<table>
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<th>Resource Management Act 1991</th>
<th>Plan Change</th>
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<td>Waimakariri District Plan</td>
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Natural Hazards Management

May 2016

DRAFT
Proposed District Plan Change 27: Natural Hazards Management

1. **Introduction**

1.1 The Waimakariri District is subject to a number of natural hazards. The term 'natural hazard' is usually associated with major geophysical events or natural occurrences and in particular where those events interact with people and their assets, threatening life, property and infrastructure essential for the functioning and safety of communities.

1.2 The population of Waimakariri District is located predominantly on a plains area. Within the plains area, flooding and active fault lines (including the Lees Valley area), along with ground instability resulting from ground shaking, are the main damaging effects. It is therefore important to ensure that structures, buildings and infrastructure are located where the risk from natural hazards are minimised.

2. **Purpose**

2.1 Section 32 of the Resource Management Act (RMA or Act) requires Council to evaluate the appropriateness of objectives in a proposed Plan or Plan Change in achieving the purpose of the Act and the appropriateness of proposed policies, rules and methods in achieving the objectives. The Council is required to prepare a section 32 evaluation report and make it available concurrently when the proposal is publicly notified pursuant to the requirements of the Act.

2.2 The purpose of this report is to fulfil section 32 evaluation requirements for Proposed Plan Change 27 - Natural Hazards Management. This report is accompanied by proposed District Plan amendments (Appendix 1) to the operative Waimakariri District Plan (the Plan) and supporting information.

2.3 The direction for this review and the proposed response in terms of amendments to the Plan relate to the following overarching matters:

- Recent technical analysis in regard to earthquake fault line and liquefaction risk; and
- Recent technical analysis and modelling of localised (rainfall) and river breakout flood risks.

2.4 The proposed plan change recognises changes in approaches to natural hazard management since the Plan was developed and to utilise recent technical information to respond to current legislative requirements. The proposal is to amend the Plan informed by the recent information reconciled with RMA and regional planning requirements.
3. **Context and Review Scope**

3.1 The Council is currently reviewing the Plan in accordance with section 79 of the Act. The Plan was made operative in November 2005 and section 79 of the Act requires that a district plan be reviewed every 10 years. In 2011, the Council resolved that the Plan would be reviewed in parts, on a ‘rolling review’ basis.

3.2 The proposed Plan provisions are in part informed by other planning and statutory documents and requirements, which are addressed in this report. Of particular relevance is the Canterbury Regional Policy Statement. The other part of the broader context and scope relates to natural hazard matters, assessment and development issues that are specific to Waimakariri District.

3.3 This report evaluates Plan provisions relating to natural hazards as they apply to the entire District and the zones identified by the Plan. The term ‘natural hazard’ for the purpose of this plan change is limited to Waimakariri District specific geophysical events or natural occurrences in regard to flooding (rainfall and river breakout), earthquake (active fault line identification and liquefaction/lateral spread), coastal hazard (erosion) and to an extent climate change as it relates to flood hazard modelling and assessment only.

3.4 In regard to the above, Appendix 2 sets those matters that are outside the scope of this plan change. In addition, existing Plan provisions that are outside the scope of the plan change may be identified for a more complete view of how the Plan will manage natural hazards, but are not taken into specific consideration within the amendments. This is a particular implication given the ‘rolling review’ of the Plan.

3.5 Objectives and policies often have wide effect taking into account the structure of the District Plan. The Operative Plan is structured in such a way that Chapters 8 and Chapter 27 form the focus of this review. There are other necessary changes to other chapters based on the preferred option identified under section 32 of the Act and the proposed schedule of Plan amendments.

4. **Significance of Proposals**

4.1 Section 32(1)(c) of the Act requires that an evaluation report contains a level of detail that corresponds to the scale and significance of the environmental, economic, social, and cultural effects that are anticipated from the implementation of the proposal.

4.2 An evaluation of the scale and significance of the proposal (Plan Change 27) is set out in Appendix 3. The significance is determined as ‘high’, requiring a level of detail that focuses on key points along with expert assessments.

5. **Overview of the Issues**

Flooding (Localised and River Breakout)

5.1 The plains area of the District has historically witnessed flooding from both localised rainfall and breakout of the rivers, principally from the Waimakariri and Ashley Rivers. Flooding effects from localised rainfall events have been
evident in the past due to the relatively flat topography and ponding nature of low lying areas, particularly in the eastern part of the District.

5.2 The network of stop banks has largely contained the major rivers, with only major events continuing to pose some threat from breakout of those rivers. There is an extensive system of stop banks and floodgates which provide a level of protection against flood events, particularly those relating to breakout of the Ashley or Waimakariri Rivers. Recent works have improved the stop bank network on the lower Ashley River.

5.3 Flood modelling carried out by the Waimakariri District Council and Environment Canterbury has quantified the extent of potential flooding, and this has been shown on the proposed District Plan maps. While these maps are based on the best available information, flooding in specific areas may be less severe than the model predicts, and a degree of variability from the modelling results can be expected. Site specific detailed studies may therefore be required to confirm the flood hazard in certain circumstances.

5.4 The flood hazard within the District is now better understood than in the past based on modelling. The risks from flooding can be managed through controls or measures to ensure the effects of flooding on people, infrastructure and their assets are appropriately addressed.

Earthquake

5.5 GNS Science (GNS) has identified several active fault lines in the District and these have been mapped along with analysis of their likelihood of an earthquake event. While there are a relatively large number of faults regarded as active throughout the District, there is a large degree of uncertainty about the exact location of the fault line in most instances.

5.6 A significant fault in the District is the Ashley fault, running just north of and parallel to, the Ashley River near Loburn. This fault has been studied and mapped at a greater level of detail. While there are other areas of significant ground modification, such as around Springbank, Cust and North Loburn, these fault areas have not been well studied and the location of the fault is therefore less certain. The Starvation Hill Fault, which runs through Oxford, falls within this category. Mapping of these faults is therefore at a large scale with an accuracy of +/- 50 - 100m at best, which has implications for detailed site development, especially within higher density residential areas or zonings.

5.7 The level of detail and certainty around fault lines is not precise. In terms of managing effects associated with fault rupture, recommendations by GNS for the Ashley Fault take a permissive approach. This approach is based on the very rare rupture frequency of the fault line, the understanding that the knowledge of the fault line will encourage people to keep clear of it, the geotechnical requirements of building consent processes, and current Building Act 2004 requirements ensuring the structural integrity of buildings such that they will not collapse, although they may suffer significant damage.

5.8 The location of the Ashley Fault means that it is very unlikely that buildings of a critical type or high habitable density will be located in close vicinity to it in the future. A similar permissive management approach is an option with all fault lines in the District due to the low risk of occurrence, and even lower risk
of harm to people over and above that which inherently exists. As set out later in this report, it is not considered necessary to overly constrain subdivision or the location of structures in areas near known active fault lines, and no fault line specific rules are proposed for inclusion in the Plan.

5.9 While the shaking associated with fault rupture cannot be avoided, it is possible to avoid areas of significant ground movement or areas where soils are likely to liquefy. The location of liquefaction susceptible soils is largely contained to the eastern portion of the District. It is therefore appropriate to provide some control over subdivision in these areas, and this is achieved in part through current subdivision matters for control, including Ministry of Business, Innovation and Employment guidelines. Similarly, the location of structures, buildings and infrastructure away from such areas, or where designed to meet structural standards, would contribute towards a reduction in the severity of any effects associated with liquefaction and fault line rupture overall.

Coastal Hazard

5.10 Coastal hazard refers to erosion of the coastal area or potential inundation. The effects of sea level rise due to climate change may affect long term planning for both coastal erosion and seawater inundation, and more detailed assessment in the future will be required to identify areas likely to be at risk. Seawater inundation zones have not been identified for Waimakariri District within Appendix 5 of the Canterbury Regional Policy Statement (CRPS).

5.11 The Waimakariri District has a significant amount of coast, with a significant population living within a short distance of it. However, in general the coastal area is protected by a strip of large sand dunes, except around the mouths of the Ashley and Waimakariri Rivers, and the coastline is generally not subject to severe erosion processes at this time.

