

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, landslide, 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 [District 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/residential unit](#), 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 [District Pplan](#) 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 [District Pplan](#).

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 [District Plan](#).

5.2 Natural hazards objective

5.2.1 Objective — Natural hazards

- a. The Objective for this chapter is ~~Strategic~~ Objective 3.3.6 in Chapter 3 Strategic Directions.

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, water bodyway 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 Council 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 [site](#)³:

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, in accordance with the method and parameters described in Policy 5.3.4.1a⁵ (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 [District 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. Rule 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](#) (other than in a Transport Zone, where the [Flood Management Area](#) rules do not apply), 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

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

Summer	Summer Floodplain Hydrologic and Hydraulic Model	12N
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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: <ol style="list-style-type: none"> 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 1metre 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

Activity	Activity specific standards
P10 <u>Filling</u> or <u>excavation</u> for <u>residential building platforms</u> 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 <u>buildings</u> and for additions to <u>buildings</u> .	Nil
P11 <u>Filling</u> or <u>excavation</u> associated with the maintenance of flood protection and bank erosion protection works; and the maintenance of existing drains or ponds.	Nil
P12 <u>Filling</u> or <u>excavation</u> associated with <u>utilities</u> , or the replacement, repair or maintenance of existing <u>utilities</u> .	Nil
P13 <u>Filling</u> or <u>excavation</u> 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 <u>filling</u> above <u>ground level</u> and 0.6m depth of <u>excavation</u> below <u>ground level</u> ; and b. A maximum volume of <u>filling</u> above <u>ground level</u> of 10m ³ per <u>site</u> , and a maximum cumulative volume of <u>filling</u> and <u>excavation</u> of 25m ³ per <u>site</u> , in each case within any continuous period of 10 years. Or c. The <u>excavation</u> and <u>filling</u> 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 <u>ground level</u> at the commencement of the works.
P14 <u>Filling</u> or <u>excavation</u> 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 <u>filling</u> above <u>ground level</u> and 0.6 metres depth of <u>excavation</u> below <u>ground level</u> ; and b. A maximum volume of <u>filling</u> above <u>ground level</u> of 20m ³ per <u>site</u> , and a maximum cumulative volume of <u>filling</u> and <u>excavation</u> of 50m ³ per <u>site</u> , in each case within any continuous period of 10 years. Or c. The <u>excavation</u> and <u>filling</u> 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 <u>ground level</u> at the commencement of the works.
P15 <u>Filling</u> or <u>excavation</u> 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 <u>filling</u> above <u>ground level</u> and 0.6 metres depth of <u>excavation</u> below <u>ground level</u> ; and

Activity		Activity specific standards
		<p>b. A maximum volume of filling above ground level of 100m³ per site within any continuous period of 10 years.</p> <p>Or</p> <p>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.</p>
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.	<p>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.</p> <p>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).</p> <p>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.</p>

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 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 or [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

- ii. 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	<p>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.</p> <p>Any application arising from this rule shall not be limited or publicly notified.</p>	<p>a. The Council's discretion is limited to the following matters:</p> <ul style="list-style-type: none"> i. setting of minimum floor levels ii. mitigation of the effects of flooding <p>b. These restricted discretionary activities will be assessed against the following criteria:</p> <ul style="list-style-type: none"> 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	<p>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 - P15 set out in Rule 5.5.1.1.</p>	<p>a. The Council's discretion is limited to the following matters:</p> <ul style="list-style-type: none"> i. timing, location, scale and nature of earthworks; ii. earthworks method; and iii. mitigation of effects as they impact flooding and

Activity	The <u>Council</u> 's discretion shall be limited to the following matters:
	<p>surface drainage.</p> <p>b. These restricted discretionary activities will be assessed against the following criteria:</p> <p>i. Whether any effects arise from <u>filling</u> or <u>excavation</u> on land stability, flooding, <u>water bodiesways</u>, groundwater and natural <u>ground levels</u> on- and/or off- site, including:</p> <p>A. any likelihood of exacerbation of flooding, erosion, or siltation either upstream or downstream of the site;</p> <p>B. any likelihood of affecting the stability of <u>adjoining</u> land, including its susceptibility to subsidence or erosion;</p> <p>C. any adverse effects on other properties from disturbances to surface drainage patterns;</p> <p>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;</p> <p>E. any implications for groundwater and the water table, on- or off- site; and</p> <p>F. any benefits associated with flood management.</p> <p>ii. Whether there are any benefits arising that enable the reasonable use of the <u>site</u>.</p> <p>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.</p>

