

Coastal Hazards District Plan Change

Issues and options discussion paper:
Managing new development in areas
exposed to coastal hazards.

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**Tell us what you think by
Monday 15 November 2021.**





Introduction

The Christchurch City Council needs to make changes to its District Plan to avoid new developments being exposed to coastal hazards such as flooding (including tsunami) and erosion, and also to ensure Council meets its legal obligations under the Resource Management Act.

Coastal hazards have the potential to affect a large number of people and communities along the coastline and in low-lying parts of our district. The risks associated with these hazards for property, people and the wider community are likely to intensify as the impacts of climate change increase.

The Coastal Hazards Plan Change is about managing **new** development, changes of use and subdivision proposed in the future. Reducing risks to **existing** land use activities and development will be considered through the Coastal Hazards Adaptation Planning programme. You can find more information about the Coastal Hazards Adaptation Planning programme at:

ccc.govt.nz/adaptation-planning

We want to **hear what you think.**

We are at the start of this plan change process and want to hear what you think. This discussion paper identifies how coastal hazards might affect communities across Christchurch and Banks Peninsula, discusses the issues that we are facing and why we need to change the District Plan, and sets out a range of options for how the District Plan could manage the risks associated with these hazards.

Let us know what you think: ccc.govt.nz/haveyoursay



If you have any questions or require further information, please get in touch:



Call Mark Rushworth, Senior Planner: **03 941 8809**



Fill out our online submission form at: ccc.govt.nz/haveyoursay (preferred)



Email your feedback to: engagement@ccc.govt.nz

Glossary

Term	Definition
Activity Status	Refers to whether an activity (development, use or subdivision of land) is permitted or requires an application for resource consent under the Resource Management Act. Activities needing consent can be classified as follows: Controlled – will be granted consent, but conditions can be applied, Restricted Discretionary, Discretionary – resource consent may be granted or declined, Non complying – If adverse effects are minor, or its not contrary to objectives and policies, resource consent may be granted or declined, or Prohibited – an application for resource consent cannot be made and resource consent cannot be granted.
Annual Exceedance Probability (AEP)	the probability that a coastal hazard event of a particular magnitude or greater (storm severity, storm-tide level, etc.) will occur in any one year. This is usually expressed as a percentage (e.g. 1%), but can be expressed as a decimal (e.g. 0.01). This probability will change over time if the hazard (e.g. storm-tide level) is changing, for example from climate change effects.
Coastal erosion	is a natural, ongoing process that occurs when the sea wears away the land. Some coastal areas experience short periods of erosion, but then recover (build up again) while others continuously erode and never recover. In the 2021 Coastal Hazards Assessment reports and maps we refer to land which is 'prone to erosion'. This includes all land that might be affected by coastal erosion at some point over the timeframe considered, even if it might subsequently recover.
Coastal flooding	happens when normally dry, low-lying coastal areas are flooded by the sea. It is usually caused by a severe storm but rising sea levels could also cause 'sunny day flooding' from high tides.
Consequence	the outcome of an event that may result from a hazard. It can be expressed quantitatively (e.g. units of damage or loss, disruption period, monetary value of impacts or environmental effect), semi-quantitatively by category (e.g. high, medium, low level of impact) or qualitatively (a description of the impacts) (adapted from Ministry of Civil Defence and Emergency Management [MCDEM], 2019). It is also defined as the outcome of an event affecting objectives (ISO/IEC 27000:2014 and ISO 31000: 2009) (Ministry for the Environment, 2019).
District Plan	is a document prepared under the Resource Management Act in conjunction with the community. It sets a framework for development and the management of resources in the district in a manner that meets the goal of sustainable management of those resources. It includes objectives, policies and rules to manage the environmental effects of land use activities. It defines the various zones and the rules for what activities are permitted to occur in each zone. In this way a district plan has a very strong influence over all activities that occur in the district.
Existing Use Rights	are where someone has a right to continue a use/ activity if it was lawfully established by resource consent or permitted by the plan at the time, and the effects of the use are the same or similar in character, intensity and scale to the effects when the activity was established, and has not stopped for any time lasting more than 12 months.
Exposure	the lack of systems (i.e., properties, infrastructures, human)/ protection against adversity (adverse hazard factors) in a hazard prone area, that could cause negative impacts.
Minimum Floor level	the Council can set minimum floor levels to protect buildings throughout the city from the risk of flooding. The minimum floor level can be defined as a height above ground level so that flood waters do not enter a building during a specific flood event.

