Key:

This is the amended position of the Council as per the Council's Evidence in Chief (dated 13 February 2015):

The following text is from the notified version of the proposed Christchurch City Council Replacement District Plan. It has been amended as follows:

1) As a result of Council's submission (#310) – additions are underlined in black text and deletions are struck through in black text;

2) As a result of the Planner's expert witness caucusing statement dated 29 January 2015, where the Council supports those changes – additions are underlined in light blue text and deletions are struck through in light blue text; and

3) As a result of Council's consideration of submissions – additions are underlined in red text and deletions are struck through in red text.

For clarity, note that this document also contains dark blue text and underlined green text. This text is as it appears in the notified proposals and indicates links to key documents and links to definitions respectively (ie it does not represent amendments).

Where additional text, proposed through (1), (2) or (3) above, contains a word that is to be linked to a definition in Chapter 2 of the proposed Replacement District Plan. In that situation, a comment box has been added stating "defined word" to indicate that it should be linked to the definition.

Crown's suggested changes in Yellow highlight
Introduction to Chapter 5 Natural Hazards

Introduction

The Natural Hazards Chapter is focused on identifying natural hazards affecting the district, increasing public awareness of those natural hazards and providing an appropriate district planning framework for reducing the risk to the community over the long term. The natural hazards that this District is particularly concerned with include:

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

The Chapter includes provisions in respect to flooding, liquefaction and slope instability as part of Phase 1 of the District Plan Review as these were identified as the priority natural hazards in the recovery process. The chapter is structured with objectives (outcomes the Plan seeks to achieve), followed by general policies (how the objectives will be achieved) and a more detailed set of policies on each of the priority natural hazards of flooding, liquefaction and slope instability. The objectives and policies are generally implemented by Rules in this District Plan. These Rules are primarily found in the Natural Hazards Chapter. The exceptions to this are where the policies:

- Are implemented by rules in other parts of the Plan;
- Are supported by Rules to be provided in Phase 2 of the District Plan Review; and
- Provide guidance in the consideration of plan changes such as rezoning of land.

The Rules section of the Natural Hazards Chapter is divided into the three priority natural hazards discussed above. Rule 5.8 deals with Flood Hazard, Rule 5.9 with Liquefaction and 5.10 with Slope Instability. Natural Hazard overlays are identified in the Planning Maps and identify the relevant rules at the property level. A section on information requirements for plan changes and resource consent applications is provided in Section 5.11.

A key policy (Policy 5.2.7) refers to the need for increased awareness of natural hazards and to encourage people to include measures beyond those afforded by existing use rights under the Resource Management Act 1991. Policy 5.2.7a is primarily implemented through identifying properties subject to natural hazards on the planning maps, while the Plan anticipates that methods to achieve policy 5.2.7b will occur outside the Plan requirements. There are a number of concepts used in this Chapter not found elsewhere in the district plan. An explanation of some of these key concepts is provided below. These explanations are intended only to assist in understanding the policies and are not definitions in themselves.
Key Concepts

Risk-based approach:
The Plan takes a risk-based approach by selecting three priority hazards and managing them according to their risk. Slope instability areas are managed on the basis of intolerable risk to life safety, reflecting the high level of risk in the mapped area. Flooding is managed through floor level and fill management areas, a reflection of the risk to property, rather than life. Liquefaction is not a life safety risk but is a risk to property and, as mitigation measures can be put in place, is managed in a more permissive way. For example, liquefaction only requires a restricted discretionary consent, i.e. there is a presumption of permissiveness, in contrast to slope instability areas, where some activities are prohibited and non-complying.

Levels of risk:

‘Acceptable’ refers to risks that do not need mitigation measures. The term ‘acceptable level of risk’ refers to the level at which further mitigation is not worthwhile. For example, the risk is so low that additional mitigation measures will not result in a significant reduction in risk levels.

‘Tolerable’ refers to the willingness to live with a risk due to the benefits associated with it, on the understanding that it is being appropriately controlled. Tolerability does not mean acceptability; rather, it is something that should be monitored and reviewed so that, if feasible and appropriate, the risk to life and property can be reduced further.

‘Intolerable’ refers to where the risks to life cannot be tolerated no matter what benefits the activity may bring; and/or the risk is so great that no risk reduction measures will reduce the risk to a tolerable level.

Intolerable risk to life safety:

In terms of the policies in the Plan intolerable risk to life safety is a concept used to explain the point where it is considered that the risk to life is so great that it should not be put up with (or development that would put that life at risk, provided for).

A metric used in this Plan for Slope Instability Hazard is the Annual Individual Fatality Risk (AIFR) which is defined in this Plan as “the probability or likelihood that an individual will be killed at their place of residence in any one year as a result of cliff collapse, rockfall or mass movement.”

An intolerable risk to life safety is largely a judgement call that will differ depending on circumstances. Using the AIFR metric an AIFR of $10^{-4}$ (chance of 1 in 10,000 of death from rockfall, cliff collapse, mass movement) may be considered intolerable level of risk to life for normal residential activity, but for a preschool or greenfield development it might be considered to be appropriately determined as being $10^{-5}$ (1 in 100,000 chance of death). The AIFR used in this Plan is modelled using residential occupancy as a key component. Consequently, for the likes of a utility building or structure with no people occupying it, the residential AIFR is unlikely to be an appropriate metric. The risk to life safety in these situations is a consideration largely during the construction period and periods of maintenance.

Mapping in the District Plan has used the AIFR metric of $10^{-4}$ and operates as an alert layer that is the trigger point for resource consents for known areas subject
to cliff collapse, rockfall and mass movement. This enables geotechnical assessment of the life safety risk to occur before new development takes place.

Multiple hazards:
Cumulative risks are where two or more unrelated natural hazard events have the potential to affect human life and/or property. For example, an area may be susceptible to flooding, bush fire, and fault rupture. The risk in this area is higher than if it were subject to only one hazard. Cascading hazards are where two or more natural hazards, caused by the same ‘trigger’ event, affect human life and/or property. For example, a storm may result in high winds and flooding.

Precautionary approach:
The ability to manage activities can be hindered by a lack of understanding about environmental processes and the effects of activities. Therefore an approach that is precautionary but responsive to increased knowledge is required. Although those intending to undertake activities seek certainty about what will be required of them, when there is little information as to the likely effects of those activities, public authorities are obliged to consider such activities on a case by case basis. In regional and district plans, such activities should be provided for as discretionary or non-complying. Any resource consent granted in such circumstances should be subject to whatever terms and conditions are necessary to avoid the possibility of serious and irreversible adverse effects on the environment that would not otherwise be remedied or mitigated.

Infrastructure repair, maintenance and upgrading:
These terms need an explanation

Other methods to manage natural hazards
This Chapter contains only regulatory methods. However, in order to fully manage natural hazard risk it is likely that other methods such as physical mitigation works and education will be also required. The Christchurch City Council intends to prepare and make available relevant explanatory material and guidance on these other non-regulatory methods.
Chapter 5 Natural Hazards (part)

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   5.2.5 Policy - Worsening, adding or transferring hazard risk
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5.11 General procedures - Information requirements

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5.11.2 Additional information requirements for all resource consent applications for subdivision

5.11.3 Additional information requirements for applications for resource consents for land use activities in flat areas where a geotechnical report is required.

5.11.4 Additional information requirements for applications for resource consents within Port Hills and Banks Peninsula Slope Instability Management Areas

5.12 General procedure - Compliance with other chapters

5.13 Appendices

5.13.1 Liquefaction assessment areas in Christchurch

5.13.2 Liquefaction assessment areas on Banks Peninsula
5.1 Natural hazards objectives

5.1.1 Objective - Reduced risk

a. Reduced risk to people, property, infrastructure and other aspects of the environment from the effects of natural hazards, including:
   
   i. intense rainfall events causing flooding from rivers, streams, overland flow and lakes;  
   ii. liquefaction during earthquake shaking;  
   iii. cliff collapse, rockfall or boulder roll, and mass movement;  
   iv. tsunami;  
   v. inundation from the sea and storm surge;  
   vi. coastal erosion  
   vii. exacerbation of hazards (i) to (vi) through climate change and sea level rise;  
   viii. and multiple hazards consisting of combinations of the above.