5.12 In addition, the coastal area is not subject to development pressure due to public ownership and the influence of existing Plan provisions. While inland areas around the river mouths are susceptible to inundation from large events such as tsunami, these potentially very damaging but very rare events are considered to be best dealt with through other mechanisms such as Civil Defence.

5.13 Both the Regional Coastal Environment Plan and the CRPS were amended in 2015. The Regional Policy Statement now includes provisions requiring the Council via its Plan to manage coastal hazards. The amendments also included provisions to either avoid or mitigate new development in urban areas located within high hazard areas.

5.14 The New Zealand Coastal Policy Statement 2010 (NZCPS) provides policy direction for coastal management under the RMA 1991, and the District Plan must give effect to the NZCPS, and have regard to it when assessing resource consents.

Climate Change

5.15 Climate change may result in increased severe rainfall events and rising sea level. Both of these could lead to flooding effects, particularly in the lower lying and coastal areas. The flood modelling carried out by the Council has factored in a 1.0m rise in sea level and an additional 16% rainfall volume change. These values are considered to provide appropriate recognition of the effects of climate change.
## 6. Comprehensive Hazard Management

### Table 1: Issue Assessment

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
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<tr>
<td>Is hazard management a resource management issue?</td>
<td>Management of hazards is a resource management issue for the District. Inappropriately managed development may result in or impose costs on the community and impact on safety of people and affect infrastructure. The ability to provide for development within a growth district in a safe, integrated and sustainable way is a resource management issue. The proposed plan change reviews existing objectives and policies, the existing environmental characteristics, and the outcomes that are being achieved, including effects on the environment.</td>
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<tr>
<td>Is hazard management relevant to the District?</td>
<td>The review of provisions is relevant to the District as the Ten Year Plan (2015-2025) identifies estimated population growth of 8,000 people in the years to 2025 (55,000 to 63,000 people). This has implications for infrastructure, development and exposure to risk in general. Community outcomes include the following:</td>
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<tr>
<td></td>
<td><strong>Environment</strong></td>
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<tr>
<td></td>
<td>a. There is a safe environment for all Harm to people from natural and man-made hazards is minimised and our district has the capacity and resilience to respond to natural disasters.</td>
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<td>The District Plan contains 3 objectives within Chapter 8 (Natural Hazards). In addition, Chapter 8 states that some information and the policy response may need revision during the life of the Plan. When reviewing plan provisions, effect must be given to any relevant national policy statements and any regional policy statement (sections 73 and 75 of the Act).</td>
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<td>In addition, a number of other plans and strategies have been prepared by Council or other agencies that have direct relevance to the understanding of natural hazards within the District (see section 7). Collectively, these documents provide a basis for a land use and subdivision policy response within the District Plan, including methods to give effect to the policy response.</td>
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<tr>
<td>Is addressing the hazard issues likely to make a difference?</td>
<td>Addressing the issues will provide for enhanced integrated understanding of hazard issues and risk effects for development, infrastructure and importantly people and their assets.</td>
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<td>It is acknowledged that the Plan is not the only</td>
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mechanism to manage the potential effects of natural hazards. Other approaches include, but are not limited to Civil Defence; education and physical works e.g. stop banks to manage river flooding.

<table>
<thead>
<tr>
<th>Should the hazard issues be addressed by the District Plan?</th>
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<tr>
<td>Section 31(1)(b)(i) of the RMA provides the Council with the function of controlling any actual or potential effects of the use, development, or protection of land, including for the purpose of the avoidance or mitigation of natural hazards, as required to give effect to the RMA. The CRPS also stipulates a number of methods that the Plan is to give effect to within its provisions.</td>
</tr>
<tr>
<td>When prepared prior to 2005, the objectives, policies, rules and methods within the Plan gave effect to the Act. The existing Plan provisions were found to be appropriate under the RMA when the Plan was developed. This report assesses the most appropriate way for the Plan to continue to give effect to the Act.</td>
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<tr>
<td>It is understood that a National Policy Statement on natural hazards is proposed to be in place by 2018 and up dated non-statutory guidance on liquefaction and coastal hazards and climate change is proposed by late 2016. These are to be prepared by the Ministry for the Environment.</td>
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7. **Information and Research**

7.1 There have been a number of reports prepared on natural hazards as they apply to the District. These include:

- Ministry for the Environment: Planning for development of land on or close to active faults: A guideline to assist resource management planners in New Zealand, 2003; and

7.2 Key reports are:

- Waimakariri District Council: Waimakariri District Localised Flood Hazard Assessment, July 2015;
- GNS Science: General Distribution and Characteristics of Faults and Folds in the Waimakariri District, North Canterbury, July 2013;
- GNS Science: Assessment of active fault ground deformation hazards associated with the Ashley Fault Zone, Loburn, North Canterbury, September 2014;
• Environment Canterbury: Review of liquefaction hazard information in eastern Canterbury including Christchurch City and parts of Selwyn, Waimakariri and Hurunui Districts, December 2012; and

7.3 The information contained in the above reports (see Appendix 8) informs and provides an understanding of the natural hazards included within the plan change, as set out in the following sections.


8.1 The Act promotes the sustainable management of natural and physical resources while continuing to enable people and communities to provide for their social, economic, and cultural wellbeing, as well as their health and safety. The Act also sets out a range of other matters to consider in order to achieve its purpose.

8.2 Section 31 (see Appendix 4) requires the Council to give effect to the Act through the establishment of a District Plan setting out objectives, policies, and rules to achieve integrated management of the effects of the use, development, or protection of land and associated natural and physical resources. Section 31(1)(b)(i) and (ii) specifically provide for control of any effects of land use, development or protection for the purpose of avoiding or mitigating natural hazards, and preventing or mitigating any adverse effects of the storage, use, disposal and transportation of hazardous substances.

8.3 The District Plan (operative in 2005) sets out the resource management issues for the District. The objectives, policies, and associated rules and methods within the Plan address those issues in order to achieve sustainable management of natural and physical resources and thereby to achieve the purpose of the Act. This includes provisions relating to natural hazards.

8.4 Section 79 requires a review of the District Plan to be commenced within 10 years of it becoming operative, except where the provisions have been previously reviewed. This plan change forms part of the District Plan review required under section 79.

8.5 Section 74 of the Act requires the Council to have regard to its functions under section 31, the provisions of Part II of the Act (purpose and principles), and its duties under section 32 when undertaking a Plan change. Section 74 also sets out a number of other matters to have regard to, including plans and strategies prepared under other acts. This includes any proposed Regional Policy Statement or Regional Plan, and any relevant planning document recognised by an Iwi Authority and lodged with the Council, and any management plan or strategy prepared under other Acts.

8.6 Significantly, section 75(3)(c) of the Act requires the Plan to ‘give effect’ to any operative Regional Policy Statement, which is particularly relevant with regard to natural hazard events and their effects. Section 75(3) of the Act also requires that a District Plan must give effect to any relevant National Policy Statement (NPS) or New Zealand Coastal Policy Statement (NZCPS). There are no related National Policy Statements that have bearing on this plan change, and the provisions of the NZCPS are also not impacted on by the proposed natural hazard management provisions. It is understood that an NPS on natural hazards is to be prepared by the Ministry for the Environment, although the scope of that document is not known at this time.
9. **Documents the District Plan must give effect to**

**Canterbury Regional Policy Statement (CRPS)**

9.1 The Canterbury Regional Policy Statement is an operative document (2013) and the District Plan must give effect to the provisions contained within it. The directly relevant chapter of the CRPS is Chapter 11 – Natural Hazards. The CRPS includes new or amended provisions inserted under the Land Use Recovery Plan in 2015.

9.2 Section 74(2)(a)(1) of the Act requires that any plan change ‘have regard’ to any proposed Regional Policy Statement. This is not relevant as there is no proposed Regional Policy Statement relevant to Plan Change 27.