Glossary

Term	Definition
Hazard	severity and magnitude of a natural or human-induced event or trend that causes harmful impacts (consequences) on natural, built environment, or social systems (MfE 2020).
Likelihood	the chance of an outcome occurring, where this might be estimated probabilistically (IPCC, 2014). For coastal erosion is a combination of Sea Level Rise scenario, time frames and probability of occurrence needs to be considered so risk can be expressed as: “xxx probability that erosion will occur within yyy time frame under zzz SLR scenario”.
Long Term	30 to 100 years into the future from 2020.
New Zealand Coastal Policy Statement (NZCPS)	provides national direction on how the coastal environment and activities within it are to be managed to implement the Resource Management Act. Councils are required to 'give effect' to the direction contained in the NZCPS.
Plan Change	a method under the Resource Management Act to amend a District Plan. A plan change can be initiated by Council or any member of the public and is to follow a statutory process including inviting submissions, submissions supporting/ opposing others submissions, followed by a hearing and then decisions on submissions. After a decision is made, appeals can be made to the Environment Court, unless use of a streamlined plan change process under the RMA changes those rights.
Regional Policy Statement (RPS)	is a strategic planning document required to be prepared under the Resource Management Act. All regional councils must prepare a RPS. They help set the direction for managing all resources across the region. The Canterbury Regional Policy Statement applies to Christchurch.
Resource Consent	permission under the RMA from the local council for an activity that might affect the environment, and that isn't allowed 'as of right' under the district or regional plan. As defined in Section 87 of the Resource Management Act.
Rising Groundwater	can bring the water table closer to the ground surface. Near the coast, the level of the sea often influences groundwater levels. We can therefore expect to see the groundwater rising as sea levels rise. At its most extreme, groundwater could rise above ground level and cause temporary or permanent ponding of water.
Risk	the interaction between the hazard, exposure of things to that hazard and the vulnerability of the things that are exposed. Risk is often represented as probability or likelihood of occurrence of hazardous events or trends multiplied by the impacts if these events or trends occur.
Sea Level Rise (SLR)	sea level rise is an increase in the level of the world's oceans due to the effects of global warming.
Short Term	Less than 30 years into the future from 2020.
Urban Areas	includes those areas that are zoned for residential, commercial or industrial activities in the District Plan, are already built up and are serviced by infrastructure.
Vulnerability	the propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm, and lack of capacity to cope and adapt.

How might coastal hazards affect Christchurch and Banks Peninsula communities?

We recognise that there are uncertainties in assessing coastal hazards risks. However, what is certain is that the risks exist and will not go away in the foreseeable future. Under current conditions, it is predicted that New Zealand will experience around 30cm of sea-level rise by 2050, 50cm of rise by 2075 and 1m of rise by 2115¹. Even if emissions are reduced, it is virtually certain that the global mean sea level will continue to rise through 2100, and there is high confidence that longer term impacts will be seen for centuries to millennia to come². This will affect the frequency, severity and extent of existing coastal hazards such as coastal flooding, erosion and groundwater.

In line with the New Zealand Coastal Policy Statement and Ministry for the Environment's guidance for local government on coastal hazards and climate change³, the Council commissioned Tonkin + Taylor to produce an updated Coastal Hazards Assessment⁴. This report identifies the future extent and magnitude of areas potentially at risk of coastal erosion and coastal flooding across the district. It also identifies low-lying land that could be susceptible to rising groundwater for a range of different sea level rise scenarios and storm events.

Unlike previous studies, the Coastal Hazards Assessment does not predict how much sea level will rise and by when. Rather than make any fixed assumptions, it considers a series of incremental changes to understand what could happen across the full range of scientifically credible scenarios for sea level rise. For the analysis of erosion, the assessment also considers four points in time – current-day, 2050, 2080 and 2130. A summary of the Coastal Hazards Assessment in plain language, the full Coastal Hazards Assessment and coastal hazards interactive map portal are available at ccc.govt.nz/coastalhazards

The Coastal Hazards Assessment is our starting point to identify how and where we manage land use, development and subdivision in the District Plan. Put simply, the Coastal Hazard Assessment provides the data that is then translated into lines on a map in the District Plan.