5.1.2 Objective - Awareness of natural hazards

a. Increased public awareness of the range and scale of natural hazard events that can affect the District.

5.1.3 Objective - Repair of earthquake damaged land

a. Repair of earthquake damaged land used for residential purposes is facilitated as part of the recovery.  
   b. Repair of other earthquake damaged land.

5.2 General natural hazards policies

5.2.1 Policy - Avoid development where there is unacceptable or intolerable risk

a. Avoid new subdivision, use and development, particularly including new urban zonings, where:
   
   i. there is intolerable risk of loss of life or serious injury in the event of a natural hazard occurrence; or  
   ii. other potential adverse effects arising from a natural hazard event are serious and risks associated with the natural hazard cannot be mitigated to an acceptable level.
5.2.2 Policy - **Critical infrastructure**

a. Avoid locating new critical infrastructure **locating** where it is at risk of being **significantly** affected by a **significant** natural hazard unless there is no reasonable alternative location or method including considering functional and operation requirements, and

b. To enable **critical infrastructure** **is to be** designed, maintained and managed to function to the **fullest** extent **possible** **practicable** during and after natural hazard events.

c. Recognise the benefits of **existing critical infrastructure** and the need for its repair, maintenance, and use in areas affected by natural hazards, enable the ongoing use, maintenance and upgrading of critical infrastructure.

5.2.3 Policy - Restrict land use to avoid or mitigate hazards

d. a. Apply different levels of control on subdivision, use and development in areas at risk of natural hazards, depending on the level of risk, to ensure that the adverse effects of natural hazards are avoided or **otherwise** adequately mitigated.

5.2.4 Policy - Precautionary approach

a. Adopt a precautionary approach to subdivision, use and development where:

i. there is a **high degree of** uncertainty as to likelihood and scale of a natural hazard; or there

ii. **there** are multiple natural hazards that can occur simultaneously resulting in **adverse effects**; or there is

iii. **potential for serious or irreversible effects from a natural hazard**.

iv. multiple natural hazards have been identified on a site and result in an **elevated overall risk profile**.

b. Where a precautionary approach is to be applied, the activity should seek to provide an acceptable level of risk from natural hazards.

5.2.5 Policy - **Worsening, adding or transferring hazard risk**

a. Ensure that subdivision, use and development, or hazard mitigation proposals do not:

i. **worsen the adverse effects of any known natural hazard**;

ii. **create a new hazard**; or

iii. transfer or **increase unacceptable intolerable risk** or **adverse effects** to other people, property, infrastructure or the **natural environment**.
5.2.6 Policy - Natural features providing hazard resilience

a. Ensure that Protect natural features which assist in avoiding or reducing the effects risk of natural hazards, such as natural ponding areas, coastal dunes, wetlands, waterway margins and riparian vegetation, are protected from inappropriate subdivision, use and development and where appropriate restore, maintain or enhance the functioning of these features.

5.2.7 Policy - Awareness of natural hazards

a. Ensure people are informed about the natural hazards relating to their properties and surrounding area.

b. Encourage property owners to incorporate additional measures into the rebuild of earthquake damaged buildings including earthquake damaged buildings beyond existing use rights or minimum building standards to avoid or mitigate natural hazards affecting their property.

5.2.8 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 have minimal adverse effects on people, property or the natural environment.

b. To recognise that the repair of other earthquake damaged land is necessary as part of recovery.

5.3 Policies for flooding

Note: Rules will be added to the Natural Hazards chapter through the notification of further provisions implementing Policies 5.3.1, 5.3.2, and 5.3.3 and Policy 5.3.4 in respect to the zones/areas not covered in Phase 1.

5.3.1 Policy - High flood hazard

a. Avoid subdividing or developing subdivision or development where it will increase the potential risk to people’s safety, well-being and property new residential units, other habitable buildings, buildings for concentrations of people and additions to those buildings, in areas where there is a high flood hazard.

b. [Additional policy in relation to additional areas will be added as part of Phase 2]
5.3.2 Policy - Flood protection works

a. Avoid activities locating where they could undermine the integrity of the Waimakariri River primary stopbank system.
b. Restrict activities locating where they could undermine the integrity of the Waimakariri River secondary stopbank system.
c. Ensure that activities located near stopbank systems do not exacerbate or transfer flood risk elsewhere.

5.3.3 Policy - Protection of flood storage and overflow areas

a. 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 Area.
b. Limit filling in urban areas at risk of flooding in a major flood event, where that filling activity could transfer risk to other properties, except where filling is required to meet minimum floor levels.

5.3.4 Policy - Flood damage mitigation by raising floor levels

a. Reduce potential flood damage by ensuring floor levels for new buildings or significant additions to buildings, that are likely to suffer material damage, are above flooding predicted to occur in a major flood event, including an allowance for sea level rise.

Interim Policy for specific areas
b. Provide for variations in minimum floor levels and their application only in the Waimakariri Stopbank Floodplain, within the Open Space 3D (Clearwater) zone, and around Te Waihora (Lake Ellesmere) and Wairewa (Lake Forsyth).

5.3.5 Policy - Repair of earthquake damaged land

a. Facilitate recovery by enabling property owners to make immediate repairs to earthquake damaged land for residential purposes in areas at risk of flooding, where the adverse effects of repairs are minimised where these repairs will have minimal adverse effects on people, property or the natural environment.

5.4 Policies for managing risk from geotechnical hazard and risks for flat areas of the district

5.4.1 Policy - Geotechnical risk including liquefaction susceptibility
a. In flat areas of the district ensure that geotechnical site suitability is assessed, including liquefaction susceptibility, before new areas are zoned for urban activities or where they are already zoned, before subdivision, use and development susceptible to geotechnical risks take place.

b. Ensure that the level of assessment undertaken for re-zoning subdivision or development reflects:
   i. the potential scale and significance of the liquefaction hazard or other geotechnical hazard; and that could occur during ground shaking, acknowledging that some areas are more susceptible to these hazards than others.
   ii. the nature and scale of the re-zoning, subdivision or development and its susceptibility to those hazards

5.4.2 Policy – Management of geotechnical risks on flat land

a. Ensure re-zoning subdivision, use and development on flat land is able to occur where geotechnical hazards have been appropriately identified and assessed and risks can be adequately remedied or mitigated.

b. Avoid re-zoning subdivision, use and development on flat land, where the risk arising from geotechnical hazard cannot be adequately mitigated and the site would not be suitable for its anticipated uses reasonable use.

5.5 Policies for slope instability areas

5.5.1 Policy - Areas subject to an intolerable risk to life-safety from potential cliff collapse

a. Avoid subdivision, use and development at the top of and/or base of cliffs in areas subject to where it will result in an intolerable risk to life-safety from the effects of cliff collapse.

5.5.2 Policy - Areas potentially affected by rockfall or boulder roll

a. Avoid subdivision, use and development where it will result in areas subject to an intolerable risk to life-safety from the effects of rockfall or boulder roll.

b. Control subdivision, use and development in areas subject to life-safety risk from the effects of rockfall or boulder roll, where the life-safety risk can be reduced to a tolerable level.

5.5.3 Policy - Areas potentially affected by mass movement

a. Avoid subdivision, use and development where it will result in areas subject to an intolerable risk to life-safety from the effects of mass movement.

b. Control subdivision, use and development in areas subject to a heightened risk from the effects of mass movement, where there is a potential for damage to property and infrastructure.
5.5.4 Policy - Slope instability in areas not already identified as cliff collapse, rockfall or mass movement (remainder of Port Hills and Banks Peninsula)

a. In areas not already identified as subject to cliff collapse, rockfall or mass movement, where appropriate require proposals for subdivision, use and development to be assessed by a geotechnical expert, to evaluate the type of hazard and level of risk to people and property including infrastructure from slope instability hazards, and only allow subdivision, use and development where risk can be reduced to an acceptable level.