**New Zealand Coastal Policy Statement**

9.3 The New Zealand Coastal Policy Statement 2010 (NZCPS) includes ‘policies in order to achieve the purpose of the Act in relation to the coastal environment of New Zealand’. This is the key statutory document in regard to coastal development and hazard management and came into effect on 3 December 2010.

9.4 Objective 5 of the NZCPS seeks to ensure the management of coastal risk (taking account of climate change) through location away from risk areas, consideration of existing development and protecting or restoring natural defences to coastal hazards.

9.5 Policies 24 to 27 of the NCPS identify areas that are potentially affected by coastal hazards over at least 100 years. Priority is given to areas of high risk, avoiding increasing the risk from coastal hazards from subdivision, use and development and provision (where appropriate) for the protection restoration or enhancement of natural defences to protect coastal land uses, biodiversity, heritage and geological values. In areas of significant existing development where there are coastal hazards, options for risk reduction need to be assessed. Policy 6 recognises the importance of infrastructure provision and tangata whenua needs among other matters.

10. **Relevant Management Plans or Strategies**

10.1 Section 74(2)(b)(i) of the Act requires that a District Plan have regard to any management plans or strategies prepared under other Acts. The following documents are relevant to proposed Plan Change 27.
10.2 The Mahaanui Iwi Management Plan (IMP) 2013 is part of a larger framework of regional and territorial planning documents. The IMP sits alongside the CRPS, the Land and Water Regional Plan (LWRP) among other documents that regard shall be given to.

10.3 The Council is required to take into account the IMP (pursuant to Section 74 (2A) of the RMA) to the extent that it has a bearing on resource management issues.

10.4 The IMP identifies issues and policies that include management of water and land resources. While not specifically focusing on natural hazard management, the plan identifies climate change (Issue R3) as having potentially significant impacts on the relationship of Ngai Tahu and their culture and traditions with their ancestral land, water, sites, wahi tapu and other taonga. Issue R3.3 requires local authorities to ‘…recognise and provide for the potential effects of climate change…’ including sea level rise, salination of rivers and hapua (lagoons), oceanic warming, changes to rainfall, and changes to ecosystems.

10.5 Fracking is also identified in issue P18 as having ‘potential to generate earthquakes, and protection from coastal erosion is sought in relation to Ngai Tahu cultural and historic heritage sites (Issue TAN6.4).

10.6 The proposed plan change incorporates climate change into the assessment for flooding, and includes provisions to recognise and regulate development within areas susceptible to coastal erosion in the next 100 years.

Waimakariri Ten Year Plan

10.7 The Waimakariri Ten Year Plan, prepared under the Local Government Act 2002 (LGA), sets out a number of community outcomes. The LGA focuses on sustainable development, and in particular social, economic, environmental and cultural well-beings. The Ten Year Plan records the outcomes identified by the community, and it is expected that the Council will use this process to inform other plans and strategies. This includes RMA processes, such as the preparation of plan changes.

10.8 One of community outcomes contained within the Ten Year Plan relates to natural hazard resilience (see section 6 of this report).

Urban Development Strategy 2007 (UDS)

10.9 The UDS project was initiated in 2004 to manage growth of the Greater Christchurch sub-region to 2041. The UDS, in terms of development planning, has largely been implemented by the LURP and Chapter 6 provisions to the CRPS which provide direction around recovery, urban form, settlement patterns and hazards but broadly reflects the direction of the UDS including ‘key approaches’. The UDS is subject to review.

Northern Pegasus Bay Bylaw 2016

10.10 The proposed Northern Pegasus Bay Bylaw 2016 is currently open for public submissions. It aims to:

- Manage recreation activity for the benefit and enjoyment of all users;
- Minimise any negative environmental impact of beach activity;
• Promote public health and safety; and
• Minimise nuisance and offensive behaviour.

10.11 The Bylaw applies to the whole of the coast within the Waimakariri District boundary, including Kairaki, Pines, Woodend, Waikuku and Pegasus beaches. It proposes controls on buildings and structures within the beach area (as defined by the Bylaw) subject to approval by an authorised officer. The Bylaw is not proposed to apply to an activity where conducted in accordance with a resource consent issued under the RMA.

**Activity Management Plans**

10.12 The Council’s Activity Management Plans are forward plans for service activities such as roading, water, wastewater, stormwater and solid waste that include levels of service, risk assessment, capacity assessment, condition assessment and forward capital works programmes. The risk assessment component includes risk from natural hazard events to as far as possible mitigate risk on services.

**Engineering Code of Practice**

10.13 The Engineering Code of Practice is a set of standards developed by the Waimakariri District Council in relation to Council services, including those that are essential for community resilience during and following a natural hazard event.

11. **Other Documents**

11.1 Section 74(2)(b)(i) also requires regard to be given to the following:

• Any relevant entry in the Historic Places Registers s74(2)(b)(iia);
• Regulations relating to sustainability of fisheries or Maori customary fishing s74(2)(iii);
• The extent that the district plan needs to be consistent with the plans or proposed plans of adjacent territorial authorities s74(2)(c);
• Any relevant document prepared or recognised by an iwi authority s74(2A); and
• The effects of trade competition s74(3).

11.2 These matters have been considered as part of the evaluation, elsewhere within this report, or are not considered directly relevant to the issues associated with natural hazard management in terms of this plan change.

11.3 Other relevant statutes include the Civil Defence and Emergency Management Act 2002 and the Building Act 2004, as set out below:

**Civil Defence and Emergency Management Act 2002 (CDEM ACT)**

11.4 The CDEM Act has as two of its purposes the sustainable management of hazards, and encouraging and enabling communities to achieve acceptable levels of risk. Another purpose is to require local authorities to co-ordinate emergency management across the areas of Reduction (of risk); Readiness (for an event); Response (when an event occurs); and Recovery (post event).

11.5 The provisions of Plan Change 27 factor in the above purposes in order to reduce the risk to people and communities associated with natural hazards.
The plan change also includes maps showing the location/extent of the hazards, subject to the purpose of the plan change, which are an important means of improving awareness.

Building Act 2004

11.6 The Building Act 2004 prescribes the legal requirements for all buildings in New Zealand, including regulation of building design in relation to natural hazards. Section 37 provides the ability to delay building work until a resource consent is gained. This can be used where development is taking place on hazard-prone land and where Plan rules require a resource consent.

11.7 Sections 71 to 74 relate to building consent restrictions for the construction of buildings on land subject to natural hazards. The Building Act requirements for natural hazards are an important method outside of the District Plan for ensuring protection of people and property from natural hazard events.

12. The Operative District Plan

12.1 The Waimakariri District Plan was made operative in November 2005. The following analysis summarises the Plan provisions that are relevant to the issue of natural hazard management.

12.2 Chapter 8 (Natural Hazards) contains the Objectives, Policies, and Methods for natural hazard management, while Chapters 27 (Natural Hazards) and 32 (Subdivision) contain key relevant rules. Localised flooding areas are currently shown on District Plan maps, and the District Plan contains a number of Objectives, Policies, Methods and rules relating to subdivision and land use within those areas. Land use Rule 27.1.1.15 in particular restricts structures within the localised flooding areas. Other natural hazards are not specifically addressed in the rules, other than subdivision, or on the District Plan maps.

12.3 The current localised flooding areas are largely based on past experience and observation, rather than on any assessment or data resulting from modelling. The areas affected by breakout flooding from the Waimakariri and Ashley Rivers are not currently accounted for in the Plan. While lack of detailed data has meant this approach has been acceptable in the past; the detailed data now available provides for a more comprehensive outcome based on known rainfall inputs and detailed ground contour data. The current approach has the potential for inaccurate and/or inappropriate flood hazard effects management.

12.4 With regard to earthquake effects, the CRPS requires the District Council to manage subdivision and land use on or close to an active fault trace, or in areas susceptible to liquefaction and lateral spreading. While the existing matters for control relating to subdivision contain general reference to natural hazards and ground stability, the Plan currently has no comprehensive ground stability controls, and there is no representation of, or controls relating to, fault lines.

12.5 Recommendations from GNS Science and Environment Canterbury (ECAn) are that proximity to known fault lines is a low risk factor, given return periods, and no specific controls to manage this issue are necessarily required. However, controls relating to ground stability help to ensure subdivision and
location of structures in liquefiable areas are appropriately addressed. These matters need to be reviewed to ensure the Plan gives effect to the CRPS.

