii. location, size and design of allotments, structures, roads, access, services or foundations in relation to natural hazard risk;
 - iii. location, scale and design of buildings in relation to natural hazard risk;
 - iv. clearance or retention of vegetation or other natural features that mitigate natural hazard risk;
 - v. timing, location, scale and nature of earthworks;
 - vi. earthworks method;
 - vii. potential for the proposal to exacerbate natural hazard risk;
 - viii. benefits of infrastructure and performance of critical infrastructure following a natural hazard event; and
 - ix. mitigation of effects as they impact slope instability hazards.
- b. Controlled activities C7 to C28 will be assessed against the following criteria:
 - i. Whether the proposal and associated hazard mitigation works:
 - 1. can be shown, based on evaluation by a Chartered Professional Engineer with experience in geotechnical engineering, using best practice methods, to increase the stability of land and/or protect structures and buildings and their occupants;
 - 2. can be shown, based on evaluation by a Chartered Professional Engineer with experience in geotechnical engineering, using best practice methods, to achieve an acceptable risk to life or property, including the extent to which an Annual Individual Fatality Risk of 10^{-4} (1 in 10,000) or better can be achieved; and
 - 3. will have appropriate monitoring procedures applied, with inspections and maintenance undertaken and reported to the Council.
 - ii. Whether, due to the sensitive nature of the proposed activity (for example, childcare centre, playground, hospital), an Annual Individual Fatality Risk lower than 10^{-4} is appropriate.
 - iii. Whether development of the site transfers risk to another site.
 - iv. Whether the location and design of proposed building platforms, access, earthworks, retaining walls and services to the site are the most appropriate considering the risk of natural hazards on the site.

- v. Provision for ground-strengthening, foundation design, protection structures and the ability of these to be incorporated into the subdivision consent as conditions or consent notices.
- vi. The extent that surface or subsurface drainage patterns and stormwater management are impacted as a result of hazard mitigation works, and whether these have an effect on the site or surrounding sites.
- vii. Where critical infrastructure is involved, whether the infrastructure is designed in a way to continue to operate safely in the event of a significant natural hazard occurring, including containment of any hazardous substances associated with that infrastructure.
- viii. For infrastructure generally, the extent of benefits associated with that infrastructure, whether there is a functional or operational requirement for that location and whether there are any practical alternatives.
- ix. Whether or not the work would be carried out under the supervision of either a Chartered Professional Engineer with experience in geotechnical engineering or a Professional Engineering Geologist (IPENZ registered).

5.7.1.6 Slope Instability Management Areas — RD1 to RD49 matters of discretion

- a. The Council's discretion is **limited** to the following matters:
 - i. **e**ffects of natural hazards on people and property;
 - ii. **l**ocation, size and design of allotments, structures, roads, access, services or foundations in relation to natural hazard risk;
 - iii. **l**ocation, scale and design of buildings in relation to natural hazard risk;
 - iv. **c**learance or retention of vegetation or other natural features that mitigate natural hazard risk;
 - v. **t**iming, location, scale and nature of earthworks;
 - vi. **e**arthworks method;
 - vii. **p**otential for the proposal to exacerbate natural hazard risk;
 - viii. **b**enefits of infrastructure and performance of critical infrastructure following a natural hazard event; **and**
 - ix. **m**itigation of effects as they impact slope instability hazards.
- b. Restricted discretionary activities RD1 to RD49 will be assessed against the following criteria:
 - i. Whether the proposal and associated hazard mitigation works:
 - 1. can be shown, based on evaluation by a Chartered Professional Engineer with experience in geotechnical engineering, using best practice methods, to increase the stability of land and/or protect structures and buildings and their occupants;
 - 2. can be shown, based on evaluation by a Chartered Professional Engineer with experience in geotechnical engineering, using best practice methods, to achieve an

acceptable risk to life or property, including the extent to which an Annual Individual Fatality Risk of 10^{-4} (1 in 10,000) or better can be achieved; and