5.5.5 Policy - Hazard mitigation works for slope instability in the Port Hills and across Banks Peninsula

a. 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 mitigation works, or where construction or maintenance of hazard mitigation works creates a safety hazard, unless reasonably required to protect critical infrastructure.

b. Control hazard mitigation works for slope instability across all other areas of the Port Hills and Banks Peninsula, to ensure that hazard mitigation proposals:
   i. are effective; and
   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; and
   iv. do not adversely affect sites of cultural significance to Ngai Tahu.

5.6 Interim policy for coastal hazards (to be further considered in Phase 2 of the District Plan Review)

5.6.1 Policy - Climate change and sea level rise

a. Avoid intensification of built development in areas that are projected to be subject to flooding and/or inundation as a result of the effects of climate change, including sea level rise.

b. Limit intensification of development in locations where the effects of climate change, including sea level rise, are likely to result in decreasing levels of service from drainage or other infrastructure.

5.7 Policy - Multiple natural hazard areas

a. Where multiple natural hazards have been identified on a site and result in an elevated overall risk profile, adopt a precautionary approach to subdivision, use and development.
5.8 Flood hazard rules

5.8.1 Residential zones - Activities and earthworks in Floor level and Fill Management Areas

Click here for Planning Maps

5.8.1.1 Permitted activities

The activities listed below are permitted in all residential zones where the activity is located in a Floor Level and Fill Management Area subject to compliance with:

1. activity status rules and any standards specified elsewhere in the Plan for that activity, and
2. the standards specified in this Rule 5.8.1.1.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Activity specific standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>New buildings located within the Fixed Minimum Floor Overlay, unless specified in P3, P4, P5 and P6 in Rule 5.8.1.1.</td>
</tr>
<tr>
<td>P2</td>
<td>Additions existing buildings which increase the ground floor area of the building located within the Fixed Minimum Floor Overlay, except those specified in P4, P5 and P6 in Rule 5.8.1.1.</td>
</tr>
</tbody>
</table>

a. Minimum floor levels shall be the highest of the following:
   i. flooding predicted to occur in a 1 in 200-year rainfall event concurrent with a 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 5.8.1.1.a; or
   ii. flooding predicted to occur in a 1 in 200-year tidal event concurrent with a 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 5.8.1.1.a; or
   iii. 12.3m above Christchurch City Council Datum. (Link to table with floor levels)

Table 5.8.1.1.a Hydrologic and Hydraulic Models Used to Provide Minimum Floor Levels
# Chapter 5 - Natural Hazards

Evidence in Chief – Ms Janice Carter: **Attachment A** (13.02.2015)

## Floor Level and Fill Management Area

<table>
<thead>
<tr>
<th>Catchment</th>
<th>Model</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Styx</td>
<td>Styx River Hydrologic and Hydraulic Model</td>
<td>R004</td>
</tr>
<tr>
<td>Avon</td>
<td>Avon River Hydrologic and Hydraulic Model</td>
<td>D13</td>
</tr>
<tr>
<td>Heathcote</td>
<td>Heathcote River Hydrologic and Hydraulic Model</td>
<td>2012 Design</td>
</tr>
<tr>
<td>Sumner</td>
<td>Sumner Floodplain Hydrologic and Hydraulic Model</td>
<td>12N</td>
</tr>
</tbody>
</table>

## Activity

<table>
<thead>
<tr>
<th>Activity</th>
<th>Activity specific standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>P3</td>
<td>Additions to existing buildings that do not increase the ground floor area of the building. a. Nil</td>
</tr>
<tr>
<td>P4</td>
<td>Additions <strong>other than garages provided for in P5</strong> which do not increase the ground floor area of an existing building by more than 25m² within any continuous period of 10 years. a. Nil</td>
</tr>
<tr>
<td>P5</td>
<td>Garages of 40m² or less in area, and any other accessory buildings without floors. a. Nil</td>
</tr>
<tr>
<td>P6</td>
<td>Decks, swimming pools, and unenclosed buildings without floors. a. Nil</td>
</tr>
<tr>
<td>P7</td>
<td><strong>Utilities Support structures for overhead transmission lines including lattice towers, and above ground LPG storage tanks.</strong> a. Nil</td>
</tr>
<tr>
<td>P8</td>
<td><strong>Filling or excavation for residential building platforms only to the extent necessary to achieve the minimum floor levels specified for P1 and P2 in Rule 5.8.1.1 for new buildings and for additions to buildings.</strong> a. Nil</td>
</tr>
<tr>
<td>P9</td>
<td><strong>Filling or excavation associated with the maintenance of flood</strong> a. Nil</td>
</tr>
</tbody>
</table>

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Comment [JC11]: Defined term.
<table>
<thead>
<tr>
<th>P10</th>
<th><strong>Filling</strong> or excavation associated with permitted <strong>utilities</strong> or their replacement, repair or maintenance of existing <strong>utilities</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Nil</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P11</th>
<th>Any other <strong>filling</strong> or excavation.</th>
</tr>
</thead>
</table>
|     | 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 10m$^3$ per site, and a maximum cumulative volume of **filling** and excavation of 25m$^3$ 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. |

With regard to P1 and P2, irrespective of anything to the contrary in this Plan, recession plane breaches created directly by the need to raise floor levels to meet the minimum floor level standards set in Rule 5.8.1.1 are exempt from compliance with:

- Rule 14.2.3.6 Daylight Recession Planes - Residential Suburban Zone and Residential Suburban Density Transition Zone;
- Rule 14.3.3.5 Daylight Recession Planes - Residential Medium Density Zone; and
- Rule 14.6.3.5 Daylight Recession Planes - New Neighbourhood Zone.

Recession plane breaches in excess of those created by the need to raise floor levels are not exempt from these rules.

Note: For **filling** or excavation (before 31 December 2018) for repair of land used for residential purposes and damaged by earthquakes, see Rule 5.8.2.

1 $^{1}$ in 200 year event = 0.5% AEP event; 1 in 20 year event = 5% AEP event.  
2 As for footnote 1.
## 5.8.1.2 Restricted discretionary activities

The activities listed below are restricted discretionary activities in all residential zones where the activity is located in a **Floor Level and Fill Management Area**.

<table>
<thead>
<tr>
<th>Activity</th>
<th>The Council’s discretion shall be limited to the following matters:</th>
</tr>
</thead>
<tbody>
<tr>
<td>RD1</td>
<td>New buildings located within the Fixed Minimum Floor Overlay which do not meet the standards set out in P1 under Rule 5.8.1.1 and are not permitted by P3, P4, P5 or P6 in Rule 5.8.1.1. Any application arising from this rule will not require written approvals and shall not be publicly or limited notified.</td>
</tr>
</tbody>
</table>

a. The setting of the minimum floor level of the building and/or addition.