12.6 There is currently no specific provision for management of coastal hazards within the Plan as it applies to the coastal area, other than limited references. As the District contains a significant stretch of coast, some of which may be impacted by coastal hazards, it is necessary to implement provisions within the Plan to give effect to the CRPS. Further assessment of sea level rise impacts is likely to be necessary in the future.

12.7 Overall, the function of the District Plan with regard to natural hazard management will be reinforced by addressing these issues, as will compliance with relevant statutory documents.

13. Options to Amend the Operative District Plan

13.1 Section 32 of the Act sets out the process by which the Council is required to change the District Plan to achieve the purpose of the Act and fulfil its statutory obligations. In particular, section 32 requires the Council, prior to public notification of any change, to carry out an evaluation to examine:

- the extent to which the objectives are the most appropriate way to achieve the purpose of the RMA; and
- whether the proposed provisions are the most appropriate way to achieve the objectives by:
  - identifying other reasonably practicable options; and
  - assessing the efficiency and effectiveness of the selected provisions; and
- summarising the reasons for deciding on the provisions.

13.2 The evaluation of efficiency and effectiveness of the selected provisions, or any relevant or remaining provisions of the current District Plan, must:

- identify and assess the benefits and costs of the environmental, economic, social and cultural effects resulting from implementation of the provisions. This assessment needs to have specific regard to opportunities for economic growth and employment that are anticipated to be provided or reduced, quantifying those benefits and costs where practicable. It also needs to assess the risk of acting or not acting if there is uncertain or insufficient information about the subject matter.

13.3 After the submission period closes, the Council is required to undertake a further evaluation of costs and benefits prior to making a decision on the proposed plan change, taking into account matters raised in any submissions.

13.4 Options for achieving the purpose of the Act and other documents such as the CRPS should consider:

- Retaining the status quo;
- Consideration of other regulatory non-RMA approaches as well as non-regulatory methods; and
- Identification of preferred 'candidate options' by discarding unreasonable or impracticable options. This could include:
  - achievability in terms of the scope of the plan change, tools and resources available;
  - enforceability;
- sound principles for writing provisions; and
- effectiveness of the option to guide decision-making.

13.5 For the purposes of proposed Plan Change 27, options are identified as set out below (Options 1 to 4).

**OPTION 1** – The status quo; retain existing objectives, policies, rules, methods and maps (see Appendix 5).

**OPTION 2** – Prohibit or restrict further development within areas affected by natural hazards and in particular those affected by high hazard events.

**OPTION 3** – Provide a framework for management of the effects of natural hazards, based on recent information from flood modelling, active fault line and liquefaction research and coastal hazards, to ensure effects are avoided or mitigated.

**OPTION 4** - Use alternative methods to achieve the purpose of the Act and control effects by providing a framework of objectives and policies predominantly implemented or supported by methods that sit outside of the Plan.

13.6 Appendix 1 outlines the objective proposed as part of Option 3 in addition to retained, new or amended policies, rules and methods to the Plan. A commentary on the Plan provisions is attached as Appendix 7. Overall, Option 3 is the recommended option to amend the Plan. This is assessed below.

14. **Examining the Appropriateness of Proposed Objective(s)**

14.1 Section 32 requires the Council to be satisfied that any proposed objective(s) are the most appropriate way of achieving the purpose of the Act. When proposing a change to the objectives of the Plan, section 32(1)(a) of the Act requires an assessment of the extent to which each proposed objective is the most appropriate towards achieving the purpose of the Act.

14.2 Proposed Plan Change 27 introduces one new objective and deletes existing objectives. Table 2 below sets out an assessment of the appropriateness of the proposed objective.

15. **Evaluation of Proposed Policies, Rules and Methods**

15.1 Section 32(1)(b) of the Act directs the Council to examine whether, having regard to their efficiency and effectiveness, the policies, rules or other methods proposed are the most appropriate way to achieve the objective(s).

15.2 Table 2 sets out the evaluation of benefits and costs and efficiency and effectiveness. Opportunities for economic growth and employment, and the risk of acting or not acting if there is insufficient information available are assessed following this.

15.3 Section 32(3) requires that the examination under section 32(1)(b) must relate to the provisions and objectives of the proposal and the objectives of the existing Plan where relevant and if they would remain after the proposal takes effect. This is on the basis that a plan change cannot be justified based solely
on its own objectives, without being consistent with the broader plan objectives.

15.4 Whilst Plan Change 27 makes amendments to the operative District Plan, there are no existing objectives within the Plan that are relevant to the plan change. This is on the basis of the purpose and scope of the plan change as set out earlier in this report. The existing objectives relevant to the plan change have been deleted in their entirety and replaced with a new objective as set out in Appendix 1.

15.5 Table 2.1: Evaluation of Option 3, Objective 8.1.1.

| OPTION 3 – Provide a framework for management of the effects of natural hazards, based on recent information from flood modelling, active fault line and liquefaction research and coastal hazards, to ensure those effects are avoided or mitigated. |
|---|---|
| Objective – Objective 8.1.1 Natural Hazard Management |
| People, property, structures and the environment are: |
| a. protected from the adverse effects of natural hazards; and |
| b. are resilient and safe through natural hazard risk awareness. |

Achieving the purpose of the Act

• A copy of section 5 of the RMA is attached as Appendix 4.

The proposed objective specifically recognises the adverse effects that are associated with natural hazards and allows for a response that is to either avoid the hazard or to mitigate, based on the direction provided by the relevant policies, and recognising the need to give effect to the CRPS and the Act itself.

The objective gives specific consideration to enable subdivision, use and development of land as a first option. This is measured against the effects of the hazard to gauge the extent of subdivision, use or development that should or should not occur and the extent of any mitigation required, as informed by the relevant policy or policies.

<table>
<thead>
<tr>
<th>Elements that make up the purpose of the Act (in summary)</th>
<th>Examination of objective in meeting the purpose of the Act</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabling – social wellbeing</td>
<td>Development activity can positively or negatively impact on individuals, the broader community, amenity and the quality of the environment for residents. Ensuring that hazards are addressed prior to any development occurring will enable people’s well-being, health and safety to be met through the appropriate management of the effects of natural hazards.</td>
</tr>
<tr>
<td>Enabling – economic wellbeing</td>
<td></td>
</tr>
<tr>
<td>Enabling – cultural wellbeing</td>
<td></td>
</tr>
<tr>
<td>Enabling – health and safety</td>
<td></td>
</tr>
<tr>
<td>Sustaining the potential of natural and physical resources</td>
<td>Ensuring natural hazards are identified prior to development occurring will allow for the effects to be addressed and contribute to</td>
</tr>
<tr>
<td>Safeguarding life-supporting capacity</td>
<td></td>
</tr>
<tr>
<td>Avoiding, remediating, or mitigating</td>
<td></td>
</tr>
</tbody>
</table>
any adverse effects on the environment sustaining the potential of resources now and into the future.

Overall, it is considered that the proposed objective is the most appropriate way to achieve the purpose of the Act. The objective provides an approach based on new information on relevant natural hazards and provides a framework whereby the effects resulting from the natural hazard are able to be managed such that the effect is avoided or mitigated. This enables people and communities to provide for their social, economic and cultural well-being and for their health and safety.

Additional Evaluation Comments

Proposed Objective 8.1.1 gives effect to the CRPS that requires, under Objectives 11.2.1 to 11.2.4, effects relating to natural hazards to be mitigated or avoided. Appendix 6 sets out the relevant CRPS objectives and policies and provides a commentary on these in relation to Option 3.

In addition, Plan information can be used to increase public awareness, via non-RMA processes, including but not limited to Project and Land Information Memoranda (PIMs and LIMs). This is important for the earthquake fault lines identified on the proposed Plan maps. Awareness is provided for within Objective 8.1.1 and further reinforced through its assessment provisions, in particular the methods linked with the policies. Similarly, information from other sources can be used to achieve Objective 8.1.1, such as Civil Defence activities and the overall approach to reduce risk set out within the CDEM Act.