¹Bell, R., Lawrence, J., Allan, S., Blackett, P., & Stephens, S. (2017). *Coastal Hazards and Climate Change: Guidance for local government*. Ministry for the Environment. (Note: This statistic uses a baseline period of 1986-2005. We have experienced around 10cm of sea level rise since this baseline period and therefore expect to see around 20cm of additional sea level rise over the next 30 years, by 2050).

²Intergovernmental Panel on Climate Change (IPCC). (2021). *Summary for Policymakers*. In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. <https://www.ipcc.ch/report/ar6/wg1/>

³Section 6.1 describes the matters to be considered in undertaking a Coastal Hazards Assessment, in order to meet the requirement to identify areas potentially at risk of coastal hazards under Policy 24 of the NZCPS (p116 onwards in 'Coastal Hazards and Climate Change Guidance for Local Government') <https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/coastal-hazards-guide-final.pdf>

⁴A long-term risk assessment is a necessary first step towards developing strategic options that seek to reduce the risk of harm from coastal hazards over the long term" (section 6.2, p28 of NZCPS 2010 guidance note: Coastal Hazards Objective 5 and Policies 24, 25, 26 & 27. <https://www.doc.govt.nz/globalassets/documents/conservation/marine-and-coastal/coastal-management/guidance/policy-24-to-27.pdf>

⁴Coastal Hazard Assessment: link

In addition, we have a number of studies modelling the effects of different tsunami scenarios, with most assuming a worst-case scenario of a 1 in 2,500 event. A recent study from 2018⁵, prepared by NIWA for Christchurch City Council of a 1 in 500 year event shows that 39km² of the city would be subject to coastal flooding, with depths ranging between 1.5 – 2m around Brooklands Lagoon and low-lying areas around the Avon-Heathcote estuary and Lower River channels.

For Banks Peninsula, Environment Canterbury commissioned GNS Science to undertake modelling over 2019⁶ and 2020⁷, which included scenarios from 20 sources across the Pacific ocean. The modelling shows maximum depths of water in the head of Lyttelton Harbour and in the bays facing north/ north east of up to 6m for a 3m tsunami wave.

Note that for tsunami, the speed and depth of flooding would be much greater which could cause a much greater risk to life.

We want to **hear what you think.**

The areas affected by rising groundwater, a 1 in 500 year tsunami⁸, and coastal flooding⁹ are very similar. It's therefore possible for us to address groundwater and tsunami risks through coastal flooding risk management. However, we want to hear what you think:

- Should we have specific policies and rules on groundwater, or rely on policies and rule for managing coastal flooding?
- Should we manage risks to life and property from tsunami through rules in the District Plan, or rely on policies and rule for managing coastal flooding, or rely on civil defence activities? If we do rely solely on civil defence activities (e.g. evacuation zones) it would be important that everyone in an area could safely evacuate in a timely manner. Depending on the nature of the event, there is a risk that routes from some areas could become congested, so we need to consider how people may be impacted by this.



Let us know what you think: ccc.govt.nz/haveyoursay

⁵Passarella C., Arnold J., Lane E.; *Land Drainage Recovery Programme: Tsunami Study*. NIWA report 2018039CH Prepared for CCC.

⁶Mueller, C., Wang, X., Power, W.L., Lukovic, B., 2019, *Multiple scenario tsunami modelling for Canterbury*. Report prepared for Environment Canterbury. GNS Science consultancy report; 2018/198, GNS Science, Lower Hutt, New Zealand.

⁷Mueller, C., Wang, X., Lukovic, B., 2020. *Multiple scenario tsunami modelling for the Selwyn coastline, Kaitorete Barrier and Akaroa Harbour*. Report prepared for Environment Canterbury. GNS Science consultancy report 2020/47, GNS Science, Lower Hutt, New Zealand.

⁸Based on 1.06m of sea level rise

⁹Based on a 1 in 100 year event and 1.2m of sea level rise

Our objectives for this plan change

The objectives we are seeking to achieve from this Plan Change reflect those from the Resource Management Act, New Zealand Coastal Policy Statement and Regional Policy Statement:

- **Ensuring that coastal hazard risks are addressed by managing activities in areas prone to coastal hazards, having regard to the level of risk.** This aligns with our responsibilities to implement national and regional direction that seeks the following:
 - Management of significant risks of natural hazards¹⁰, and controlling potential effects of the use of land including for the purpose of avoiding or mitigating natural hazards¹¹.
 - New subdivision, use and development is to be avoided where it increases risks associated with coastal hazards¹².
- **Enabling people and communities to provide for their social, economic and cultural well-being and their health and safety through subdivision, use and development¹³.**