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 (other than in a Transport Zone, where the Flood Management Area rules do not apply), 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 unless specified in Rule 5.5.2.1 P2-P6.	a. Minimum floor levels shall be the level specified in the Minimum Floor Level Certificate (refer to Rule 5.5.2.2).
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 P11.	
P11	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 certificate

- a. For Rule 5.5.2.1 P1, new buildings or additions to existing buildings within the Te Waihora/Lake Ellesmere and Wairewa/Lake Forsyth Flood Management Areas 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 approved model and any relevant field information; or
 - iii. 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 Rule 5.5.2.1 P1, 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 5.5.2.2, or natural ground level, whichever is higher.
- b. For the purposes of a. above, the applicable daylight recession plane in residential zones is:
- i. 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 <u>Council</u> 's discretion shall be limited to the following matters:
RD1	New <u>buildings</u> or additions to <u>buildings</u> which are not permitted by the activity status rules and/or	<ol style="list-style-type: none"> a. The <u>Council</u>'s discretion is limited to the following matters: <ol style="list-style-type: none"> i. setting of minimum floor levels; and

	<p>activity specific standards for P1 – P6 set out in Rule 5.5.2.1.</p> <p>Any application arising from this rule shall not be limited or publicly notified.</p>	<p>ii. mitigation of the effects of flooding.</p> <p>b. These restricted discretionary activities will be assessed against the following criteria:</p> <p>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.</p> <p>ii. Whether any mitigation measures are proposed, their effectiveness and environmental effects, and any benefits to the wider area associated with flood management.</p> <p>iii. Whether there are any positive effects from the reduction in floor levels in relation to neighbouring buildings or streetscape.</p>
<p>RD2</p>	<p>Filling or excavation which is not a permitted activity under P7–P9 or P11 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.</p>	<p>a. The Council's discretion is limited to the following matters:</p> <p>i. Timing, location, scale and nature of earthworks</p> <p>ii. Earthworks method</p> <p>iii. Mitigation of effects as they impact flooding and surface drainage</p> <p>b. These restricted discretionary activities will be assessed against the following criteria:</p> <p>i. Whether any effects arise from filling or excavation on land stability, flooding, water bodiesways, groundwater and natural ground levels on- and/or off-site, including:</p> <p>A. any likelihood of exacerbation of flooding, erosion, or siltation either upstream or downstream of the site.</p> <p>B. any likelihood of affecting the stability of adjoining land, including its susceptibility to subsidence or erosion.</p> <p>C. any adverse effects on other properties from disturbances to surface drainage patterns.</p> <p>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.</p> <p>E. any implications for groundwater and the water table, on- or off-site.</p> <p>F. any benefits associated with flood management.</p> <p>ii. Whether there are any benefits arising that enable the reasonable use of the site.</p>

		<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> A. any adverse effects or benefits for public access, natural character or ecology of water bodiesways 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](#) (other than in a Transport Zone, where the [Flood Management Area](#) rules do not apply), 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.	
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-rural Zones-zones and Open-open Space space Zones-zones .
P4	Decks, swimming pools and unenclosed buildings without floors.	Nil

Activity		Activity specific standards
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 access ways to a residential unit .	a. Finished ground level shall be maintained to within 200mm of the natural ground level , and b. Access ways 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 been approved as part of a building consent.
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 unless specified in P1, P2, P3 or P4 in Rule 5.5.3.1 or RD1 or RD2 in	a. Minimum floor levels shall be the level specified in the Minimum Floor Level Certificate (refer to Rule 5.5.3.2).

Activity	Activity specific standards
	Rule 5.5.3.3 or NC1 or NC2 in Rule 5.5.3.4.
P16	Additions to existing buildings which increase the ground floor area of the building unless specified in P2, P3 or P4 in Rule 5.5.3.1 or RD1 or RD2 in Rule 5.5.3.3 or NC1 or NC2 in Rule 5.5.3.4.
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](#) 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~~ [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~~ [Council](#) approved model and any relevant field information; or
 - iii. 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	<p>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 likelihood of work undertaken exacerbating inundation, erosion, alluvion or avulsion whether upstream or downstream of the site.</p> <p>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.</p>
RD2	
	<p>New buildings not located within the 100 metre wide pPrimary sStopbank sSetback as shown on the Planning Maps and which are 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.</p>
	<p>New buildings or new accessory buildings or additions to any</p>