15.6 Table 2.2: Evaluation of Option 3, Provisions to achieve the objective.

Evaluation of Proposed Policies, Rules and Methods

The proposed framework of provisions is considered to be the most appropriate way to achieve the outcome sought by the objective. It does this by setting out policies for each component of the purpose of the plan change, along with rules and methods to help inform development and to require resource consent decisions where necessary.

This approach provides the opportunity for site and hazard specific assessments identifying ways to avoid or mitigate the hazard, especially in regard to flood effects. This approach is considered to be strongly enabling while ensuring adverse effects of the avoidance or mitigation mechanism are themselves avoided or mitigated.

Other reasonably practical options i.e. policies, rules and methods for achieving the Objective relate primarily to Options 1 and 4 identified above. These are described further in Appendix 5.

Objective – Objective 8.1.1 Natural Hazard Management

People, property, structures and the environment are:

a. protected from the adverse effects of natural hazards; and
b. are resilient and safe through natural hazard risk awareness.

<table>
<thead>
<tr>
<th>Option 3 - Provisions</th>
<th>Efficiency and Effectiveness</th>
</tr>
</thead>
</table>

Natural Hazards
<table>
<thead>
<tr>
<th>Policy 8.1.1.1 Low and Medium Flood Hazard</th>
<th>Flood Hazard:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitigate the effects of flood hazard risk within Low and Medium Flood Hazard Areas by ensuring:</td>
<td>Option 3 recognises the modelled flood hazard while providing for permitted activities within low and medium flood hazard areas subject to a minimum finished floor height for buildings. This has the effect of avoiding the modelled flood level in these areas, in conjunction with a freeboard. For high hazard areas shown on the proposed district plan maps, including rural land, parts of the wider coastal area, Kaiapoi and Southbrook at Rangiora further assessment of risk is required.</td>
</tr>
<tr>
<td>a. the height of floor levels are sufficient to prevent floodwater inundation.</td>
<td>This approach takes into account sea level rise due to climate change to the extent that it is factored into the modelling. It also allows for more refined site specific assessment outside low and medium hazard areas based on specific site and proposal characteristics. This acknowledges that effects of flooding within high hazard areas must be mitigated or avoided under the provisions of the CRPS.</td>
</tr>
<tr>
<td>b. hazardous substance storage will not be inundated; and</td>
<td>Earthquake effects (Liquefaction and fault lines):</td>
</tr>
<tr>
<td>c. displacement or diversion of flood waters will not cause or increase adverse effects on other sites or critical infrastructure.</td>
<td>The hazard relating to seismic events is explicitly recognised based on recent and up to date technical information. Taking this into account as part of the provisions will provide for management of the potential effects of this hazard. A policy framework is provided to assist decisions on resource consent applications and land rezoning and to inform/make aware. The identified fault lines show an awareness area at differing dimensions based on GNS recommendations and for mapping purposes these are 20m for the well-defined Ashley Loburn Fault and 125m or 250m for other faults.</td>
</tr>
</tbody>
</table>

Policy 8.1.1.2 High Flood Hazard

Avoid new development within High Hazard Flood Areas, other than within Residential or Business Zones where the effects of flooding are mitigated.

Policy 8.1.1.3 Critical Infrastructure

Avoid new critical infrastructure in locations subject to the adverse effects of natural hazards, other than where:

a. the location is essential to the function of the infrastructure; and

b. the infrastructure is designed to maintain its function in the event of a natural hazard.

8.1.1.4 Physical Mitigation of Hazards

Provide for new or upgraded physical works to mitigate natural hazards where:

a. the natural hazard risk cannot be reasonably avoided; and

b. adverse effects of the works are avoided, remedied or mitigated.

Policy 8.1.1.5 Natural and Vegetation Features

Subdivision, use and development shall recognise and protect natural and vegetation features that assist in avoiding or mitigating the adverse effects of natural hazards.

Policy 8.1.1.6 Earthquake Fault Line Awareness

Manage the location of buildings and critical infrastructure where active fault lines are known to exist.
Policy 8.1.1.7 Liquefaction and Lateral Spread Susceptibility
Ensure liquefaction and lateral spread susceptibility is evaluated prior to subdivision, use and development.

Policy 8.1.1.8 Coastal Hazards
Avoid subdivision, development or use of land on the seaward side of the Coastal Hazard Line, other than activities that are essential for public safety or community wellbeing and include mitigation to ensure increased risk to people or the environment is avoided.

Policy 8.1.1.9 Climate Change
Recognise and understand the potential effects of climate change on weather patterns, and ensure proposals to develop and use land have particular regard to the effects of climate change so that adverse effects on the health and safety of people and to structures, including critical infrastructure, are avoided or mitigated.

and the coastline is not subject to severe erosion processes. Seawater inundation zones have not been identified for Waimakariri District within Appendix 5 of the CRPS and the Coastal Hazard Line shown on the proposed maps relates only to coastal erosion. The provisions do not restrict public access to and along the coastal marine area (RMA, s6 Matters of National Importance).

Climate Change
Managing development in respect to the effects of climate change is a matter set out under the RMA that regard must be given to. Climate change values have been factored into the flood modelling in order to assist with the robustness of the modelling into the future. Sea level rise, associated with climate change, has not been addressed other than within the flood modelling. Policy 8.1.1.9 acknowledges that further assessment is required in order to fully understand the effects of climate change and what this may mean for the Plan to achieve the purpose of the Act. It is also noted that further national guidance is planned in the short to medium term; this policy enables this to be considered.

Overall, effectiveness is high and the efficiency is high.

**Option 3 – Benefits and Costs**

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Gives effect to the CRPS.</td>
<td>• Management controls on subdivision and land uses within identified flood/coastal hazard areas, including monetary costs.</td>
</tr>
<tr>
<td>• The provisions are clear and practical in order to manage risk.</td>
<td>• Increased information requirements for applicants and restriction on land uses, and potentially on subdivision.</td>
</tr>
<tr>
<td>• Identification of flooding areas and associated rules that are tailored to the perceived risk and therefore ensure flooding risk is addressed and managed.</td>
<td>• Costs in relation to any resource consent requirements.</td>
</tr>
<tr>
<td>• Setting of a minimum finished floor level for permitted activity in certain hazard flood areas</td>
<td>• Possible economic effects resulting from unnecessary loss of current and future development</td>
</tr>
</tbody>
</table>
will reduce consenting burden and economic costs while also preserving land use opportunities provided an appropriate mitigation measure is available.

- Provides the opportunity for appropriate measures to avoid or mitigate earthquake related effects.
- District Plan information can be used to increase public awareness, via non-RMA processes.
- Limits costs to the community through costly public physical mitigation measures, although this is enabled.

Opportunities for economic growth that are anticipated to be provided or reduced by the provisions under Option 3

15.7 Economic growth could be provided by:

- Continuing to enable subdivision, use and development within the District and appropriate to the zones, which could provide employment for those involved, during the development phase and into the future.
- Enhanced clarity as to the intent of the policies and rules, including maps to aid development. This may provide increased certainty for investment and longer term growth.

15.8 Economic growth could be reduced by:

- Cost and time delay for any resource consent processes where required and costs associated with compliance with Plan standards.
- Development locational requirements especially associated with flood risk. Also, potential cost and cumulative costs for development, through additional design and/or construction costs.

Opportunities for employment that are anticipated to be provided or reduced under Option 3

15.9 Employment opportunities that could be provided:

- Employment opportunities that relate directly to the provisions include professionals involved in development proposals such as geotechnical, hydrological and structural engineers, surveyors, planners, and architects, site developers and contractors, builders and building trade suppliers, and subcontractors, real estate agents and other allied services and trades.
15.10 Employment opportunities that could be reduced:

- It is possible that employment opportunities could be affected by the plan change provisions, related to land use. However, it is anticipated that there will be a generally unchanged position in relation to employment.