In order to achieve these objectives, there are two main issues with the provisions in our current District Plan that we need to address:

- There is a risk of communities being exposed to the impact of coastal hazards that will become more prevalent in the future. We need to act now, otherwise land use activities and development will continue to occur in areas exposed to coastal hazards without appropriate ways to manage the risk.
- The Council has statutory responsibilities to implement national and regional direction in the New Zealand Coastal Policy Statement and the Regional Policy Statement. The current District Plan does not define the full extent of areas at risk of coastal hazards and only manages some activities in defined areas. For example, the City Plan has rules only for an area 20m from around the high tide mark¹⁴, and the Banks Peninsula District Plan only considers the risk of coastal hazards for subdivision, not development. These gaps do not enable the effective management of the risks and development could occur without appropriate controls.

You can read more about these issues in Appendix A.



¹⁰Section 6(h) of the Resource Management Act.

¹¹Section 31(1)(b) of the Resource Management Act.

¹²Objective 11.2.1 of the Canterbury Regional Policy Statement

¹³Objective 6 of the New Zealand Coastal Policy Statement.

¹⁴Mean High Water Springs mark

Options for how the District Plan could manage coastal hazards

We have identified four options as potential ways forward for a Plan Change. For an assessment matrix that shows the pros and cons of each option, see Appendix B.

We have not included maintaining the status quo as an option because it does not adequately manage risks to people and property from coastal hazards. It also does not implement national or regional direction.

Option 1 (preferred) – Risk-based approach to coastal hazards

This involves managing activities according to the level of risk in that location, acknowledging the uncertainty (of when land may be affected by rising sea levels) and the vulnerability of the activity to risk. It reflects the approach taken to other hazards in the District Plan¹⁵, and is consistent with international risk management best practice¹⁶.

It recognises that the level of risk is not the same in every location and that a range of restrictions should therefore apply to reflect the circumstances in different areas.

The risk-based approach to coastal hazards would limit land use, development and subdivision in areas at High risk, and would remove or reduce the opportunities for further investment and development in some of these areas.

In areas of Lower to Medium risk, there would continue to be development opportunities with people still able to extend their house, subdivide their property, and change the use of a building. However, there would be conditions on land use and development to improve the adaptability and resilience of any future development.

How we are identifying different levels of risk

The identification of different levels of risk was based on work by Jacobs with input from Council planners and technical specialists. It draws on data in the Coastal Hazards Assessment to define a range of ‘thresholds’ for different levels of risk, using different scenarios¹⁷.

To account for climate change and the impact of sea level rise, Jacobs and Council staff selected 60cm sea level rise by 2080 and 1.2m sea level rise by 2130 as the most appropriate to apply to both erosion and coastal flooding hazard scenarios. These scenarios reflect the closest sea level rise to the more conservative global projections as recommended by the Ministry for the Environment based on the data available for around 50 and 100 year timeframes.

The sea levels of 60cm and 1.2m also indicate higher and lower levels of certainty. All of the global projection scenarios forecast 60cm of sea level rise by at least 2130, so the effects will need to be managed in any case over the life of a development. However, 1.2m of sea level rise is only expected to occur in this timeframe based on conservative global projections. It still needs to be managed, but in a way that recognises the higher degree of uncertainty.

Maps showing areas of very low, low, medium and high risk are available at

ccc.govt.nz/plan-change-12

¹⁵Areas identified at a higher risk of river flooding that could cause harm are classified as High Hazard Management Areas. Similarly on the Port Hills, a graduated approach is taken with a more restrictive set of rules applying to properties subject to a higher risk of rock fall, cliff collapse and mass movement compared with other areas where there is a lower risk.

¹⁶ISO 31000: 2009, Risk Management – Principles and Guidelines;

¹⁷Scenario” refers to a combination of a future time period and climate change scenario (RCP) which together determine a projected rise in mean sea level or sea level rise and consequent increase in hazard.

Coastal flooding

Four different hazard zones of coastal flooding have been identified - High, Medium, Low and Very Low. They were determined using the three main factors which define flood risk:

- Likelihood of flooding (we used a 1 in 100 year event, being a 1% chance of it occurring in any year, which is reasonably likely to occur over the lifetime of a building).
- Consequence of flooding (we looked at depths of flooding which have the potential to cause damage, injury or harm)
- Change in likelihood and consequence in the future with sea level rise (60cm sea level rise is more certain, while 1.2m sea level rise is less certain).