   **Note:** Where the applicant accepts the minimum floor level provided by Council, no further matters need to be considered. Otherwise, the following matters will be considered.

b. 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.

c. Any proposed mitigation measures, and their effectiveness and environmental impact, including any benefits associated with flood management.

d. Any adverse effects of the scale and nature of the building and its location in relation to neighbouring buildings, including effects on the privacy of neighbouring properties as a result of the difference between minimum and proposed floor levels, and effects on streetscape.
<table>
<thead>
<tr>
<th>RD2</th>
<th>New buildings not located within the Fixed Minimum Floor Overlay and not permitted by P3, P4, P5 or P6 set out in Rule 5.8.1.1. Any application arising from this rule will not require written approvals and shall not be publicly or limited notified.</th>
</tr>
</thead>
<tbody>
<tr>
<td>RD3</td>
<td>Additions to existing buildings located within the Fixed Minimum Floor Overlay, which increase the ground floor area of the building, but which do not meet the standards set out in Rule 5.8.1.1 - P2 and are not permitted by P4, P5 or P6 set out in Rule 5.8.1.1. Any application arising from this rule will not require written approvals and shall not be publicly or limited notified.</td>
</tr>
<tr>
<td>RD4</td>
<td>Additions to existing buildings not located within the Fixed Minimum Floor Overlay, which increase the ground floor area of the building, but are not permitted by P4, P5 or P6 set out in Rule 5.8.1.1. Any application arising from this rule will not require written approvals and shall not be publicly or limited notified.</td>
</tr>
<tr>
<td>RD5</td>
<td><strong>Filling</strong> or excavation which is not a permitted activity under P8, P9 or P10 set out in Rule 5.8.1.1, or <strong>filling</strong> or excavation that exceeds the standards in P11 set out in Rule 5.8.1.1.</td>
</tr>
<tr>
<td></td>
<td>a. The effects of <strong>filling</strong> or excavation on flooding, waterways, groundwater and natural ground levels on and/or off site, including:</td>
</tr>
<tr>
<td></td>
<td>i. Any likelihood of exacerbation of flooding, erosion, or siltation either upstream or downstream</td>
</tr>
</tbody>
</table>
of the site.

ii. Any adverse effects on other properties from disturbances to surface drainage patterns.

iii. 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.

iv. Any implications for groundwater and the water table, on or off site.

v. Any benefits associated with flood management.

b. Any proposed mitigation measures, and their effectiveness and environmental impact.

c. The effects of the scale and nature of the filling or excavation, and location in relation to neighbouring sites, including:

i. Effects on privacy of neighbouring properties and effects on streetscape.

ii. The stability of adjoining land, and its susceptibility to subsidence or erosion upon excavation or filling taking place.

d. Effects on access, character, ecology and amenity, and on sites of archaeological and cultural value, including:

i. Any adverse effects or benefits for public access, natural character, or ecology of waterways and wetland areas.

ii. Any adverse effects on amenity values including dust
nuisance, visual impact, noise, vibration and traffic associated with the filling or excavation.

iii. Effects on sites of archaeological value including consideration of the need to impose an Accidental Discovery Protocol.

vi. Effects on sites of cultural significance to Ngai Tahu.

5.8.1.3 Discretionary, non-complying and prohibited activities

Note: There are no discretionary, non-complying or prohibited activities in respect of Rule 5.8.1.

5.8.2 Repair of land used for residential purposes damaged by earthquakes within a Floor Level and Fill Management Area (provisions previously introduced under s27 Canterbury Earthquake Recovery Act to the Operative Plan).

5.8.2.1 Permitted activities

The activities listed below are permitted activities in Floor Level and Fill Management Areas provided the activity:

1. complies with all of the activity specific standards set out in a to j in P1 and P2 in Rule 5.8.2.1.
2. occurs in the Suburban Residential (except for the Suburban Residential Zone on the corner of Hendersons and Sparks Road), Residential Suburban Density Transition, Medium Density Residential and New Neighbourhood zones only
3. is commenced prior to the expiry date of this rule on 31 December 2018
<table>
<thead>
<tr>
<th>Activity</th>
<th>Activity specific standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>Any filing 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 Floor Level and Fill Management Area unless specified by P2 in Rule 5.8.2.1.</td>
</tr>
<tr>
<td></td>
<td>a. Any filing, excavation or disturbance of soils shall not exceed the criteria in Table 1 or 2 under Rule 5.8.2.1.</td>
</tr>
<tr>
<td></td>
<td>b. There shall be no filing, excavation or disturbance of soil within:</td>
</tr>
<tr>
<td></td>
<td>i. 3m from any utility waterway to be piped;</td>
</tr>
<tr>
<td></td>
<td>ii. 5m from any open utility waterway;</td>
</tr>
<tr>
<td></td>
<td>iii. 7m from any environmental asset waterway;</td>
</tr>
<tr>
<td></td>
<td>iv. 10m from any other waterway; and</td>
</tr>
<tr>
<td></td>
<td>v. 20m from Mean High Water Springs except where works within these riparian area setbacks are permitted under the Canterbury Regional Council rules for repair to earthquake-damaged land or where the earthworks are authorised by a land use consent granted by the Canterbury Regional Council.</td>
</tr>
<tr>
<td></td>
<td>Note: The Canterbury Regional Council manages earthworks within 10m of other rivers and lakes and 20m 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.</td>
</tr>
<tr>
<td></td>
<td>c. All filing, excavation or disturbance of soil:</td>
</tr>
<tr>
<td></td>
<td>i. is not within the dripline of a listed heritage or notable tree; or</td>
</tr>
<tr>
<td></td>
<td>ii. does not alter the finished ground level by more than 0.25m within 5m of the dripline of a listed heritage or notable tree; or</td>
</tr>
<tr>
<td>P2</td>
<td>Any filing 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 Floor Level and Fill Management Area.</td>
</tr>
</tbody>
</table>
iii. is not within an Ecological Heritage Site; or

iv. is not at or within 5m of a listed heritage item including items of significance to tangata whenua Ngai Tahu, where the heritage item is on the same site.

d. All filling, excavation or disturbance of soil greater than 10m$^3$ in volume and 0.6m in depth or within the waterway setbacks at activity specific standard b in Rule 5.8.2.1 shall be undertaken in accordance with the Erosion and Sediment Control Guidelines for Small Sites and Section 6.1 of the Erosion and Sediment Control Guidelines (both prepared by Environment Canterbury)

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 standard g in Rule 5.8.2.1.

f. All filling, excavation or disturbance of soil is to be undertaken. All land repair works are to be managed in

g. **For filling, excavation or disturbance of soil** completed under Table 2 in Rule 5.8.2.1, PS-4 certification completed by a suitably qualified and experienced chartered geotechnical engineer must be provided to the Council within 3 months of the land repair being completed. This shall include as-built plans of the works.

h. 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. **pressurized injection** of grout into the ground.

i. Where grout is deposited into land:

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.
   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 of the location of the land repair and the name and contact details
of the supervising engineer:

ii. Written notice shall be provided to any occupier of a residential dwelling 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 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.

Table 1: 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 5.8.2.1 must also be met.**
Table 2: 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 5.8.2.1 must also be met.

<table>
<thead>
<tr>
<th>Column A Max. Volume (Cumulative)</th>
<th>Column B Max. depth (m)</th>
<th>Column C Max. depth of fill (m) [below ground level]</th>
<th>Column D Fill (m) [above ground level]</th>
<th>Column E Setback from boundary</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1 50m³/site</td>
<td>0.6</td>
<td>0.6</td>
<td>0.3 max. depth and 10 m³/site max. volume</td>
<td>Setback from boundary must be equivalent to or greater than the depth of filling or excavation.</td>
</tr>
<tr>
<td>P2 10m³/site Not more than 10m³ of grout/site</td>
<td>1.0</td>
<td>1.0</td>
<td>0.3m max. depth</td>
<td></td>
</tr>
</tbody>
</table>

5.8.2.2 Restricted discretionary activities

The activities listed below are a restricted discretionary activity. Discretion to grant or decline consent or impose conditions is restricted to the matters for discretion identified below.

<table>
<thead>
<tr>
<th>Activity</th>
<th>The Council’s discretion shall be limited to the following matters:</th>
</tr>
</thead>
<tbody>
<tr>
<td>RD1</td>
<td>Any filling or excavation undertaken to repair land used for residential purposes damaged by earthquakes that does not comply with P1 or P2 set out in Rule 5.8.2.1.</td>
</tr>
</tbody>
</table>
5.8.2.4 Exemptions to Rules 5.8.2.1 and 5.8.2.2

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 5.8.2.1 or 5.8.2.2 where:

i. they comply with the criteria in column D of Tables 1 and 2 in Rule 5.8.2.1 controlling fill above ground level in Floor Level and Fill Management Areas; 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 1 and 2 in Rule 5.8.2.1; or

iii. they comply with activity specific standards b, c, d, e, f, h, and i of P1 and P2 in Rule 5.8.2.1; or

iv. 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.

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 b, c, e, f, h, and i of P1 and P2 in Rule 5.8.2.1.