15.11 In terms of economic growth and employment, it is anticipated that implementation of Option 3 will not result in significant adverse effects within the District. The approach proposed will ensure unnecessary costs and processes, while also ensuring the economic commitment involved with buildings and infrastructure is protected from loss or significant damage to an acceptable degree.

15.12 In terms of flooding, the cost of increased finished floor heights or restriction on location of buildings and infrastructure is considered less than significant when compared to the total cost of construction, loss of or damage to any of these assets. While urban areas are impacted on by inundation in locations, the proposal is to require a finished floor level 300mm above the flood level other than within high hazard areas where specific assessment would apply.

15.13 Areas subject to plan change requests to change the zone from rural to residential or business will need to show how they will be provided with mechanisms to avoid or mitigate any natural hazard relevant to the plan change area and its wider location. Other areas affected are largely rural; significant areas of which fall within the permitted envelope provided, thereby minimising constraints on location of, or requirements for, residential development in these areas or buildings in general. No productive land uses within the Rural Zone are impacted on by the proposed plan change.

15.14 Risk of Acting or Not Acting

<table>
<thead>
<tr>
<th>Risk of acting or not acting if there is uncertain or insufficient information</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is considered there is sufficient and certain information to identify both the location and potential extent or severity of the effects of natural hazards in the District.</td>
</tr>
</tbody>
</table>

It is acknowledged that the technical basis underpinning the geotechnical studies and the flood modelling does have some uncertainty based on the parameters and assumptions built into the relevant analyses. However, the information is the best available and is appropriate in order to respond to the requirements of the CRPS and to change the provisions of the District Plan; provisions themselves that acknowledge the need for further research and change.

The risks of not acting are potentially significant and include possible risk to life and damage to property and infrastructure if natural hazard effects are not managed appropriately. By not acting, the community would be more vulnerable to adverse effects, especially given the information that is available and the policy and legislative framework that the District Plan is part of.

The provisions provide an approach that is relevant at this point in time. In the foreseeable future these can be updated if required when new information becomes available or when regional policy or national legislative changes occur.
15.15 The evaluation above shows that Option 3 is the most appropriate means to address flood, active fault, liquefaction and coastal hazards issues and effects. This approach would provide appropriate provisions within the Plan with a focus on effects management consistent with the outcomes sought by the objectives and policies in the CPRS, and would lead to improved natural hazard management which is considered to achieve the purpose of the Act.

16. **Consultation**

16.1 Clause 3 of the First Schedule of the Act requires that the Council, when preparing a change to the District Plan, consults with a number of statutory parties. In addition, the Council may identify any other person, and consult with that person, in preparing the change. The Council consulted directly with the following statutory parties:

- Selwyn District Council
- Christchurch City Council
- Hurunui District Council
- New Zealand Transport Agency
- Ministry for the Environment
- Environment Canterbury
- Mahaanui Kurataiao Limited
- Transpower New Zealand
- Canterbury District Health Board
- Canterbury Earthquake Recovery Authority
- Heritage New Zealand

16.2 Responses were received from the Ministry for the Environment, Transpower New Zealand, Environment Canterbury, the Canterbury District Health Board and Mahaanui Kurataiao Limited.

16.3 It should also be noted that flooding information has been made available on Project Information Memoranda and Land Information Memoranda. The GNS Science reports were also publicly released.

17. **Conclusion**

17.1 This evaluation report has been undertaken in accordance with Section 32 of the RMA. The review of the natural hazard provisions has determined that the most appropriate way to manage natural hazards is to develop an objective, policy and rule framework which manages natural hazards as provided for by Option 3.

17.2 The recommended approach (set out in Appendix 1) is considered to bring the Plan into line with current statutory obligations and requirements, and the relevant planning documents and will contribute towards aligning the outcomes achieved through the District Plan with the purpose of the Act.
APPENDIX 1: PROPOSED AMENDMENTS (OPTION 3)

See separate document: Waimakariri District Plan Change 27 – Natural Hazards Management Proposed District Plan Amendments
APPENDIX 2: PLAN CHANGE SCOPE EXCLUSIONS

Plan Change 27 is limited in scope to those matters set out in paragraph 3.3 and excludes the following:

- Tsunami, volcanic and geothermal activity, landslip, subsidence (other than effects associated with fault line or liquefaction events), wind, drought, fire or other natural hazards effects such as snow events.

Plan Change 27 does not address future climate change effects associated with sea level rise in relation to potential inundation. Sea level rise is factored into the plan change as it applies to the flood modelling only. Sea level rise as it may affect part or the full extent of the Waimakariri District coast is not part of the scope of the plan change.

It is noted that a National Policy Statement on natural hazards is proposed to be in place by 2018 and updated non-statutory guidance on liquefaction and coastal hazards and climate change is proposed by late 2016. These documents are anticipated to have a bearing on the District Plan and may lead to further changes to the District Plan to address sea level rise and any other hazards.
## APPENDIX 3 SCALE AND SIGNIFICANCE RATING OF PROPOSAL

<table>
<thead>
<tr>
<th>Variable</th>
<th>High / large +1</th>
<th>Moderate 0</th>
<th>Low / small -1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Importance of the issues that the plan changes seek to address given the context in which they arise</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Extent of change from the status quo</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3. Size of geographical area that is affected by the plan change</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4. Number of people likely to be affected</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5. Degree of risk and uncertainty</td>
<td></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Score = 3

<table>
<thead>
<tr>
<th>Rating score</th>
<th>Scale / significance</th>
<th>Level of detail required</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 to 5</td>
<td>High</td>
<td>Comprehensive / detailed report that thoroughly addresses all aspects of s32. Expert assessments likely to be required.</td>
</tr>
<tr>
<td>-2 to 2</td>
<td>Moderate</td>
<td>Moderate level of detail focusing on key points.</td>
</tr>
<tr>
<td>-3 to -5</td>
<td>Low</td>
<td>Basic evaluation without need for much detail.</td>
</tr>
</tbody>
</table>
APPENDIX 4: RESOURCE MANAGEMENT ACT 1991

Part 2, Section 5.

(1) The purpose of this Act is to promote the sustainable management of natural and physical resources.

(2) In this Act, **sustainable management** means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while -

(a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and

(b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and

(c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.

Section 31.

(1) Every territorial authority shall have the following functions for the purpose of giving effect to this Act in its district:

(a) the establishment, implementation, and review of objectives, policies, and methods to achieve integrated management of the effects of the use, development, or protection of land and associated natural and physical resources of the district:

(b) the control of any actual or potential effects of the use, development, or protection of land, including for the purpose of—

(i) the avoidance or mitigation of natural hazards; and

(ii) the prevention or mitigation of any adverse effects of the storage, use, disposal, or transportation of hazardous substances; and

(iia) the prevention or mitigation of any adverse effects of the development, subdivision, or use of contaminated land:

(iii) the maintenance of indigenous biological diversity:

(c) [Repealed]

(d) the control of the emission of noise and the mitigation of the effects of noise:

(e) the control of any actual or potential effects of activities in relation to the surface of water in rivers and lakes:

(f) any other functions specified in this Act.

(2) The methods used to carry out any functions under subsection (1) may include the control of subdivision.
APPENDIX 5: OTHER REASONABLY PRACTICAL OPTIONS

Option 1 – Status Quo: Retain existing policies, rules, methods and maps

The current approach within the Operative District Plan specifically identifies only a relatively small physical part of the District as being impacted on by flood hazard, and therefore does not comprehensively manage development in terms of providing for social, economic and cultural wellbeing. This is in regard to localised flooding shown on the relevant District Plan maps.

In addition, the Plan does not provide a particularly robust basis on which to assess the flooding potential in various areas. Not only is this in respect to the spatial area identified on the District Plan maps but also to the development types that trigger the need for resource consent and ultimately the assessment process that follows as part of any resource consent application.

Therefore, while this approach may minimise any restriction on location of activities it does not necessarily provide for the best long term outcomes (for example the need to repair damage from natural events) and does not enable people to provide for their health and safety due to less reliable information on the location and likely occurrence of natural hazards.

The Plan sets out an earthquake and liquefaction related objective and associated policy, although these provisions acknowledge that further analysis is required to better understand the potential effects of these events. Existing subdivision controls within the Plan do allow for geotechnical effects to be considered.