3. will have appropriate monitoring procedures applied, with inspections and maintenance undertaken and reported to the Council.
- ii. Whether, due to the sensitive nature of the proposed activity (for example, childcare centre, playground, hospital), an Annual Individual Fatality Risk lower than 10^{-4} is appropriate.
 - iii. Whether development of the site transfers risk to another site.
 - iv. Whether the location and design of proposed building platforms, access, earthworks, retaining walls and services to the site are the most appropriate considering the risk of natural hazards on the site.
 - v. Provision for ground-strengthening, foundation design, protection structures and the ability of these to be incorporated into the subdivision consent as conditions or consent notices.
 - vi. The extent that surface or subsurface drainage patterns and stormwater management are impacted as a result of hazard mitigation works, and whether these have an effect on the site or surrounding sites.
 - vii. Where critical infrastructure is involved, whether the infrastructure is designed in a way to continue to operate safely in the event of a significant natural hazard occurring, including containment of any hazardous substances associated with that infrastructure.
 - viii. For infrastructure generally, the extent of benefits associated with that infrastructure, whether there is a functional or operational requirement for that location and whether there are any practical alternatives.
 - ix. Whether or not the work would be carried out under the supervision of either a Chartered Professional Engineer with experience in geotechnical engineering or a Professional Engineering Geologist (IPENZ registered).
 - x. For RD 34, RD 36, RD 37, RD 38, RD 39 and RD 40 only, where the use and storage of hazardous substances are involved, whether the facility is designed in a way to manage the residual risks of adverse effects from hazardous substances to acceptable levels in the event of a significant natural hazard event occurring.

5.8 General procedures — information requirements

5.8.1 Additional information requirements for resource consent applications in the Liquefaction Management Area where a geotechnical report is required

Liquefaction potential

- a. Applicants will be required to supply the results of a detailed geotechnical investigation and interpretation. The level of investigation should correspond with the scale and significance of the liquefaction hazard. Plans and information shall:
 - i. identify any areas which require particular ground strengthening or other mitigation measures, and recommendations for such mitigation;
 - ii. identify any areas which should be excluded from built development, due to geotechnical constraints, or which require geotechnical setbacks, including areas near the edges of rivers, streams, lakes, wetlands, stormwater detention areas and swales where lateral spread is likely to occur; and
 - iii. indicate any options and recommended locations for the proposed land use, transport features and other infrastructure recommended by the geotechnical engineer.
- b. All geotechnical reports in respect of liquefaction potential are to be prepared by a Chartered Professional Engineer with experience in geotechnical engineering or a Professional Engineering Geologist (IPENZ registered), and should contain all relevant geotechnical information, presented in both a factual and interpretive manner.

5.8.2 Additional information requirements for resource consent applications within Slope Instability Management Areas

- a. Plans and accompanying information shall show:
 - i. the geological and geotechnical constraints across the site, including any relationship to or effect on areas of actual or potential instability of the site, including the location of any inferred faults.
 - ii. the location of the site in relation to the natural hazard, or the location of the hazard on the site itself, and the location of building platforms in relation to the hazard.
 - iii. the nature of the proposed activities on the site and the impact on other sites potentially affected by the natural hazard, and the effect of the hazard on the activity and vice versa.
- b. All geotechnical reports are to be prepared by a Chartered Professional Engineer with experience in geotechnical engineering or a Professional Engineering Geologist (IPENZ registered), and should contain all relevant geotechnical information, presented in both a factual and interpretive manner. The design of rockfall protection structures must be carried out by a Chartered Professional Engineer with specific experience in the investigation, design and/or construction of rockfall protection structures, who has registered with the Council.