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

i. 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.

ii. Measurement of volume shall include only areas which have been disturbed, including by filing, 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.

iii. 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 5.8.2.1, Rule 5.8.2 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. 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.

7. The injection of grout under pressure should be undertaken by competent practitioners in line with current best practice guidelines. The practitioner should be aware of buried services when undertaking works.

5.8.3 Commercial and industrial zones - Activities and earthworks in Floor Level and Fill Management Areas

5.8.3.1 Permitted activities

The activities listed below are permitted activities in all commercial and industrial zones where the activity, is located in a Floor Level and Fill Management Area subject to compliance with:
1. activity status rules and any standards specified elsewhere in the Plan for that activity, and
2. the standards specified in this Rule 5.8.3.1

<table>
<thead>
<tr>
<th>Activity</th>
<th>Activity specific standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>New buildings located within the Fixed Minimum Floor Overlay, unless specified in P3 and P4 as set out in Rule 5.8.3.1.</td>
</tr>
<tr>
<td>P2</td>
<td>Additions to existing buildings located within the Fixed Minimum Floor Overlay, which increase the ground floor area of the building unless specified in P4 in Rule 5.8.3.1</td>
</tr>
</tbody>
</table>

a. Minimum floor levels shall be the highest of the following:

i. flooding predicted to occur in a 1 in 200-year rainfall event concurrent with a 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 5.8.3.1.a; or

ii. flooding predicted to occur in a 1 in 200-year tidal event concurrent with a 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 5.8.3.1.a; or

iii. 12.3m above Christchurch City Council Datum

Link to table with floor levels
### Table 5.8.3.1.a Hydrologic and Hydraulic Models Used to Provide Minimum Floor Levels

<table>
<thead>
<tr>
<th>FMA Catchment</th>
<th>Model</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Styx</td>
<td>Styx River Hydrologic and Hydraulic Model</td>
<td>R004</td>
</tr>
<tr>
<td>Avon</td>
<td>Avon River Hydrologic and Hydraulic Model</td>
<td>D13</td>
</tr>
<tr>
<td>Heathcote</td>
<td>Heathcote River Hydrologic and Hydraulic Model</td>
<td>2012 Design</td>
</tr>
<tr>
<td>Sumner</td>
<td>Sumner Floodplain Hydrologic and Hydraulic Model</td>
<td>12N</td>
</tr>
</tbody>
</table>

**P3**
Additions to existing buildings that do not increase the ground floor area of the building.

- a. Nil

**P4**
Additions which do not increase the ground floor area of an existing building by more than 25m² within any continuous period of 10 years.

- a. Nil

**P5**
Utilities Support structures for overhead transmission lines including lattice towers, and above-ground LPG storage tanks.

- a. Nil

**P6**
Filling or excavation for building platforms only to the extent necessary to achieve the minimum floor levels specified in P1 and P2 in Rule 5.8.3.1, for new buildings and for additions to existing buildings.

- a. Nil

**P7**
Filling or excavation associated with the maintenance of flood protection and bank erosion protection works; and the maintenance of existing drains or ponds.

- a. Nil

**P8**
Filling or excavation associated with permitted utilities or their replacement, repair or

- a. Nil

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**Comment [JC14]:** Defined term.

**Comment [JC15]:** Defined term.
### Chapter 5 - Natural Hazards

Evidence in Chief – Ms Janice Carter: Attachment A (13.02.2015)

<table>
<thead>
<tr>
<th>Maintenance of existing utilities</th>
<th>P9 Any other filling or excavation.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. A maximum height of 0.3m of fill above ground, and 0.6m depth of excavation below ground, and</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P11 Outdoor storage of transiting shipping containers</th>
<th>P10 a. NNII</th>
</tr>
</thead>
</table>

31 in 200 year event = 0.5% AEP event; 1 in 20 year event = 5% AEP event.
4As for footnote 3.

#### 5.8.3.2 Restricted discretionary activities

The activities listed below are restricted discretionary activities in all commercial or industrial zones where the site or part of the site is located in a Floor Level and Fill Management Area.

<table>
<thead>
<tr>
<th>Activity</th>
<th>The Council's discretion shall be limited to the following matters:</th>
</tr>
</thead>
<tbody>
<tr>
<td>RD1</td>
<td>New buildings located within the Fixed Minimum Floor Area Overlay which do not meet the standards specified for P1 as set out in Rule 5.8.3.1 and are not permitted by P3 or P4 of Rule 5.8.3.1. Any application arising from this rule will not require written approvals and shall not be</td>
</tr>
<tr>
<td></td>
<td>a. The setting of the minimum floor level of the building and/or addition. Note: Where the applicant accepts the minimum floor level provided by Council, no further matters need to be considered. Otherwise, the following matters will be considered.</td>
</tr>
<tr>
<td></td>
<td>b. The frequency at which any</td>
</tr>
<tr>
<td>RD2</td>
<td>New buildings not located within the Fixed Minimum Floor Area Overlay and which are not permitted by P3 or P4 of Rule 5.8.3.1. Any application arising from this rule will not require written approvals and shall not be publicly or limited notified.</td>
</tr>
<tr>
<td>RD3</td>
<td>Additions to existing buildings located within the Fixed Minimum Floor Area Overlay which increase the ground floor area of the building, but which do not meet the standards specified for P2 set out in Rule 5.8.3.1 and are not permitted by P4 of Rule 5.8.3.1. Any application arising from this rule will not require written approvals and shall not be publicly or limited notified.</td>
</tr>
<tr>
<td>RD4</td>
<td>Additions to existing buildings not located within the Fixed Minimum Floor Area Overlay which increase the ground floor area of the building and are not permitted by P4 of Rule 5.8.3.1. Any application arising from this rule will not require written approvals and shall not be publicly or limited notified.</td>
</tr>
</tbody>
</table>
| RD5 | **Filing** and excavation which is not a permitted activity under P6, P7, or P8 set out in Rule 5.8.3.1 or **filling** and excavation which exceeds the standards in P9 of Rule 5.3.8.1  

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| a. The effects of **filling** or excavation on flooding, waterways, groundwater and natural ground levels on and/or off site, including:  

**The Council’s discretion shall be limited to the following matters:**  

i. Any likelihood of exacerbation of flooding, erosion, or siltation either |  
|   |   |
upstream or downstream of the site.
ii. Any adverse effects on other properties from disturbances to surface drainage patterns.
iii. 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.
iv. Any implications for groundwater and the water table, on or off site.
v. Any benefits associated with flood management.
b. Any proposed mitigation measures, and their effectiveness and environmental impact.
c. The effects of the scale and nature of the filling or excavation, and location in relation to neighbouring sites, including:
   i. Effects on privacy of neighbouring properties and effects on streetscape.
   ii. The stability of adjoining land, and its susceptibility to subsidence or erosion upon excavation or filling taking place.
d. Effect on the reasonable use of the site.
e. Effects on access, character, ecology and amenity and sites of archaeological and cultural value, including:
   i. Any adverse effects or benefits for public access, natural character, or ecology of waterways and wetland areas.
   ii. Any adverse effects on amenity values including dust nuisance, visual impact, noise, vibration and traffic associated with the filling or
5.8.3.3 Discretionary, non-complying and prohibited activities

Note: There are no discretionary, non-complying or prohibited activities in respect of Rule 5.8.3.

5.9 Liquefaction rules

Click here for Planning Maps
Click here for Liquefaction assessment area maps

Note: The liquefaction rules below specify two restricted discretionary activities and add matters of discretion for those activities specific to consideration of liquefaction hazard. These liquefaction rules only apply to two activities. Compliance with the General Procedure in Rule 5.12 and any other relevant rules in this chapter is also required.

5.9.1 Permitted activities - Liquefaction Assessment Areas 1 and 2

Note: There are no permitted activities in respect of Rule 5.9.