Flooding:

Option 1 is not considered to help achieve clear outcomes sought by Objective 8.1.1 on the basis that the policies, such as Policy 8.2.1.5, and through explanations and methods, acknowledge that further understanding on flooding and its effects is required. Related to this is that not all flooding areas identified by recent modelling are addressed by the existing rules (or identified on the District Plan Maps), and the rules relating to flooding are relatively blunt in that they are not tailored to address specific levels of risk or consequence.

Earthquake:

No active fault lines are identified in the Plan and like the provisions relating to flooding the Plan identifies the need for further assessment to be carried out (see Policy 8.3.1.1 and its explanation and methods). As not all earthquake active fault and liquefaction areas are identified, people are not protected and the ability of these provisions to meet the proposed objective is consequently not achieved. However, geotechnical issues (liquefaction predominantly) are covered by the existing matters for control in the subdivision chapter of the Plan.

The understanding of earthquake fault and liquefaction effects has improved in recent years. The operative provisions acknowledge the need for improved understanding, which is now available, meaning it is also appropriate to update the Plan provisions.

Coastal hazard and climate change:

There are no provisions within the Plan that relate specifically to climate change. This does not provide for effective on-going management of any associated risks and therefore does not result in an efficient or effective means to meet Objective 8.1.1. Climate change is a Part 2 matter under the Act and the proposed policy along with
those relating to flood management are considered to be most appropriate as opposed to those of the Operative Plan. There are no specific coastal hazard rules within the Plan, acknowledging that these were previously found within the RCEP and have recently been subject to changes in conjunction with the CRPS.

**Option 2 - Prohibit or restrict further development within areas affected by natural hazards and in particular those by high hazard events.**

This option recognises that natural hazards events can pose significant threats on people and property. Whilst at a coarse level this approach would be reasonably practical given the nature and possible extent of effects related to those hazards addressed by the plan change, this approach would not provide the opportunity to assess the nature of the effect and formulate responses that would avoid or mitigate the effect of the natural hazard.

Therefore, while being very likely to enable people and communities to provide for their health and safety, it is also very likely to not enable them to provide for their social, economic and cultural well-being. It would be overly blunt acknowledging that potential effects can and will vary across the District and different outcomes may therefore be appropriate.

**Flooding/coastal and climate change:**

This option will not provide a management framework which will allow for assessment of the natural hazard issues relevant to particular sites, and thereby provide for the use of mitigation or avoidance measures which may be available. While it may be effective in avoiding the effects of natural hazards on people and their assets, it will not be efficient due to the availability of avoidance or mitigation measures within individual sites or areas.

**Earthquake:**

The effects of fault rupture on structural integrity and ground stability are able to be managed through building structural requirements and by identifying areas subject to ground movement and liquefaction. It is also possible to mitigate effects by avoiding location of buildings in certain areas, for example, directly on top or close to a fault line. It is therefore more effective and efficient to identify areas where earthquake related effects are likely to occur and ensure that those effects are managed to avoid or mitigate adverse effects to people and structures.

**Option 4 - Use alternative methods to achieve the purpose of the Act and control effects by providing a framework of objectives and policies predominantly implemented or supported by methods that sit outside of the District Plan.**

This option would set out objectives and policies in order to meet RMA and CRPS requirements. However, it would rely predominantly on guidelines or other mechanisms outside the District Plan to indicate the information or requirements for development.

This could include any relevant Bylaws, engineering guidance or other legislation, such as the Building Act 2004. This is opposed to rules that can be provided under Section 75 of the Act. For example, for floor levels, the Building Act 2004 requires that the floor level for the habitable part of a dwelling is set above the 0.2% annual exceedance flood level. Where land is subject to flood hazard, sections 71-73 of the Act can mean that dwellings can be erected. However this is subject to an assessment beyond the 0.2% level and determinations by MBIE have found it “reasonable” to use the 1% level to set floor levels. This is not aligned to the CRPS.
requirement that the 0.5% level be used. This difference between the Building Act 2004 and the CRPS makes the option of using the building consent process to set floor levels a less certain pathway.

Option 4 may also need to rely on public awareness and the provision of information to inform landowner decisions or development planning. It may also necessitate the need for Council or other agencies to investigate and carry out works to protect the public, beyond current levels of service. This could include for example, flood protection works or land improvement schemes.

This option would generate fewer resource consent applications and therefore would translate into limited appraisal and consideration of effects under the Act. The extent that the objectives and policies within the Plan could be met could therefore be limited.
### APPENDIX 6: CANTERBURY REGIONAL POLICY STATEMENT, RELEVANT PROVISIONS

<table>
<thead>
<tr>
<th>A. Relevant CRPS Provision</th>
<th>B. Response related to Plan Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 6 (Objective 6.2.1 (8)):</td>
<td>Chapter 6 of the CRPS sets out the intended land use distribution for greater Christchurch for the period to 2028. The CRPS includes an objective of protecting people from unacceptable risk from natural hazards. The purpose of this objective is to provide for an outcome where appropriate urban development is enabled within specified areas reconciled against a need to protect people from natural hazard risk. In terms of greenfield priority areas and any residential or business rezoning requests, hazard risk must be considered and this has been occurring to date within Waimakariri District.</td>
</tr>
<tr>
<td>Recovery, rebuilding and development are enabled within Greater Christchurch through a land use and infrastructure framework that:</td>
<td></td>
</tr>
<tr>
<td>(8) protects people from unacceptable risk from natural hazards and the effects of sea level rise.</td>
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</tr>
<tr>
<td>Policy 6.3.3 - Development in accordance with outline development plans includes the following:</td>
<td></td>
</tr>
<tr>
<td>(11) Show how the adverse effects associated with natural hazards are to be avoided, remedied or mitigated as appropriate and in accordance with Chapter 11 and any relevant guidelines.</td>
<td></td>
</tr>
<tr>
<td>Chapter 11 – Natural Hazards (shown below in short list form):</td>
<td>Chapter 11 seeks to manage the adverse effects and risks associated with natural hazards through a range of provisions.</td>
</tr>
<tr>
<td>Objective 11.2.1 – Avoid new subdivision, use and development of land that increases risks associated with natural hazards</td>
<td>In terms of flooding, Policy 11.3.2 directs that subdivision, use and development be avoided in areas subject to a 0.5% AEP flood event but provides for mitigation as an alternative in circumstances where there is no increased risk to life subject to several individual requirements including floor levels for new buildings to be above a 0.5% AEP design flood level. The plan change proposes a floor height requirement in order to give effect to this requirement. Objective 8.1.1 seeks to ensure protection for the effects of natural hazards. How this is achieved is set out in Policy 8.1.1.1.</td>
</tr>
<tr>
<td>Objective 11.2.2 – Adverse effects from hazard mitigation are avoided or mitigated</td>
<td></td>
</tr>
<tr>
<td>Objective 11.2.3 – Climate change and natural hazards</td>
<td></td>
</tr>
<tr>
<td>Objective 11.2.4 – Effective integration of the management of, and preparedness for, natural hazards</td>
<td></td>
</tr>
<tr>
<td>Policy 11.3.1 – Avoidance of inappropriate development in high hazard areas</td>
<td>Policy 11.3.1 relates to high flood hazard areas. This policy requires avoidance of development in high hazard areas, although it provides for mitigation or avoidance within existing urban zoned areas. High hazard risk based on background analysis predominantly affects Kaiapoi, parts of the coastal area and land in and around</td>
</tr>
<tr>
<td>Policy 11.3.2 – Avoid development in areas subject to inundation</td>
<td></td>
</tr>
<tr>
<td>Policy 11.3.3 - Earthquake hazards</td>
<td></td>
</tr>
<tr>
<td>Policy 11.3.4 – Critical infrastructure</td>
<td></td>
</tr>
<tr>
<td>Policy 11.3.5 - General risk management approach</td>
<td></td>
</tr>
</tbody>
</table>
Policy 11.3.6 – Role of natural features
Policy 11.3.7 – Physical mitigation works
Policy 11.3.8 – Climate change
Policy 11.3.9 – Integrated management of and preparedness for natural hazards

Southbrook at Rangiora. Proposed Objective 8.1.1 and Policy 8.1.1.2 give effect to this CRPS provision and are associated with Rule 27.1.1.4 that enables certain development, in addition to any existing use rights under s10 of the RMA, and assessment through the resource consent process stipulated by the RMA for other development.