Table 1: Recommended definitions for coastal flood risk mapping using the Coastal Hazards Assessment coastal flooding depth data (d = water depth from the Coastal Hazards Assessment for a 1 in 100 year flood event)

Possible District Plan hazard categories	Flood depths based on 60cm of sea level rise (higher certainty)	Flood depths based on 1.2m of sea level rise (lesser certainty)
Very low	(dry)	(d < 0.5m)
Low	(d < 0.5m)	(0.5m < d < 1.1m)
Medium	(0.5m < d < 1.1m)	(d > 1.1m)
High	(d > 1.1m)	(d > 1.7m)

Note: 'd' represents the depth of coastal flooding in a flood event, which factors in the sea level amount considered i.e. 60cm of sea level rise does not equate to 60cm of flooding.

This risk-based approach recognises that in areas where we have a higher degree of confidence that the hazard will occur and that the effects will be of a high consequence (such as over 1.1m of flooding with 60cm of sea level rise), this poses a high risk. Areas which could be impacted by similar depths of flooding, but only if sea levels rise much higher, is a less certain outcome, so at this stage it may only pose a medium risk.

The depths referred to in Table 1 were informed by international guidance from Australia and the UK and reflect the need to manage the safety of people who need to access, exit or use buildings during a flood, rather than just the building or activity affected.

In terms of flooding, the higher the level of risk, the greater the level of control needed to ensure that the risk is appropriately managed. Table 2 provides a high-level overview of the general approach to the level of controls that could apply to activities across a range of zones.

Erosion

Based on the Coastal Hazards Assessment and the type of coastal environment, two types of erosion zones have been identified (High-Medium and Low Hazard Areas) for the open coast and estuary, and a single zone elsewhere. In the High-Medium Hazards Areas, it is more likely that erosion will occur over a shorter timeframe. In any case, the consequence of erosion occurring is high (e.g. loss of land) so a restrictive approach is required (see Table 2).

You can read more information about how areas of coastal flooding and erosion have been identified at

ccc.govt.nz/plan-change-12

How the risk-based approach could be applied to activities

Generally, the higher the level of risk the greater the level of control needed to ensure that the risk is appropriately managed. Table 2 provides a high-level overview of the general approach to the level of controls that could apply to activities across a range of zones.

A more refined approach would be needed for activities within the risk areas reflecting the outcomes sought for different zones.

Regulatory control level ¹⁸	Enabled*	Regulated*	Restricted
	Permitted/Controlled	Restricted Discretionary / Discretionary	Non complying/Prohibited

* Subject to meeting standards and assessment criteria

Table 2: High Level Activity Status by Risk category

Activity		Emerging Level of Risk from Coastal Hazards			
Inundation		Very Low ¹⁹	Low	Medium	High
Erosion				Low ²⁰	High-Medium/ Single zone ²¹
Coastal Hazard management works	a) New and upgraded community flood and erosion protection structures				
	b) Maintenance works				
New Infrastructure	a) Strategic/ critical coastal infrastructure (port)				
	b) Critical infrastructure/ lifeline links (Road and rail networks)				
	c) Conventional infrastructure e.g. water, electricity, telecommunications				
New or extension to existing Dwelling; family flat on the same property.	Conventional design e.g. concrete slab fixed foundation				
	Innovative design e.g. relocatable or amphibious				
Non habitable building secondary to house e.g. garage.					
Recreation/ new facilities e.g. yacht/rowing clubs					
New commercial buildings/ places of work					
Non habitable buildings – sheds, farm buildings					
Health & Care facilities – e.g. new Health clinic & elderly peoples home					
Education facility – pre-school centre, school					
Fencing					
Subdivision for housing					

¹⁸This is based on the different types of activities described in sections 77A and 87A of the Resource Management Act.

¹⁹In areas of 'very low' risk, activities would be enabled with rules requiring minimum floor levels and safe exit from the building in the event of flooding.

²⁰This applies to the Low Hazard Coastal Erosion zone on the open coast of the City and around the Avon-Heathcote estuary.