5.9.2 Restricted discretionary activities - Liquefaction Assessment Areas 1 and 2

The activities listed below are restricted discretionary activities in any zone within the area shown on the Planning Maps as “Liquefaction Assessment Areas 1 and 2” and are subject to compliance with any standards specified elsewhere in the Plan for that activity.

Note for clarification: 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.
Chapter 5 - Natural Hazards

Evidence in Chief – Ms Janice Carter: Attachment A (13.02.2015)

For all resource consent applications under Rule 5.9.2 a geotechnical assessment is required to be undertaken by a Chartered Professional Engineer with experience in geotechnical engineering or a Professional Engineering Geologist (IPENZ registered). Assessments must provide the relevant information set out in Clause 5.11 for resource consent applications in areas of liquefaction potential, and address the relevant matters set out below for which discretion is restricted.

<table>
<thead>
<tr>
<th>Activity</th>
<th>The Council’s discretion shall be limited to the following matters which are in addition to those matters of discretion stated for these activities elsewhere in this Plan:</th>
</tr>
</thead>
</table>
| RD1      | Any subdivision which creates an additional vacant lot or lots.  
**Note:** This rule does not apply to boundary adjustments, amalgamations, or the creation of unit titles.  
Any resource consent application arising from this rule will not require written approvals and shall not be publicly or limited notified. | a. All matters which discretion has been reserved over for restricted discretionary activity subdivision in Chapter 8 (Subdivision).  
b. The nature and extent of the liquefaction hazard identified for the site.  
c. Techniques proposed for mitigation of the effects of any liquefaction hazard identified, including but not limited to:  
   i. Measures proposed for ground strengthening and foundation design, and the ability of these proposals to be incorporated into the subdivision consent as conditions.  
   ii. Any geotechnical setbacks provided in relation to size of any waterway or waterbody, or any sharp change in ground elevation, sloping ground or free face or alternatively, ground strengthening or other proposed engineering or geotechnical solutions to address any identified potential for lateral spread.  
d. The layout of the subdivision with respect to the extent of liquefaction hazard, including: |
i. The proposed location of earthworks, servicing and building platforms in regard to the liquefaction hazards identified including, where appropriate:
   A the location of services and buildings where there is liquefaction susceptibility variability across the site; and
   B the ability to relocate services affected by liquefaction to more desirable locations.

**e. Provision made, where appropriate, for ground strengthening or material, design and construction alternatives for in-ground infrastructure / services which will improve resilience to liquefaction hazard.**

**f.** The suitability of the site for the range of uses anticipated, given the nature and extent of any geotechnical constraints identified and mitigation measures proposed.

**f g.** The overall effect on the reasonable use of the site.

**g h.** Potential environmental effects of any mitigation measures on adjoining sites.

---

Note: See Clause 5.11 for additional information requirements in respect to liquefaction potential, for all applications for subdivision, and for all resource consent applications for land use activities where a geotechnical report is required.
5.9.3 Restricted discretionary activities - Liquefaction Assessment Area 1

The activities listed below are restricted discretionary activities in any zone within the area shown on the Planning Maps as "Liquefaction Assessment Area 1" and are subject to compliance with any standards specified elsewhere in the Plan for that activity.

Note for clarification: 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.

For all resource consent applications under Rule 5.9.3 a geotechnical assessment is required to be undertaken by a Chartered Professional Engineer with experience in geotechnical engineering or a Professional Engineering Geologist (IPENZ registered). Assessments must provide the relevant information set out in Clause 5.11 for resource consent applications in areas of liquefaction potential, and address the relevant matters set out below for which discretion is restricted.

<table>
<thead>
<tr>
<th>Activity</th>
<th>The Council’s discretion shall be limited to the following matters which are in addition to those matters of discretion stated for these activities elsewhere in this Plan:</th>
</tr>
</thead>
<tbody>
<tr>
<td>RD2</td>
<td>a. The nature and extent of the liquefaction hazard identified for the site.</td>
</tr>
<tr>
<td></td>
<td>b. The siting and layout of buildings, carparking areas, access and services proposed for the site, including the ability to locate buildings and services on land of lesser liquefaction potential where there is variability across the site.</td>
</tr>
<tr>
<td></td>
<td>c. Techniques proposed for mitigation, including, but not limited to, measures for ground strengthening and foundation design.</td>
</tr>
<tr>
<td>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:</td>
<td></td>
</tr>
<tr>
<td>1. Enhanced Development Mechanism - Rule 14.7.2.1 RD1, RD2;</td>
<td></td>
</tr>
<tr>
<td>2. Community Housing Redevelopment Mechanism - Rule 14.8.2.1 RD1, RD2;</td>
<td></td>
</tr>
<tr>
<td>3. Residential Suburban Zone and Residential Suburban Density Transition Zone - Rule 14.2.2.3 RD7, RD8,</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 5 - Natural Hazards

Evidence in Chief – Ms Janice Carter: Attachment A (13.02.2015)

| RD9; | 4. New Neighbourhood Zone - Rule 14.6.2.3 RD5; |
| 5. Residential Medium Density Zone - Rule 14.3.2.3 RD7; |
| 6. Residential Banks Peninsula Zone - Rule 14.4.2.3 RD3 |
| 7. Residential Conservation Zone - Rule 14.5.2.3 RD3. |

Resource consent application/s arising from this rule in respect to the Enhanced Development Mechanism or the Community Housing Redevelopment Mechanism will not require written approvals and shall not be publicly or limited notified.

d. Provision made, where appropriate, for ground strengthening or material, design and construction alternatives for in-ground infrastructure / services which will improve resilience to liquefaction hazard.

d. e. The effectiveness and environmental impact of any mitigation measures proposed.

f. The nature and scale of the proposed development.

Note: See Clause 5.11 for additional information requirements in respect to liquefaction potential, for all applications for subdivision, and for all resource consent applications for land use activities where a geotechnical report is required.

5.9.4 Discretionary, non-complying and prohibited activities - Liquefaction Assessment Areas 1 and 2

Note: There are no discretionary, non-complying or prohibited activities in respect of Rule 5.9.

5.10 Port Hills and Banks Peninsula slope instability rules

Click here for Planning Maps

5.10.1 Activity status for Port Hills and Banks Peninsula Slope Instability Management Areas

The activities listed below have the activity status listed within each slope instability management area, and are subject to compliance with any standards specified elsewhere in the Plan for that activity.
For all resource consent applications under Rule 5.10.1 a geotechnical assessment is required to be undertaken by a Chartered Professional Engineer with experience in geotechnical engineering or a Professional Engineering Geologist (IPENZ registered). Assessments must provide the relevant information set out in Clause 5.11.4 for resource consent applications in slope instability management areas, and address the relevant assessment matters below.

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 Christchurch City Council.

### Slope Instability Management Areas

<table>
<thead>
<tr>
<th>Activity</th>
<th>Cliff Hazard Mgmt Area 1</th>
<th>Cliff Hazard Mgmt Area 2</th>
<th>Rockfall Hazard Mgmt Area 1</th>
<th>Rockfall Hazard Mgmt Area 2</th>
<th>Mass Movement Hazard Mgmt Area 1</th>
<th>Mass Movement Hazard Mgmt Areas 2 &amp; 3</th>
<th>Remainder of Port Hills and Banks Peninsula Slope Instability Mgmt Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Subdivision</td>
<td>PR1/NC1*</td>
<td>NC2</td>
<td>NC3</td>
<td>D1</td>
<td>NC4</td>
<td>D2</td>
<td>RD1</td>
</tr>
<tr>
<td>b. Earthworks except as provided in activities c, d, f, g, h, i and g-j in Rule 5.10.1</td>
<td>PR2</td>
<td>NC5</td>
<td>NC6</td>
<td>D3</td>
<td>NC7</td>
<td>D4</td>
<td>PHASE 2 REVIEW</td>
</tr>
<tr>
<td>c. Hazard mitigation works, including earthworks associated with those works unless provided for in d.</td>
<td>PR3</td>
<td>NC8</td>
<td>D5</td>
<td>D6</td>
<td>NC9</td>
<td>D7</td>
<td>RD2</td>
</tr>
<tr>
<td>d. Hazard mitigation works to protect infrastructure including earthworks</td>
<td>D8 includes works to protect Brittan Terrace</td>
<td>D9</td>
<td>D10</td>
<td>D11</td>
<td>D12</td>
<td>D13</td>
<td>RD3</td>
</tr>
</tbody>
</table>