In addition, Policy 11.3.1 requires Council to identify land subject coastal erosion, as set out in the CRPS definition of 'High Hazard Areas'. The proposed plan change (Policy 8.1.1.8 and rule changes to Chapter 26) inserts the hazard line identified by the CRPS (and the RCEP) into the Plan, noting that neither of these set out a seawater inundation area or line along the Waimakariri District coastline.

Policy 11.3.2 identifies as a criterion for subdivision and development, that hazardous substances will not be inundated during a 0.5% AEP flood event. This specifically addressed within the context of existing hazardous substance provisions.

Liquefaction and fault lines are specifically managed by Policy 11.3.3. This policy requires that new subdivision use and development on land close to an active fault trace or in areas susceptible to liquefaction and lateral spreading, be managed in order to avoid or mitigate the adverse effects. Liquefaction effects have been assessed post Canterbury Earthquakes and an eastern liquefaction susceptibility area identified. Building Act 2004 foundation and structural requirements apply and the plan change seeks to specifically address liquefaction effects via Policy 8.1.1.7 and subdivision requirements, noting that all subdivision requires resource consent and approval.

Fault line awareness areas are mapped and are supported by proposed Policy 8.1.1.6. Specific structure or building setbacks are not included within the plan change due to the inability to accurately define these in a practical and enforceable way, such as the Starvation Hill Fault at Oxford. The plan change, based on the CRPS, such as
set out in Policy 11.3.9(5), promotes awareness and this is expressed throughout the plan change amendments, including Objective 8.1.1.

Critical infrastructure is specifically addressed by the plan change as this is a requirement of Policy 11.3.4. The District Plan, currently manages utilities in order to achieve the Act, although the critical infrastructure definition within the CRPS has a slightly differing focus and for the purposes of this plan change has been tailored to specifically relate to natural hazard management. The plan change gives effect to the CRPS through proposed policies relating to low and medium flood hazard (Policy 8.1.1.1), a specific policy (Policy 8.1.1.3), Policy 8.1.1.6 (Earthquake Fault Line Awareness) and the proposed rules package.

The remaining policies of the CRPS set out in column A. of this appendix are also given effect to by the plan change as set out by specific policies. It is important to note the methods that relate to each policy, including non-district plan approaches such as community awareness.
<table>
<thead>
<tr>
<th>Objective, Policy, Rule or Method</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition – Critical Infrastructure</strong></td>
<td>Critical Infrastructure is a matter contained within the CRPS that the District Plan must give effect to ensure such infrastructure is located outside known high hazard areas, unless there is no reasonable alternative. The proposed definition is applicable to natural hazards only and applies to those services that have a wider public or community function as opposed to individual services or connections. Critical Infrastructure is subject to Policy 8.1.1.3 to meet the requirements of the CRPS. It is also a matter referenced within Policy 8.1.1.6 in order to emphasise that it should not be located on or in close proximity to an active fault line.</td>
</tr>
<tr>
<td><strong>Definition – High Hazard</strong></td>
<td>This definition reflects the definition and policy direction set out in the CRPS. It primarily relates to Rules 27.1.1.4, 27.4.5, Policy 8.1.1.2 and the high hazard areas shown on the District Plan maps. High hazard for the purposes of the plan change has been based on depth and velocity as set out in the definition.</td>
</tr>
<tr>
<td><strong>Definition – Natural Hazard</strong></td>
<td>This is an existing definition within the District Plan. It covers a number of events that constitute a natural hazard event or events, of which some are relevant to the purpose of the plan change.</td>
</tr>
<tr>
<td><strong>Chapter 7 (Coastal Environment)</strong></td>
<td>The relevant provisions of Chapter 7 are retained, although an addition is made to existing Method 7.1.1.5.8 to recognise the coastal hazard line provisions set out in the CRPS that the District Plan is required to give effect to. The Principal Reasons (7.1.2) is amended accordingly.</td>
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<tr>
<td><strong>Chapter 8 (Natural Hazards)</strong></td>
<td>Chapter 8 is significantly amended in order to most appropriately reflect the requirements of the RMA and also those matters set out in the CRPS. The amendments also take into account new information regarding hazards as set out earlier in this report. The chapter is effectively re-packaged to more clearly articulate the outcomes sought and how these are to be achieved.</td>
</tr>
<tr>
<td><strong>Rules 23.1.1.8 and 23.3.2 (ix)</strong></td>
<td>The Residential 4A and 4B Zones are lower density living environments located within or adjacent to the District’s rural areas. These are commonly referred to as ‘rural residential’. This rule recognises that changes to the ground level or drainage paths can influence overflow flow during flood events and generate flooding effects. The Plan currently has earthwork rules that trigger resource consent over certain volumes. The proposed rules allow for these effects to be considered where consent is required.</td>
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<tr>
<td><strong>Chapter 26 (Coastal Environment – Rules)</strong></td>
<td>Two new rules have been added to Chapter 26. Rule 26.1.1.2 provides for unstaffed utilities that may need to be located within the coastal hazard area. The rule recognises that some utility structures may need to locate in this area, such as beacons. The requirement that they are unstaffed means that any staffed utilities would require resource consent and assessment of risk. A new discretionary activity is added for any other structure that is proposed to locate within the coastal hazard area, to ensure appropriate assessment of effects is carried out through the resource consent process.</td>
</tr>
<tr>
<td>Chapter 27 (Natural Hazards – Rules)</td>
<td>Rule 27.1.1.15 is deleted as this relates only to localised flooding areas. Flood understanding has now been updated through recent river breakout and localised flooding modelling. New Rules 27.1.1.3, 27.1.1.4 along with Rules 27.3.1 and 27.4.5 are proposed, reflecting flood categorisation and the policies contained within the CRPS. Both provide for exemptions to allow for buildings and structures, that given the size or nature of the matter within the exemption, are not consider to impact on flood effects management. It is important to note that existing use rights under the RMA (s10) would continue to apply. Current bulk and location requirements, such as building height and recession planes continue to apply. Rule 27.1.2.5 recognises those instances to date where existing flood avoidance/mitigation rules apply or where flood effects for structures have been addressed through resource consent approval. Likewise, Rules 27.1.1.3 to 27.1.1.10, 27.1.1.13, 27.1.1.14 and Rules 27.1.1.17 to 27.1.1.31 and associated Figures 27.1 to 27.14 are retained as these sites/areas have been subject to flood assessments and have been developed or are being developed.</td>
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<tr>
<td>Chapter 31 (Health, Safety and Wellbeing – Rules)</td>
<td>New Rule 31.14.1.5 sits with existing hazardous substance rules within the Plan. This rule gives effect to the CRPS that requires inundation of hazardous substances to not be inundated in a 0.5% AEP flood event. The relevant assessment matter under Rule 31.16.2 is amended accordingly.</td>
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<tr>
<td>Chapter 32 (Subdivision – Rules)</td>
<td>Existing subdivision matters of assessment in relation to hazards are retained. These are supported by new discretionary rules for subdivision within the identified liquefaction area and medium and high hazard flood areas except for those areas where minimum floor levels or minimum finished ground levels have been established through plan changes or resource consent approval. These provisions recognise the potential effects from these hazards, including but not limited to effects on infrastructure.</td>
</tr>
<tr>
<td>Maps</td>
<td>New map series are proposed for flooding, liquefaction, active fault lines and coastal hazards. These link to the proposed rules and show the liquefaction area, fault line awareness areas, flooding and the coastal hazard lines. Existing rezoned areas with agreed flood mitigation floor heights are shown in red and are subject to specific on going floor height rules. The fault line awareness areas shown on the maps and their dimensions are based on GNS recommendations and are applied in regard to definite and likely fault lines.</td>
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