5.8.3 Additional information requirements for all resource consent applications for subdivision

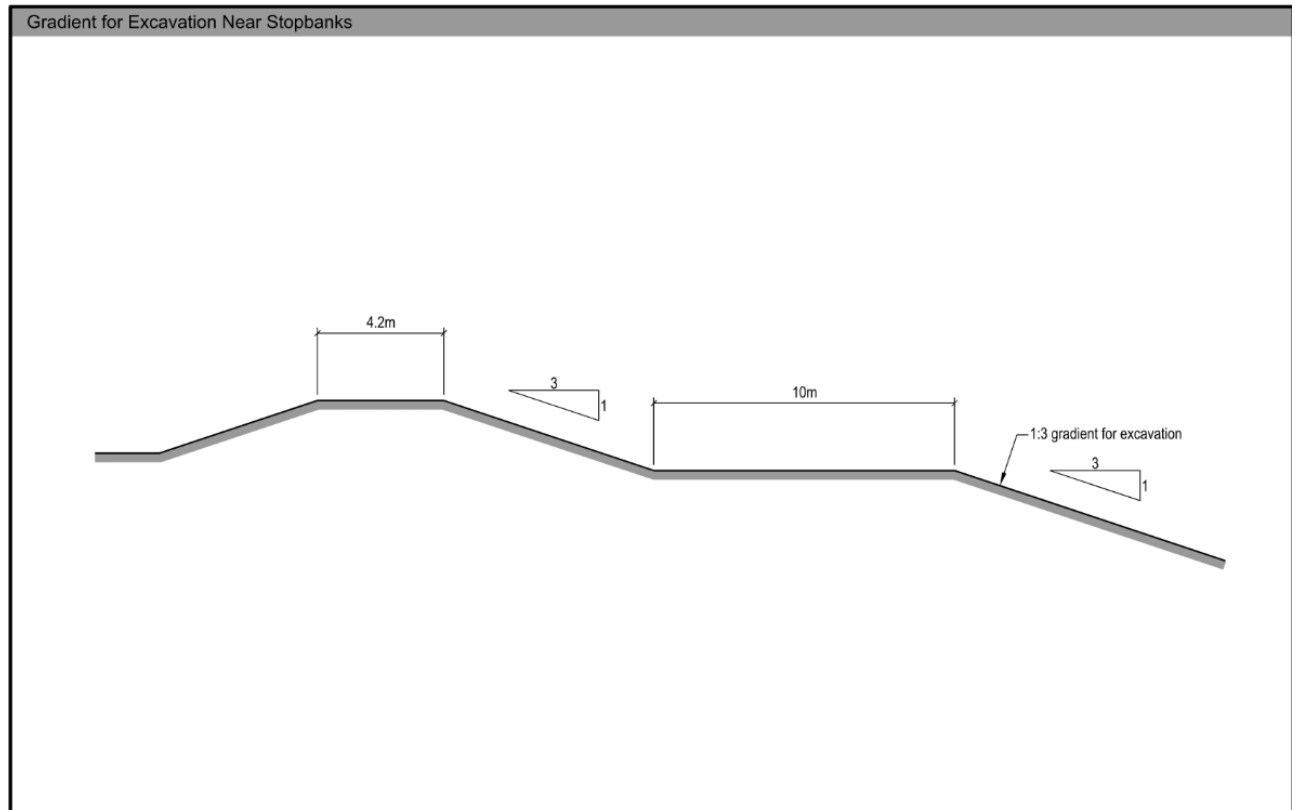
5.8.3.1 Liquefaction Management Area

Liquefaction potential

- a. At subdivision consent application stage, detailed liquefaction susceptibility assessment and reporting will be required in accordance with the densities, depth, methods and reporting specified in Ministry of Business, Innovation and Employment (December 2012): Part D of "Guidance: Repairing and rebuilding houses affected by the Canterbury Earthquakes": Guidelines for the geotechnical investigation and assessment of subdivisions in the Canterbury region: Minimum requirements for geotechnical assessment for land development ('flatland areas' of the Canterbury region).
- b. Subdivision consent applications will be required to include sufficient information and proposed measures to satisfy the Council that liquefaction risk (if present) can be adequately avoided, remedied or mitigated, including the potential effects of lateral spread within 200 metres of the edges of rivers, streams, lakes, wetlands, stormwater detention areas, swales or other areas with a sharp change in ground elevation.
- c. Subdivision plans shall show:
 - i. any areas which require particular ground strengthening or other mitigation measures, and recommendations for such mitigation;
 - ii. any areas which should be excluded from built development due to geotechnical constraints, or which require geotechnical setbacks; and
 - iii. any features of subdivision layout recommended by the geotechnical engineer, for example any recommended locations for proposed land uses, transport features and other infrastructure as a result of geotechnical constraints.
- d. All geotechnical reports with respect to liquefaction potential are to be prepared by a Chartered Professional Engineer with experience in geotechnical engineering, or a Professional Engineering Geologist (IPENZ registered), and should contain all relevant geotechnical information, presented in both a factual and interpretive manner.

5.9 Appendices

5.9.1 Gradient for excavation near stopbank for Rule 5.5.3.5.b



5.9.2 Residential Unit Overlay within the High Flood Hazard Management Area for Rule 5.5.6.2 RD2

The Council is directed to prepare a plan for inclusion in this Appendix identifying the “Area for further consideration” from the Updated HFHMA Maps attached to the Council’s Memorandum of 15 July 2016 [Memorandum of Counsel on behalf of Christchurch City Council in response to Panel’s Minute dated 7 July 2016 regarding High Flood Hazard Management Area mapping and rules). The area is to be shown on the plan as “Residential Unit Overlay within the High Flood Hazard Management Area for Rule 5.5.6.2 RD2”.