Activity	The Council's discretion shall be limited to the following matters:
<p><u>accessory building</u> not located within the 50 metre wide <u>sSecondary</u> <u>sStopbank</u> <u>sSetback</u> 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.</p> <p>Any application arising from this rule shall not be limited or publicly notified.</p>	<p>c. Whether the floor level of any new <u>building/building</u> addition is above the predicted 0.5% <u>Annual Exceedance Probability</u> (AEP) or 1 in 200 year flood event level with a stopbank breach plus an allowance for <u>freeboard</u> not exceeding 400mm.</p> <p>d. Whether the integrity and/or function of either the <u>pPrimary</u> or <u>sSecondary</u> stopbanks will be adversely affected by the method to achieve the floor level set out in (c).</p> <p>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.</p>
<p>RD3</p> <p><u>Filling</u> or <u>excavation</u> within 50 metres of the <u>sSecondary</u> <u>sStopbank</u> as shown on the Planning Maps unless permitted by Rule 5.5.3.1 P10.</p>	<p>f. The way in which any <u>building</u> is sited and constructed and its intended use.</p> <p>g. Any adverse effects on access for maintenance of flood protection works.</p> <p>h. The effectiveness and environmental impact of any measures that may be proposed to mitigate the effects of <u>filling</u>, <u>excavation</u> or <u>building</u>.</p> <p>i. The extent to which other properties will be adversely affected as a result of disturbances to surface drainage patterns.</p> <p>j. Any benefits associated with flood management, including the provision of public access, or the enhancement of the natural qualities, <u>amenity values</u> or ecology of <u>water bodiesways</u> and <u>wetland</u> area.</p> <p>k. The extent to which development could result in surface water ponding in the event of flooding, and hence and increased risk of <u>birdstrike</u>.</p> <p>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.</p>
<p>RD4</p> <p>New <u>buildings</u> or additions to <u>buildings</u> 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.</p> <p>Any application arising from this rule shall not be limited or publicly notified.</p>	<p>a. The Council's discretion is limited to the following matters:</p> <ol style="list-style-type: none"> i. setting of minimum floor levels ii. mitigation of the effects of flooding <p>b. These restricted discretionary activities will be assessed against the following criteria:</p> <ol style="list-style-type: none"> i. The frequency at which any proposed <u>building</u> 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 <u>buildings</u> or streetscape.

Activity	The Council's discretion shall be limited to the following matters:
<p>RD5</p> <p><u>Filling</u> or <u>excavation</u> which is not a permitted activity under P5-P7 set out in Rule 5.5.3.1, or <u>filling</u> or <u>excavation</u> that does not meet the standards in P8-P14 set out in Rule 5.5.3.1.</p>	<p>a. The Council's discretion is limited to the following matters:</p> <ol style="list-style-type: none"> i. timing, location, scale and nature of <u>earthworks</u>; ii. <u>earthworks</u> method; and iii. mitigation of effects as they impact flooding and surface drainage. <p>b. These restricted discretionary activities will be assessed against the following criteria:</p> <ol style="list-style-type: none"> i. Whether any effects arise from <u>filling</u> or <u>excavation</u> on land stability, flooding, waterways, groundwater and natural <u>ground levels</u> on- and/or off-site, including: <ol style="list-style-type: none"> A. any likelihood of exacerbation of flooding, erosion, or siltation either upstream or downstream of the <u>site</u>; B. any likelihood of affecting the stability of <u>adjoining</u> 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 <u>site</u>. 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: <ol style="list-style-type: none"> A. any adverse effects or benefits for public access, natural character or ecology of waterways and wetland areas; and B. any adverse effects on amenity values including dust nuisance, visual impact, noise, vibration and traffic associated with the filling or excavation.

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 p Primary s Stopbank s 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 s Secondary s Stopbank s Setback shown on the Planning Maps.
NC3	Filling or excavation within the 100 metre wide p Primary s Stopbank s 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~~[meets](#) 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.	<p>a. Any filling, excavation or disturbance of soils shall not exceed the standards in Tables 5.5.4.1b or 5.5.4.1c (whichever applies) under Rule 5.5.4.1.</p> <p>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;</p> <p>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.</p>
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 .	<p>c. All filling, excavation or disturbance of soil:</p> <ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> 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. <p>d. Erosion and sediment control measures are implemented and maintained in accordance with Environment Canterbury Canterbury Regional Council's Erosion and Sediment Control Guidelines for Small Sites to minimise erosion and the discharge of sediment laden water to surface water.</p> <p>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 k₂ and l₂ in Rule-Table 5.5.4.1a.</p> <p>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.</p> <p>g. Land repair works involving mixing or insertion of grout shall not involve:</p> <ol style="list-style-type: none"> 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