²¹This applies to the High/High-Medium Hazard coastal erosion zones on the open coast of the City and around the Avon-Heathcote estuary; the beaches and bays of Banks Peninsula, Lyttelton Harbour and Akaroa Harbour; the setback from cliffs; and where there is land reclamation/ substantial hard protection structures along the southern shore of the Avon-Heathcote Estuary, Sumner Beach, Lyttelton Port and Akaroa Township.

Methods for managing the risks of coastal hazards through a risk-based approach

By using different methods in the District Plan, we can strike a balance between enabling land use and development so that people and communities can provide for their well-being, and health and safety, while ensuring that coastal hazard risks are addressed to avoid increasing the risk of harm.

These methods could include:

- Identifying **thresholds** within which development and activities are acceptable – for example, until a specified level of sea level rise is reached and further action is required. These actions could include relocating a building to higher ground or requiring a building to be removed.
- Requiring that **buildings are relocatable/removable or adaptable**²² without a specified threshold.
- Identifying and restricting **vulnerable/sensitive activities**. A range of activities are more vulnerable/sensitive to the effects from coastal hazards than others because they put more people at risk or those affected are more vulnerable (for example, the elderly). For example, residential activities are more sensitive than some business activities, as are facilities such as care homes where the residents may have restricted mobility and health conditions that limit their ability to respond quickly to hazard alerts. We need to be careful when considering any new development for sensitive activities and this, combined with the categorisation of areas of Very Low, Low, Medium and High risk, will inform the District Plan activity status and regulatory controls. The District Plan could either identify and list all potentially highly vulnerable activities, or it could use a criteria based approach that would consider factors such as:
 - Operational period - time of day
 - Number of users
 - Mobility of users
 - Evacuation potential
- Specifying **minimum floor levels** to reduce the likelihood of floodwaters entering homes.
- Requiring **specific types of building foundation or construction types or designs**, and site design that reduces the risk of damage while incorporating access requirements to ensure people can safely leave if the property is flooded.
- Requiring **setbacks**²³ from areas identified at risk of coastal flooding and/or erosion.
- Increasing **minimum lot sizes and reducing densities** to protect buildings from flooding by providing more spacing for flood water to pool on surrounding land.
- Developing **policy direction that is responsive to the decisions made through adaptation planning** and enables subsequent implementation without necessitating a plan change in all circumstances.

Where there is uncertainty about whether an activity would result in increased risk, a resource consent may be required to assess the level of increased risk of a proposal on a particular site, and other properties.

The coastal hazards policies and rules would be applied to areas identified as susceptible to coastal hazards, which would be additional to the zone rules, for example for Residential or Commercial Zones. They would not affect people's existing rights, unless existing use rights have been removed, either by Environment Canterbury under the Resource Management Act or in future by changes to the resource management system, which have been signalled by Central Government.

²²More information on these types of buildings is available in the Catalogue of Coastal Hazard Adaptation Options, available at www.ccc.govt.nz/adaptation-planning

²³More information on setbacks is available in the Catalogue of Coastal Hazard Adaptation Options, available at www.coastalfutures.nz.

Case Studies:

- 1** Alyson wants to build a house on a vacant section. Alyson's property is unlikely to flood in the next 30 years but beyond that, the section may start to flood in large storm events. In 70 years time Alyson's section could be flooded annually by up to 1m of water in a large storm.

This site is identified as having a medium risk of coastal flooding because it is not currently a high risk, but could have impacts of a high consequence in the longer term (beyond 30 years).

Alyson can get a resource consent to build, provided she can demonstrate the house can be relocated or designed to adapt to sea level rise, and that there is a safe evacuation route in the event of flooding.

- 2** Carl wants to extend his house of 100m² by adding an additional 50m² for a living area and bedroom at existing ground floor level. Even though Carl has never experienced flooding on his property, it is currently at risk of small amounts of flooding in a large storm event. In the next 10 years Carl's property may be flooded on an annual basis. A large storm could flood the house by more than 1m, including the area identified for the extension.

This site is identified as having a high risk of coastal flooding because it is expected to have high impacts in the short term (next 30 years).

Carl would be unlikely to get a resource consent because of the high risk of flooding in the near future.

- 3** Sam wants to subdivide his 1000m² section to create two 500m² sections. There has been no recent history of flooding on the land.

The site is identified as having a low risk of coastal flooding in the next 30 – 50 years.

Sam can apply for consent to subdivide and any subsequent development would need to meet floor level requirements.