Chapter 8 Subdivision, Development and Earthworks

The following amendments are made to Chapter 8 – Subdivision, Development and Earthworks (deleted text ~~struck through~~, added text underlined).

Amend the activity description for Rule 8.5A.2.1 P1 as follows:

Activity	
P1	Earthworks: a. outside a Flood Management Area or Flood Ponding Area; and a. not for the purpose of the repair of land used for residential purposes and damaged by earthquakes; and b. if in the Industrial General Zone (North Belfast), greater than 20 metres from: i. the surveyed point of the spring identified on the Outline Development Plan in Appendix 16.8.5; or ii. any spring not identified on the Outline Development Plan in Appendix 16.8.5, and which is within the area identified as Stormwater Management Area 1 on the Outline Development Plan but not within Lots 5, 6 and 7 DP 71209, in which case the setback shall be measured from the head or heads of the spring where visible. Clarification: 1. Refer to Chapter 5 for earthworks within a Flood Management Area or Flood Ponding Area. Chapter 5 contains additional requirements for earthworks within Flood Management Areas and Flood Ponding Management Areas. 2. Refer to P2 for earthworks for the purpose of the repair of land used for residential purposes and damaged by earthquakes

Amend the activity description for Rule 8.5A.2.1 P2 as follows:

Activity	
P2	Earthworks for the purpose of the repair of land used for residential purposes and damaged by earthquakes <u>outside a Flood Management Area (including outside the Te Waihora/Lake Ellesmere and Wairewa/Lake Forsyth Flood Management Areas).</u> Clarification 1. For the purposes of this rule, “repair of land used for residential purposes damaged by earthquakes” does not include repair of land on the Port Hills or Banks Peninsula. It does include all other residential land whether or not an EQC payment has been made and residential land which was unimproved when damage occurred. Refer to Appendix 2.2 of Chapter 2. 2. <u>Rule 5.5.4 in Chapter 5 applies to earthworks for the repair of land used for residential purposes damaged by earthquakes within Flood Management Areas in rural and residential zones.</u>

Chapter 14 Residential

The following amendments are made to Chapter 14 – Residential (deleted text ~~struck through~~, added text underlined).

Amend Rule 14.2.3.6 c. as follows:

- c. Where the building is located in a Flood Management Area, the exemptions in Rule 5.5.1.3 apply (for activities P1-P4 in Table 5.5.1.1b).

Amend Rule 14.3.3.6 c. as follows:

- c. Where the building is located in a Flood Management Area, the exemptions in Rule 5.5.1.3 apply (for activities P1-P4 in Table 5.5.1.1b).

Amend Rule 14.4.3.5 as follows:

- a. No part of any building shall project beyond a building envelope contained by a 45 degree recession plane measured at any point 2 metres above ground level at any adjoining site boundary, that is not a road boundary.
- b. Where the building is located in a Flood Management Area, the exemptions in Rule 5.5.1.3 apply (for activities P1-P4 in Table 5.5.1.1b).

Amend Rule 14.5.3.4 as follows:

- a. Buildings shall not project beyond a building envelope constructed by recession planes, as shown in Appendix 14.15.2 Diagram B as relevant, from points 2.3 metres above:
 - i. ground level at the internal boundaries; or
 - ii. where an internal boundary of a site abuts an access lot or access strip the recession plane may be constructed from points 2.3 metres above ground level at the furthest boundary of the access lot or access strip or any combination of these areas; or
 - iii. where buildings on adjoining sites have a common wall along an internal boundary the recession planes shall not apply along that part of the boundary covered by such a wall.
- b. The recession plane shall only apply to the midpoint of each section of wall and roof of a building, as shown in Appendix 14.15.2B.
- c. Where the building is located in a Flood Management Area, the exemptions in Rule 5.5.1.3 apply (for activities P1-P4 in Table 5.5.1.1b).

Refer to Appendix 14.15.2 for permitted intrusions.

Note: For the purpose of this rule, a section of roof means a continuous part of the roof with the same slope.