Activity	Activity specific standards
	<p>accordance with the inverted cone test at NZS 3112: Part 1:1986 (Test 11) except for <u>in-situ mixing</u>; or</p> <p>ii. pressurised injection of <u>grout</u> into the ground <u>at a pressure of no more than 40 bar when measured at the pump</u>.</p> <p>h. Where <u>grout</u> is deposited into land:</p> <p>i. using <u>in-situ mixing</u>, the <u>grout</u> shall be mixed evenly through the augured soil column and the percentage of <u>grout</u> within the augured soil column shall not exceed 20%; or</p> <p>ii. where <u>grout</u> is deposited into land using methods other than in-situ mixing, the percentage of cement in the dry <u>grout</u> mixture shall not exceed 30%.</p> <p>i. Land repair materials shall consist only of:</p> <p>i. soil, gravel, rocks, concrete, sand, silt (such as exists on site already), or clean, inert material; or</p> <p>ii. cement and/or bentonite <u>grout</u> including inert additives; or</p> <p>iii. timber foundation piles;</p> <p>and shall not</p> <p>iv. include or disturb putrescible, pollutant, inflammable or hazardous components; and/or</p> <p>v. include <u>filling</u> which comprises more than 5% vegetation of any load by volume.</p> <p>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.</p> <p>k. Where the land repair and <u>earthworks</u> 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 <u>site</u>, including stockpiling and preparatory works:</p> <p>i. written notice shall be provided to the <u>Council</u> informing it of the location of the land repair and the name and contact details of the supervising engineer; and</p> <p>ii. written notice shall be provided to any occupier of a <u>residential unit adjoining</u> the land repair <u>site</u> to inform them that the works will be taking place, the expected duration of the works and provide contact details of the <u>site</u> supervisor; and</p> <p>iii. a <u>sign</u> shall be erected at the front of the property including the name and contact details of the site</p>

Activity	Activity specific standards
	<p>supervisor.</p> <p>1. 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.</p>

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 filling (m) [below ground level]	Column D Filling (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 filling (m) [below ground level]	Column D Filling (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	<p>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.</p> <p>Any application arising from this rule shall not be limited or publicly notified.</p>	<p>a. The Council's discretion shall be limited to the following matters:</p> <p>i. The matters for discretion reserved for RD2 set out in Rule 5.5.1.5.</p> <p>b. These restricted discretionary activities will be assessed against the following criteria:</p> <p>i. The assessment criteria set out for RD2 in Rule 5.5.1.5</p>

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 [filling](#) 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 [District 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/Canterbury Regional Council](#) 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 Plan](#) 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 access ways to a residential unit .	a. Finished ground level shall be maintained to within 200mm of the natural ground level , and b. Access ways 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 per year 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.

Activity		Activity specific standards
P9	<u>Filling</u> that is not provided for under Rule 5.5.5.1 P 1-8 or P12.	<ul style="list-style-type: none"> a. Either the maximum depth of <u>filling</u> shall be 200mm, and b. The maximum volume of <u>filling</u> shall be 100m³ per <u>site</u> within any continuous period of 10 years, and c. Finished <u>ground level</u> shall not exceed the surrounding land; or d. The <u>filling</u> has consent approval.
P10	<u>Excavation</u> for farm purposes that is not provided for under Rule 5.5.5.1 P1-P4, P6-P8 or P12.	<ul style="list-style-type: none"> a. The excavated area is subsequently filled within the following year so that there is no net effect on flood storage.
P11	<u>Utilities</u>	<ul style="list-style-type: none"> a. The <u>ground floor area</u> of the <u>utility</u> does not exceed 10m² (except where the <u>utility</u> is a lattice tower for <u>electricity transmission</u> or <u>electricity distribution</u> purposes).
P12	<u>Excavation</u> and <u>filling</u> within the area identified in Appendix 8.6.7d – Cashmere/Worsleys Development Plan.	<ul style="list-style-type: none"> a. The <u>excavation</u> and <u>filling</u> 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 Rresidential zone development, in a 0.2% AEP (1 in 500 year) event up to the existing Worsleys Road minimum centreline level of 18.89m (<u>Christchurch City Council Drainage Datum</u>). The design shall also accommodate additional storage for any additional stormwater that could be discharged from the development of the Residential zones and <u>roads</u> in such a 0.2% AEP event. b. All <u>roads</u> are filled so that the crown of the <u>road</u> is no lower than RL 18.7m (<u>Christchurch City Council Drainage Datum</u>), except for the realigned Worsleys Road required in the Development Plan. The crown of Worsleys Road shall be no lower than RL 18.89m (<u>Christchurch City Council Drainage Datum</u>). 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 <u>buildings</u> .	<ul style="list-style-type: none"> a. The <u>ground floor area</u> of the replaced or repaired <u>building</u> is not greater than the <u>ground floor area</u> of the existing <u>building</u>. b. The replaced or repaired <u>building</u> is located in a position on the <u>site</u> that is no lower than the existing <u>building</u>.
P14	<u>Residential unit</u> .	<ul style="list-style-type: none"> a. The <u>residential unit</u> is either: <ul style="list-style-type: none"> i. on piles; or ii. has a maximum of 200m² <u>ground floor</u>