Key: P = Permitted; RD = Restricted Discretionary; D = Discretionary; NC = Non-complying; PR = Prohibited.
<table>
<thead>
<tr>
<th>Chapter 5 - Natural Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Evidence in Chief – Ms Janice Carter: Attachment A (13.02.2015)</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>associated with those works.</th>
<th>Port related activities.</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.</td>
<td>Demolition of buildings</td>
<td>D14 D15 D16 D17 D18 D19 P1</td>
</tr>
<tr>
<td>f.</td>
<td>Repair and maintenance of roads and other infrastructure including earthworks associated with these works.</td>
<td>D20 D21 P2 P3 D22 P4 P5</td>
</tr>
<tr>
<td>X</td>
<td>Replacement and upgrading of infrastructure including earthworks associated with these works.</td>
<td>NC D D RD D RD PHASE TWO REVIEW</td>
</tr>
<tr>
<td>XX</td>
<td>Development of new infrastructure</td>
<td>NC NC NC D NC D PHASE TWO REVIEW</td>
</tr>
<tr>
<td>g.</td>
<td>Retaining walls which are both less than 6m² in area and less than 1.8m in height including earthworks associated with those works.</td>
<td>P6 D23 P7 RD4 P8 RD5 P9 P6 P40 RD6 P41 P7 P42 P8</td>
</tr>
<tr>
<td>h.</td>
<td>Signage and fencing for warning or excluding the public including post holes associated with those works.</td>
<td>D24 P9 P10 P11 P12 P13 PHASE 2 REVIEW</td>
</tr>
<tr>
<td>i.</td>
<td>Hazard mitigation works and associated earthworks and planting in accordance with the Port Hills</td>
<td>NC10 P14 P15 P16 NC11 P17 P18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>j.</th>
<th>Recreation activities within parks and reserves and associated park management and maintenance activities, including grazing and track repair.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>X</th>
<th>Farm buildings and farm tracks, including earthworks associated with these works.</th>
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</table>

<table>
<thead>
<tr>
<th>h. k.</th>
<th>Any building or structure not listed in activities a to g of Rule 5.10.1.</th>
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<tbody>
<tr>
<td></td>
<td>PR4</td>
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</table>

<table>
<thead>
<tr>
<th>l.</th>
<th>Any other activity not otherwise listed in this table.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NC1317</td>
</tr>
</tbody>
</table>

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

Any resource consent application arising from RD1, RD2 and RD3, RD4, RD5 and RD6 set out in Rule 5.10.1 above will not require written approvals and shall not be publicly or limited notified.

**Note:** See Clause 5.11.4 for additional information requirements for all resource consent applications within Port Hills and Banks Peninsula Slope Instability Management Areas.
5.10.2 Remainder of Port Hills and Banks Peninsula Slope Instability Management Areas - RD1, RD2 and RD3 to RD6 matters of discretion

a. The Council's discretion shall be limited to the following matters:

i. With respect to subdivision applications: All matters which discretion has been limited to for restricted discretionary activity subdivision in Chapter 8.

ii. The nature and extent of the natural hazard and the level of risk to people and property, including infrastructure, associated risks posed to subdivision, use and development, both on and off site.

iii. The nature and scale of any existing or proposed development, including engineering works, and its design, effects and levels of risk.

iv. Proposed hazard mitigation works, the effects on levels of risk and proposed monitoring procedures and maintenance.

v. Suitability of proposed building platforms and access to the site.

vi. The visual impact of any proposed earthworks or hazard mitigation/protective works.

vii. Drainage and sediment control measures, both during and after the development.

5.10.3 Slope Instability Management Areas – D5 (Discretionary Activity 5) to D26 28 (Discretionary Activity 26 28) assessment matters for land use resource consent applications

a. The land use activities listed in Rule 5.10.1 as discretionary activities will be assessed against the relevant assessment matters below, together with other matters specified in section 104 of the Resource Management Act 1991.

i. The level of risk to life, property and infrastructure the environment posed by the natural hazard, either on the site of the activity, or elsewhere such as downhill.

ii. The extent to which hazard mitigation works, or conditions on the activity, would enable the level of risk effects of the hazard, either on site or elsewhere, to be reduced remedied or mitigated.

iii. The suitability of the site for the activities proposed.

iv. 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).

v. For hazard mitigation measures, whether the works:

A 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;

B can be shown, based on evaluation by a Chartered Professional Engineer with experience in geotechnical engineering, using best practice methods, to reduce risk to life to a tolerable level, including the extent to which an Annual Individual Fatality Risk of
10⁻⁴ (1 in 10,000) or better can be achieved where that method is used, or by use of other hazard assessment methods; C will have appropriate monitoring procedures applied, with inspections and maintenance undertaken and reported to the Council.

vi. The extent to which the activity or works will lead to removal of vegetation or topsoil, or modification of ecosystems or natural character, or adverse landscape and visual effects.

vii. The extent to which the activity or works would impact on recreational public access, where available, or historical or cultural heritage, or sites of cultural significance to Ngai Tahu.

viii. For infrastructure, the significant social, economic or cultural benefit to the community it serves, whether there is a functional or operational requirement for such a location and whether there are any practical alternatives.

5.10.4 Slope Instability Management Areas - D1 (Discretionary Activity 1) to D13 (Discretionary Activity 13) and D20 (Discretionary Activity 20) to D24 (Discretionary Activity 24) assessment matters for subdivision or earthworks resource consent applications

a. Where subdivision or earthworks are listed in Rule 5.10.1 as Discretionary Activities, they will be assessed against the relevant assessment matters below together with other matters specified in section104 of the Resource Management Act 1991.

i. The implications of any proposed works on hydrological and geological features, both underlying and surface and on site and on adjoining sites.

ii. The level of risk to life, property and infrastructure the environment posed by the natural hazard, either on the site of the activity, or elsewhere such as downhill nature, extent and implications of hazards relevant to the site e.g. slope instability or stream bank erosion.

iii. The extent to which hazard mitigation works, or conditions on the activity, would enable the level of risk, either on site or elsewhere, to be reduced effectiveness of mitigation measures proposed, and whether they will lower risk to an acceptable level.

iv. The design of proposed works including buildings and retaining walls, and access roads.

v. The nature of any existing or proposed fill or earthworks, engineering design, and their effects on the stability of the site and adjacent sites.

vi. Effects of development on surface and subsurface drainage patterns and stormwater management.

vii. The adequacy of drainage and sediment control measures; for example, the extent to which the works will retain excavations as soon as possible, drain stormwater into an approved stormwater system, and when excavating, be undertaken outside of periods of water saturation.

viii. The ability of the site to accommodate specific, stable, accessible and serviceable building platforms for each site.

Comment [JC21]: Defined term.

Comment [EG22]: Justification for changes – same as for the changes in 5.10.3 – 5.10.3 is for land use activities, and 5.10.4 is for subdivision and earthworks activities. The same policies apply to both, treating subdivision and use in the same manner, meaning the same wording should be used.

Comment [EG23]: Acceptable level is not the right term to include here – some of the relevant policies talk about reducing risk to a tolerable level, and other don’t mention a level. Best to just say ‘reduce’ in the assessment matter and leave the actual level to be specified in the policy.
ix. The extent to which the works will lead to removal of vegetation or topsoil, or modification of ecosystems or natural character, or adverse landscape and visual effects.

x. The extent to which the activity or works would impact on recreational public access, where available, or historical historic or cultural heritage or sites of cultural significance to Ngai Tahu.

xi. Any planting proposed and the usefulness of that planting as a mitigation measure.

xii. For infrastructure, the significant social, economic or cultural benefit to the community it serves, whether there is a functional or operational requirement for such a location and whether there are any practical alternatives.