Amend Rule 14.7.3.4 as follows:

- a. Buildings shall not project beyond a building envelope constructed by recession planes, as shown in Appendix 14.15.2 Diagram F, from points 2.3 metres above:
 - i. ground level at the internal boundaries; or

- ii. where an internal boundary of a site abuts an access lot or access strip the recession plane may be constructed from points 2.3 metres above ground level at the furthest boundary of the access lot or access strip or any combination of these areas; or
 - iii. where buildings on adjoining sites have a common wall along an internal boundary the recession planes shall not apply along that part of the boundary covered by such a wall.
- b. The recession plane shall only apply to the midpoint of each section of wall and roof of a building, as shown in Appendix 14.15.2B.
- c. Except in Worsleys Road where the recession planes shall commence from points 2.3m above a line at ground level 5 metres inside internal boundaries.
- d. Where the building is located in a Flood Management Area, the exemptions in Rule 5.5.1.3 apply (for activities P1-P4 in Table 5.5.1.1b).

Note: For the purpose of this rule, a section of roof means a continuous part of the roof with the same slope.

Refer to Appendix 14.15.2 for permitted intrusions.

Amend Rule 14.8.3.4 as follows:

- a. No part of any building shall project beyond a building envelope contained by a 45 degree recession plane measured at any point 2 metres above any adjoining site boundary that is not a road boundary.
- b. Within the Kainga Overlay Area 1 and 2 and the Spencerville Overlay Area, buildings shall not project beyond a building envelope constructed by recession planes, as shown in Appendix 14.15.2 Diagram A, from points 2.3 metres above:
 - i. ground level at the internal boundaries; or
 - ii. where an internal boundary of a site abuts an access lot or access strip the recession plane may be constructed from points 2.3 metres above ground level at the furthest boundary of the access lot or access strip or any combination of these areas; or
 - iii. where buildings on adjoining sites have a common wall along an internal boundary the recession planes shall not apply along that part of the boundary covered by such a wall.
- c. Where the building is located in a Flood Management Area, the exemptions below apply:
 - i. In the Flood Management Area, Rule 5.5.1.3 (for activities P1-P4 in Table 5.5.1.1b); or
 - ii. In the Te Waihora/Lake Ellesmere and Wairewa/Lake Forsyth Flood Management Areas, Rule 5.5.2.3 (for activities P1-P5 or P11-P12 in Table 5.5.2.1).

Amend Rule 14.9.3.4 c. as follows:

- c. Where the building is located in a Flood Management Area, the exemptions in Rule 5.5.1.3 apply (for activities in P1-P4 in Table 5.5.1.1b).

Amend Rule 14.11.4.2 as follows:

Buildings shall not project beyond a building envelope constructed by recession planes from points 2.3 metres above boundaries with other sites as shown in Appendix 14.15.2, diagram C except that:

- a. where an internal boundary of a site abuts an access lot, access strip, or access to a rear lot, the recession plane may be constructed from points 2.3 metres above the furthest boundary of the access lot, access strip, or access to a rear lot or any combination of these areas;
- b. where buildings on adjoining sites have a common wall along an internal boundary the recession planes shall not apply along that part of the boundary covered by such a wall.
- c. Where the building is located in a Flood Management Area, the exemptions in Rule 5.5.1.3 apply (for activities P1-P4 in Table 5.5.1.1b).

Note: The level of internal boundaries shall be measured from filled ground level except where the site on the other side of the internal boundary is at a lower level, then that lower level shall be adopted.

Amend Rule 14.12.3.2 as follows:

Buildings shall not project beyond a building envelope constructed by recession planes from points 2.3 metres above boundaries with other sites as shown in Appendix 14.15.2, diagram C, except that:

- a. where an internal boundary of a site abuts an access lot, access strip, or access to a rear lot, the recession plane may be constructed from points 2.3 metres above the furthest boundary of the access lot, access strip, or access to a rear lot or any combination of these areas; and
- b. where buildings on adjoining sites have a common wall along an internal boundary the recession planes shall not apply along that part of the boundary covered by such a wall.
- c. Where the building is located in a Flood Management Area, the exemptions in Rule 5.5.1.3 apply (for activities P1-P4 in Table 5.5.1.1b).

Note: The level of internal boundaries shall be measured from filled ground level except where the site on the other side of the internal boundary is at a lower level, then that lower level shall be adopted.

Amend Rule 14.13.3.2 as follows:

- a. Buildings shall not project beyond a building envelope constructed by recession planes from points 2.3m above internal boundaries with other sites as shown in the diagram below, except that:
 - i. Where an internal boundary of a site abuts an access lot, access strip, or access to a rear allotment, the recession plane may be constructed from points 2.3m above the furthest boundary of the access lot, access strip, or access to a rear allotment or any combination of these areas;
 - ii. Where buildings on adjoining sites have a common wall along an internal boundary the recession planes shall not apply along that part of the boundary covered by such a wall.
- a. Where the building is located in a Flood Management Area, the exemptions in Rule 5.5.1.3 apply (for activities P1-P4 in Table 5.5.1.1b).