Activity		Activity specific standards
		<p><u>area</u>.</p> <p>b. There is a maximum of one <u>residential unit</u> per <u>site</u>.</p>
P15	<u>Farm buildings</u> without floors.	Nil
P16	<u>Accessory buildings</u> without floors.	
P17	<u>Farm buildings</u> , or <u>accessory buildings</u> , with floors.	<p>a. The <u>building</u>:</p> <p>i. is on piles; or</p> <p>ii. has a maximum <u>ground floor area</u> of 200m².</p> <p>b. There is a maximum of one <u>accessory building</u> or <u>farm building</u> per <u>site</u> up to 20 hectares and a maximum of one <u>accessory building</u> or <u>farm building</u> per additional 20 hectares of <u>site</u>.</p>
P18	Below-ground swimming pools.	Nil
P19	Above-ground swimming pools.	<p>a. The swimming pool is not larger than 200m².</p> <p>b. There is no more than one swimming pool per 20 hectares of <u>site</u>.</p>

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	<p><u>Filling</u> and <u>excavation</u> within Henderson Basin for the creation and enhancement of:</p> <p>a. <u>Water bodies, wetlands</u> or public access ways associated with the recreation values of the <u>water bodiesways</u> or <u>wetlands</u> within the Basin; and</p> <p>b. stormwater treatment systems including water quality treatment, attenuation and compensatory storage.</p>	<p>a. The likely effects of proposed <u>filling</u>, or <u>excavation</u> or <u>subdivision</u> on the functioning of the ponding area or floodplain during flood periods including any compensatory storage proposed.</p> <p>b. Any potential impacts of <u>excavation</u> or <u>filling</u> or <u>subdivision</u> on the rate, level or volume of flood discharges to the Avon, Heathcote and Styx Rivers and their tributary streams and margins.</p> <p>c. Any adverse effects on the natural qualities, <u>amenity values</u> or ecology of <u>water bodiesways</u> and <u>wetland</u> areas.</p> <p>d. In respect to the Lower Styx Ponding Area, any adverse effects likely on land as a result of tidal influences during</p>
RD2	<u>Utilities</u> that do not meet the activity specific standard in P11 of Rule 5.5.5.1.	