5.11 General procedures - Information requirements

5.11.1 Information requirements for all plan changes

Liquefaction potential

a. Plans and accompanying information will be required to show the results of a geotechnical site suitability assessment, in accordance with the densities, depths, methods and reporting specified for plan changes, in Ministry of Business, Innovation and Employment (MBIE) (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). This will be required to include an indication of liquefaction susceptibility across the site in terms of performance characteristics, as well as a broad classification of the land in accordance with those guidelines. The level of investigation should correspond with the scale and significance of the hazard and the requirements of the MBIE guidelines. Plans and information shall also:

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 or other areas with a sharp change in ground elevation where lateral spread may occur;

iii. indicate any options and recommended locations for the proposed land uses, transport features and other infrastructure recommended by the geotechnical engineer.

b. 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.

Advice Notes

1. The Council reserves the right to obtain peer reviews of geotechnical reports.
2. The Council encourages the provision of geotechnical data and assessments to the Canterbury Geotechnical Database.

3. The [name of document] will assist with the assessment of Plan Changes by providing guidelines for:
   - the required land performance; and
   - the level of geotechnical assessment required

5.11.2 Additional information requirements for all resource consent applications for subdivision

5.11.2.1 Liquefaction Assessment Areas 1 and 2

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 arising from geotechnical hazards (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, and 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.

e. Where land within Liquefaction Assessment Area 2 is to be subdivided, it is likely to require a lower level of detail of geotechnical assessment than for Liquefaction Assessment Area 1. The density of deep investigation and mix of methods used in characterisation should be appropriate to the geomorphology of the site, the scale of the proposed development, the importance of the infrastructure and the nature of the community facilities planned for the site, and the level of risk to people and property arising from structural failure. More detailed assessment may be required where visual assessment and reasonable
enquiry suggests that the land or parts of the land should be subject to the same level and intensity of deep geotechnical investigation as for Liquefaction Assessment Area 1.

Other geotechnical risks

f. All applications for subdivision consent will be required to include assessment and reporting on normal geotechnical investigations for the purpose of evaluating all other potential geotechnical risks, including information on soil types, static bearing capacities, settlements, stability, and section 106 of the Act matters.

Advice notes:

1. Where land is within the area shown on the Planning Maps as “Liquefaction Assessment Area 2”, or where land has already been subject to current and appropriate significant geotechnical assessment, existing geotechnical information may be adequate for land use consent application purposes. Identifying geotechnical issues other than liquefaction potential, e.g. the presence of peat, is also part of normal geotechnical investigations.

2. The Christchurch City Council has subdivision guidance entitled Subdivision Bulletin 23.2. May 2013 “Geotechnical Assessment to Satisfy Section 106 of the Act matters”. The Council's Infrastructure Design Standard includes a chapter on geotechnical requirements for the design and construction of infrastructural assets.

3. The Council reserves the right to obtain peer reviews of geotechnical reports.

4. The Council encourages the provision of geotechnical data to the Canterbury Geotechnical Database.

5. The [name of document] will assist with the assessment of subdivision consent applications by providing guidelines for:
   - the required land performance; and
   - the level of geotechnical assessment required

5.11.3 Additional information requirements for resource consent applications for land use activities in flat areas 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 or other geotechnical 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.

Advice notes:
1. Where land is within the area shown on the Planning Maps as “Liquefaction Assessment Area 2”, or where land has already been subject to recent current and appropriate significant geotechnical assessment, existing geotechnical information may be adequate for land use consent application purposes. Identifying geotechnical issues other than liquefaction potential, e.g. the presence of peat, is also part of normal geotechnical investigations.

2. Land to be used for commercial or other non-residential purposes may require more substantial investigations, ground strengthening, and foundation design measures than for residential lots, depending on the activities proposed and the size and weight of the proposed structures.

3. The Council reserves the right to obtain peer reviews of geotechnical reports.

4. The Council encourages the provision of geotechnical data and assessments to the Canterbury Geotechnical Database.

5. The [name of document] will assist with the assessment of resource consent applications by providing guidelines for:
   - the required land performance; and
   - the level of geotechnical assessment required.

5.11.4 Additional information requirements for resource consent applications within Port Hills and Banks Peninsula 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 off 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 and extent of the natural hazard and the level of risk to people and property, including infrastructure, both on and off site, 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 as set out in Rule 5.10.1.

Advice Notes:
1. The Council reserves the right to obtain peer reviews of geotechnical reports.
2. The Council encourages the provision of geotechnical data and assessments to the Canterbury Geotechnical Database.

5.12 General procedure - Compliance with other chapters

a. All subdivision, use and development shall comply with all the provisions of other chapters.
5.13 Appendices

5.13.1 Liquefaction assessment areas in Christchurch

![Liquefaction Assessment Areas in Christchurch](image1)

5.13.2 Liquefaction assessment areas on Banks Peninsula

![Liquefaction Assessment Areas on Banks Peninsula](image2)
Chapter 2 – Definitions

Revised Definitions

High Flood Hazard

means 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 1m, 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.

Infrastructure

for the purposes of Rule 5.10.1, means water mains, sewerage mains, pump stations and reservoirs, electricity networks and sub-stations, telecommunications networks and the strategic road network, and other roads and rail, bulk storage fuel facilities and associated pipelines, but does not include services from the street to residential units.

Pressurised injection

for the purposes of Rule 5.8.2, means injection of grout at more than 25 bar at the pump.
# Record of Recommended Changes to Planning Maps

## and reference to Council evidence

<table>
<thead>
<tr>
<th>Tab</th>
<th>Submitter number</th>
<th>Submitter name</th>
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</tr>
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<tbody>
<tr>
<td>1.</td>
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<td>Otto and MJ Snoep</td>
<td>Donald Macfarlane, Peter Kingsbury</td>
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<tr>
<td>2.</td>
<td>136</td>
<td>John &amp; Heather Young</td>
<td>Mark Yetton</td>
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<tr>
<td>3.</td>
<td>139*</td>
<td>Angus Bargh</td>
<td>Iris Brookland</td>
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<td>149</td>
<td>John Taylor</td>
<td>Mark Yetton</td>
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<td>268</td>
<td>Anthony Ging</td>
<td>Ian Wright</td>
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<td>282</td>
<td>Eric &amp; Susan Stevens</td>
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<td>Carlo Stark</td>
<td>Ian Wright</td>
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<td>389*</td>
<td>Laryn / Blue Sun NZ Ltd</td>
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<td>Gregory Flynn</td>
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<td>Elizabeth Kilduff</td>
<td>Ian Wright</td>
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<td>Altman &amp; Rush</td>
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<td>Mark Yetton</td>
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<td>Ian Wright</td>
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<td>Ian Wright</td>
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<td>Ian Wright</td>
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<td>North Side Investments Ltd / Ablett</td>
<td>Ian Wright</td>
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<td>26.</td>
<td>1125*</td>
<td>Alpine View Retirement Village Limited</td>
<td>Iris Brookland</td>
</tr>
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<td>27.</td>
<td>1058</td>
<td>Brent Gilpin on behalf of the Taylors Mistake Association (Bach 28, 55-59, and 60)</td>
<td>Don Macfarlane</td>
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<td>28.</td>
<td>1059</td>
<td>Jim Turpin on behalf of the Taylors Mistake Association and Land Company (Bach 28, 55-59, and 60)</td>
<td>Don Macfarlane</td>
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<td>29.</td>
<td>1066</td>
<td>Peter Mulgrew</td>
<td>Ian Wright</td>
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<td>30.</td>
<td>1075</td>
<td>Charles Campbell</td>
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<td>31.</td>
<td>1080</td>
<td>Gerard Cleary</td>
<td>Mark Yetton</td>
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<td>Claudia Jung</td>
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<td>1102</td>
<td>Judith McLean</td>
<td>Ian Wright</td>
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*ADVICE NOTE: For changes recommended by a technical witness, see also planning evidence of Ms Carter who addresses the submission point also.*