Planning Maps

Amend the Legend to the Planning Maps (Natural Hazard Overlays) to refer to ~~Te~~Wairewa/Lake Forsyth Flood Management Area.

SCHEDULE 2

Table of submitters

This list has been prepared from the index of appearances recorded in the Transcript, and from the evidence and submitter statements shown on the Independent Hearing Panel's website.

Submitter Name	No.	Person	Expertise or Role of Witness	Filed/Appeared
Christchurch City Council	3723	I Brookland	Planning Engineer	Filed/Appeared
		G Butcher	Economist	Filed/Appeared
		P Christensen	Surface Water Engineer	Filed/Appeared
		R Evans	Planner	Filed/Appeared
		G Harrington	Water Planner	Filed/Appeared
		G Whyte	Engineer	Filed/Appeared
		T Oliver	Hazards Analyst	Filed
		Dr I Wright	Geotechnical Engineer	Filed
		M Theelen		Filed
Crown	3721	Dr W Saunders	Planner	Filed/Appeared
Gavin Frederick, Margaret Mary and Michael Gavin M Case	3280	PM Thompson	Planner	Filed/Appeared
Christchurch Coastal Residents United	3686	J Sintes		Filed/Appeared
		W Schaffer		Appeared
		A Scrase		Appeared
		S Arnold	Policy	Filed
South Brighton Residents' Association and Empowered Christchurch	3945/2498	H Kristinsson		Filed/Appeared
Cashmere Fields	3954	WR Lewis		Filed/Appeared
Christian Jordan	3955	C Jordan		Filed/Appeared
James and Mary Koh	3990	K Seaton	Planner	Filed
G & J McVicar and Christ's College Canterbury	3677			Filed
Leone Stewart	3992	L Stewart		Filed
Jan Sintes	3735	J Sintes		Filed/Appeared
Tim Sintes	3736	T Sintes		Filed/Appeared
Warwick Schaffer	3550	W Schaffer		Appeared
Karina Hay	3281	K Hay		Appeared
Jan Burney	3232	J Burney		Filed/Appeared
Dennis Lawrence Harwood	3465	D Harwood		Appeared
Raymond John and Pauline Fay McGuigan	3387	P McGuigan		Appeared

Submitter Name	No.	Person	Expertise or Role of Witness	Filed/Appeared
Riccarton/Wigram Community Board	3637	H Broughton		Appeared
Kimberlea Menendez	3360	K Menendez		Appeared
Rik Tindall on behalf of Cashmere Residents' Association	3601/3603	R Tindall		Appeared
Mark Turner	3363	J Monroe		Appeared
John Horgan on behalf of John & Bronwyn Horgan, Sue Herron, John Wisker	3074	J Horgan		Appeared
Patrick Scott	3919	P Scott		Appeared
Anne Dingwall	3663	A Dingwall		Appeared
David Hilliard Bell and James William Cole	3705	D Bell		Appeared
Simon Brown	3506	S Brown		Appeared
David Leighton	3238/3247	D Leighton		Appeared
Carey Elizabeth Treleaven	3303	C Treleaven		Appeared
Snook Family Trust (and AD & KF Rodrigues, 3428)	3297	K Snook		Appeared
Annabelle Margaret McKenzie	3659	A McKenzie		Appeared
Todd Albert Carbines	3392	T Carbines		Appeared
Dulcima Brown	3504	D Brown		Appeared
Alan Taylor	3503	A Taylor		Appeared
Mavis Taylor	3501	M Taylor		Appeared
Grant Maurice West	3333	G West		Appeared
Sparks Road Garden Ltd & The Lee Family	3651	D Lee		Appeared
Teresa Dana	3891	T Dana		Appeared
Leo-Paul Dana	3910	L Dana		Appeared
Megan Jane Roulston	3359	M Roulston		Appeared
Timothy Philip Hamer Roulston	3370	T Roulston		Appeared
James Marshall	3003	J Marshall		Appeared
Susan Lynette Carbines	9091	S Carbines		Appeared
Christine Scrase Ann Blyth	3324 3326	A Scrase		Appeared