RD3	<p><u>Subdivision</u> within the area shown at Appendix 8.6.7(d) – Cashmere/Worsleys Development Plan Area for the following purposes:</p> <p>a. Roads<u>Roading reserve</u>;</p> <p>b. ‘Land to Vest’ areas as shown on Appendix 8.6.7d This <u>allotment</u> will be transferred to the Christchurch City <u>Council</u>.</p>	<p>flood periods including the potential for exacerbation of those effects with potential sea level rise.</p> <p>e. Any adverse effects on access for maintenance or flood protection works.</p> <p>f. The effectiveness and environmental impact of any measures that may be proposed to mitigate the effects of <u>filling</u> or <u>excavation</u>.</p> <p>g. Any beneficial effects, including the provision of public access, or the enhancement of the natural qualities, <u>amenity values</u> or ecology of <u>water bodies</u>ways and <u>wetland</u> areas.</p>
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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 <u>filling</u> or <u>excavation</u> activity listed in Rule 5.5.5.1 that does not meet one or more of the activity specific standards, or any <u>filling</u> or <u>excavation</u> activity not listed in Rules 5.5.5.1 or 5.5.5.2.
NC2	Any <u>subdivision</u> which creates an additional vacant <u>allotment</u> or <u>allotments</u> from a <u>site</u> within a Flood Ponding Management Area shown on the Planning Maps except where: <p>a. the additional <u>allotment</u> or <u>allotments</u> is entirely outside the Flood Ponding Management Area; or</p> <p>b. if the additional <u>allotment</u> or <u>allotments</u> is partially within the Flood Ponding Management Area, the additional <u>allotment</u> or <u>allotments</u> contains a <u>net site area</u> capable of containing a complying <u>residential unit</u> entirely outside of the Flood Ponding Management Area.</p>
NC3	New <u>buildings</u> within a Flood Ponding Management Area shown on the Planning Maps, unless specified in P11, P13-17 and P19 in Rule 5.5.5.1 or RD2 in Rule 5.5.5.2.
NC4	The replacement or repair of <u>buildings</u> 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 .	<p>a. The ground floor area of the replaced or repaired building is not greater than the ground floor area of the existing building.</p> <p>b. The replaced or repaired building is located in a position on the site that is no lower than the existing building.</p>
P2	Utilities .	<p>a. 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).</p>
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.	<p>a. The building is:</p> <ol style="list-style-type: none"> i. on piles; or ii. has a maximum ground floor area of 200m². <p>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.</p>
P7	Below-ground swimming pools in rural zones.	Nil.
P8	Above-ground swimming pools in rural zones.	<p>a. The swimming pool is not larger than 200m².</p> <p>b. There is no more than one swimming pool per 20 hectares of site.</p>

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	<p>a. The likely effects of the proposed subdivision on the High Flood Hazard Management Area.</p>

Activity		The Council's discretion shall be limited to the following matters:
	Development Plan Area for the following purposes: <ol style="list-style-type: none"> <li data-bbox="320 349 608 383">Roading reserveRoads; <li data-bbox="320 394 783 483">'Land to Vest' areas as shown on Appendix 8.6.7(d). This <u>allotment</u> will be transferred to the <u>Council</u>. 	<ol style="list-style-type: none"> <li data-bbox="839 282 1501 371">Any potential impacts of the <u>subdivision</u> on the rate, level or volume of flood within the <u>High Flood Hazard Management Area</u>. <li data-bbox="839 383 1501 450">Whether the <u>subdivision</u> will increase the potential risk to people's safety, well-being and property.
RD2	<p data-bbox="320 517 783 607"><u>Residential units</u> within the Residential Unit Overlay identified in Appendix 5.9.2, including:</p> <ol style="list-style-type: none"> <li data-bbox="320 618 655 651">any new <u>residential unit</u>; or <li data-bbox="320 663 735 696">any replacement <u>residential unit</u>; or <li data-bbox="320 707 759 775">any addition to an existing <u>residential unit</u>. <p data-bbox="320 786 767 842">other than as provided for by Rule 5.5.6.1 P1.</p> <p data-bbox="320 853 783 920">Any application arising from this rule shall not be limited or publicly notified.</p>	<ol style="list-style-type: none"> <li data-bbox="839 517 1422 573">The Council's discretion is limited to the following matters: <ol style="list-style-type: none"> <li data-bbox="876 595 1286 629">Setting of minimum floor levels. <li data-bbox="876 640 1326 674">Building designDesign of buildings. <li data-bbox="876 685 1326 719">Mitigation of the effects of flooding. <li data-bbox="876 730 1190 763">Level of intensification. <li data-bbox="876 775 1190 808">Safe ingress and egress. <li data-bbox="876 819 1485 920">Reducing the risk to people's safety, wellbeing and property resulting from the development. <li data-bbox="839 931 1477 987">These restricted discretionary activities will be assessed against the following criteria: <ol style="list-style-type: none"> <li data-bbox="876 1010 1477 1155">The type of foundation and structure proposed for the <u>residential unit</u> and the likely impact of the <u>building</u> with regard to flood storage and flow of water. <li data-bbox="876 1167 1477 1335">The frequency at which any proposed <u>building</u> 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, well-being and property from such an event. <li data-bbox="876 1346 1477 1491">The ability to maintain safe <u>access</u> to and from the <u>residential unit</u> from the transport network with respect to access design <u>of the access</u> 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	<p data-bbox="320 1818 1342 1874">Any <u>subdivision</u> which creates an additional vacant <u>allotment</u> or <u>allotments</u> from a <u>site</u> within a <u>High Flood Hazard Management Area</u> shown on the Planning Maps except where:</p> <ol style="list-style-type: none"> <li data-bbox="320 1886 1358 1953">the additional <u>allotment</u> or <u>allotments</u> is entirely outside the <u>High Flood Hazard Management Area</u>; or

	b. if the additional <u>allotment</u> or <u>allotments</u> is partially within the <u>High Flood Hazard Management Area</u> , the additional <u>allotment</u> or <u>allotments</u> contains a <u>net site area</u> capable of containing a complying <u>residential unit</u> entirely outside of the <u>High Flood Hazard Management Area</u> .
NC2	New <u>buildings</u> within a <u>High Flood Hazard Management Area</u> shown on the Planning Maps, unless specified in P1 - P6 or P8 in Rule 5.5.6.1, or RD2 in Rule 5.5.6.2.
NC3	The replacement or repair of <u>buildings</u> 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 <u>site</u> that increases the occupancy of the <u>site</u> , 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 [District 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	<p>Any subdivision which creates an additional vacant allotment or allotments in the Liquefaction Management Area.</p> <p>Note: This rule does not apply to boundary adjustments, amalgamations, or the creation of unit titles.</p> <p>Any resource consent application arising from this rule shall not be limited or publicly notified.</p>	<p>a. The Council's control is limited to the following matters:</p> <ol style="list-style-type: none"> 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. <p>b. These controlled activities will be assessed against the following criteria.</p> <ol style="list-style-type: none"> i. Whether techniques proposed for remediation and/or mitigation of the effects of any liquefaction hazard identified are appropriate, including but not limited to: <ol style="list-style-type: none"> 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
	<p>consent as conditions or consent notices; and</p> <p>B. setbacks in relation to any waterway or water body, 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.</p> <p>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.</p> <p>iii. The effect of the remediation and/or mitigation on the reasonable use of the site.</p>

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:
<p>RD1</p> <p>Any activity located on a site with an area of 1500m² or more, qualifying as a controlled or restricted discretionary activity under any of the following residential rules:</p> <ol style="list-style-type: none"> 1. Enhanced Development Mechanism - Rule 14.11.3.3 RD1, RD2; 2. Community Housing Redevelopment Mechanism - Rule 14.12.2.3 RD1, RD2; 3. Residential Suburban Zone and Residential Suburban Density Transition Zone - Rule 14.2.2.3 RD7, RD8, 	<p>a. The Council's discretion is limited to the following matters:</p> <ol style="list-style-type: none"> i. Location, siting and layout, design of buildings, car-parking areas, 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 iii. Liquefaction hazard remediation methods <p>b. These restricted discretionary activities will be assessed against the following criteria:</p> <ol style="list-style-type: none"> i. Whether techniques proposed for remediation and mitigation of the effects of any liquefaction hazard identified are appropriate, including but not limited to: <ol style="list-style-type: none"> A. Provision for ground-strengthening, foundation design, and provision of resilient services B. Setbacks in relation to any waterway or water body, 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:
<p>RD10;</p> <p>4. Residential Medium Density Zone - Rule 14.3.2.3 RD2;</p> <p>5. Residential Banks Peninsula Zone - Rule 14.4.2.3 RD14</p> <p>6. Residential New Neighbourhood Zone - Rule 14.9.2.2 C1 or Rule 14.9.2.3 RD3;</p> <p>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.</p>	<p>geotechnical solutions are identified to address any identified potential for lateral spread.</p> <p>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.</p>

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 [District 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 m. 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 5.3.4.1a 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 <u>Slope Instability Mgmt Area</u>
a.	<u>Subdivision</u>	C7	C8	C9	C10	Refer to relevant chapters within zone and/or district wide provisions applying to the <u>sites</u> within this area
b.	<u>Earthworks</u> except as provided for below	NC24	RD41	C11	C12	Refer to relevant chapters within zone and/or district wide provisions applying to the <u>sites</u> within this area
c.	<u>Hazard mitigation works</u> , including <u>earthworks</u> associated with those works	C13	C14	C15	C16	Refer to relevant chapters within zone and/or district wide provisions applying to the <u>sites</u> within this area
d.	Demolition of <u>buildings</u>	C17	C18	C19	C20	Refer to relevant chapters within zone and/or district wide provisions applying to the <u>sites</u> 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 <u>Slope Instability Mgmt Area</u>
e.	Repair and maintenance of existing infrastructure, <u>buildings</u> , and access ways, including <u>minor upgrading of the existing electricity network</u> .	P1	P2	P3, includes <u>earthworks</u> associated with these works on flat land or where the <u>earthworks</u> are less than 10m ³ cut or fill on sloping land.	P4, includes <u>earthworks</u> associated with these works on flat land or where the <u>earthworks</u> are less than 10m ³ cut or fill on sloping land.	P
f.	<u>Earthworks</u> associated with the activities listed in e above unless identified as permitted.	C21	C22	C23	C24	P
g.	Upgrading of existing infrastructure, <u>buildings</u> , and access ways including associated <u>earthworks</u> , 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 <u>sites</u> within this area
h.	Construction of new non-habitable** <u>buildings</u> 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 <u>sites</u> 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 <u>Slope Instability Mgmt Area</u>
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 <u>Slope Instability Mgmt Area</u>
m.	Minor <u>earthworks</u> 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 <u>sites</u> within this area
n.	Any activities not otherwise listed above, including <u>buildings</u> not otherwise provided for under h	NC25	NC26	NC27	D4	Refer to relevant chapters within zone and/or district wide provisions applying to the <u>sites</u> 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. 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. 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

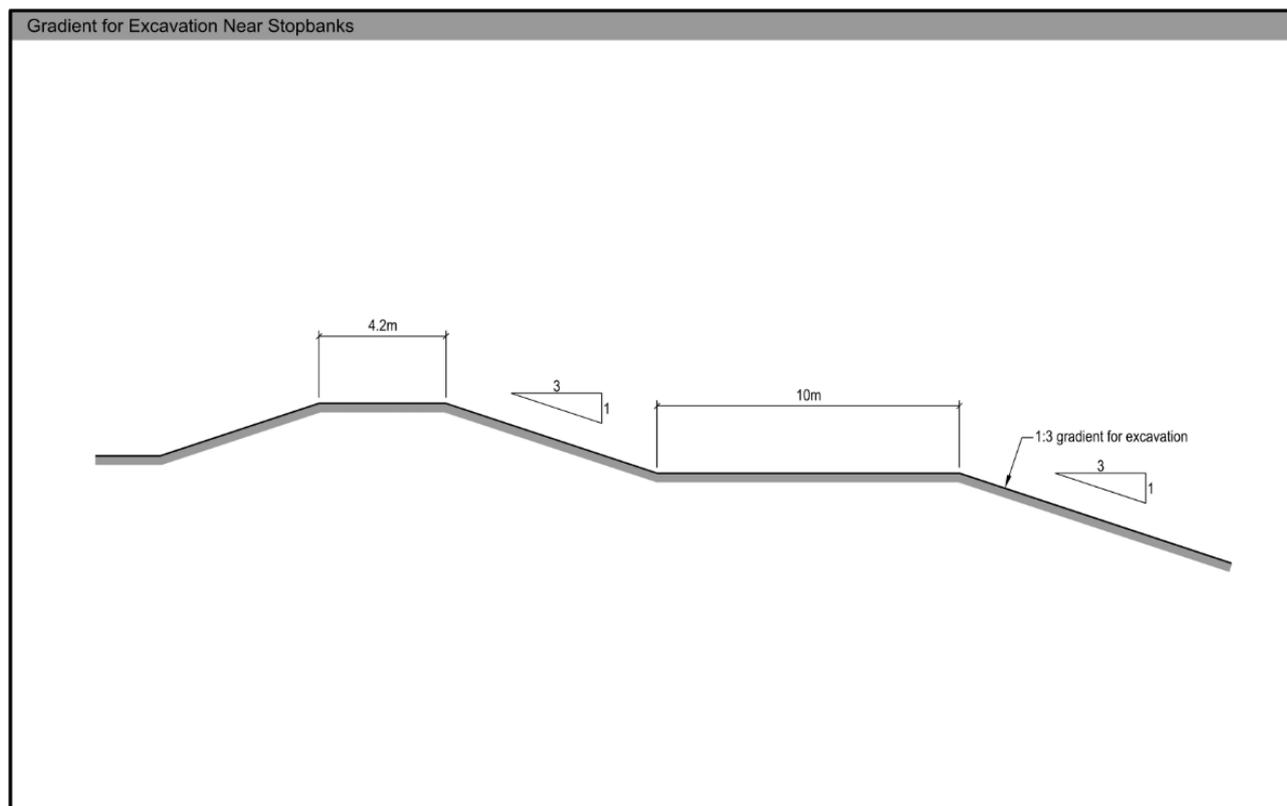
5.8.3.1 Liquefaction Management Area

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”.