Option 2 – Minimal changes (do minimum)

This option bolsters existing District Plan policies and rules with practical methods that would better manage risk, for example, requirements to raise floor levels and identifying areas of high risk where subdivision, land use and development would be restricted

This option involves relying on the existing objective of the District Plan below, which is generic to all hazards.

New subdivision, use and development (other than new critical infrastructure or strategic infrastructure)... is to be avoided in areas where the risks from natural hazards to people, property and infrastructure are assessed as being unacceptable, while ensuring that the 'risks of natural hazards to people, property and infrastructure are appropriately mitigated' in other areas (Objective 3.3.6 of the Christchurch District Plan).

The existing objective aligns with direction in the New Zealand Coastal Policy Statement and Regional Policy Statement and is therefore included as part of this option. However, the methods of achieving this objective, described below, would not give effect to either document to the extent that Option 1 would.

The change to the existing District Plan would be in the methods to achieve the existing objective including:

- Definition of coastal hazards on the planning maps
- Requirements for higher floor levels

- Inclusion of additional matters of discretion to enable assessment of the risks to subdivision, land use and development from coastal hazards
- Reliance would otherwise be on existing rules, where resource consent is already required for other reasons, to assess the risks of coastal hazards.

Methods of implementation in District Plan:

- Application of Objectives and Policies to the assessment of resource consents
- District Plan Rules & standards for flood hazard areas, which include coastal as well as inland areas.

This option is not preferred because land use, development and subdivision would likely continue to occur in areas at risk of coastal hazards, where resource consent is obtained, including on sites subject to coastal flooding and erosion over the next 100 years and beyond. This means there is a high likelihood that people and communities are exposed to harm/adverse effects at some time in the future. The lack of specific provisions also creates uncertainty for those living in and developing the area, and there is a risk of ad hoc and inconsistent decisions.

Option 3 – Avoiding activities that increase risk across the District

This option would seek to avoid all land use, development, and subdivision that increases any level of risk of harm or adverse effects from coastal hazards – within and outside of the existing urban areas.

Development, subdivision and land use activities would only be allowed where it can be demonstrated that there is no increase in 'adverse effects' – which means everything from physical effects on people and property, to environmental, economic, financial, social or other effects.

Opportunities for development, changes in land use, and improvements to existing developments would therefore be limited in affected areas. 'Non-complying' activity status would apply to subdivision and development, being activities that are not generally consistent with objectives of the District Plan and subject to additional requirements.

Methods of implementation in District Plan:

- Objectives and policies that seek to avoid new development in identified coastal hazard areas.
- Restrictive activity status requiring resource consent for most development, land use and subdivision.
- Non habitable buildings and recreational activities would continue to be enabled subject to meeting standards.

While this option provides the greatest resilience to future events, **it is not preferred** because it does not differentiate between relative levels of risk, and would therefore not reflect that the risk in one location could be quite different to another. We have a much better understanding of the different levels of risk and can respond accordingly.

Limitations on new development and increased costs are unlikely to be justified across the existing urban area, and outside of it. Option 3 would therefore be unduly restrictive.

Option 4 – Avoiding activities that increase risk outside the existing urban area while enabling a risk-based approach within the existing urban area

This option is a two-pronged approach, comprising elements of options 1 (risk-based approach) and 3 (avoiding activities):

- **It would seek to avoid land use, development, and subdivision that increase the risk of harm or adverse effects from coastal hazards, outside of the urban area.**

The opportunities for development and land use would be limited under this option unless it could be demonstrated that there is not an increased risk of harm or adverse effect. This would preclude further urban growth in areas where there is increased risk beyond the existing urban area.

- **In the existing urban area, it would take an approach of managing the risk to new development and changes in land use.**

Within urban areas, a managed approach would enable development and land use activities to occur in areas of lower risk while limiting development and land use activities in areas at high risk, removing or reducing the opportunities for further investment and development.

Urban areas includes those areas that are zoned for residential, commercial or industrial activities in the District Plan, are already built up and are serviced by infrastructure. The Canterbury Regional Policy Statement defines existing and future urban areas in Map A: ecan.govt.nz/your-region/plans-strategies-and-bylaws/canterbury-regional-policy-statement

Methods of implementation in District Plan:

- A combination of Options 1 & 3 above.

This option is not preferred because it does not reflect the differences in the nature of the hazard which has a strong influence on the level of risk. As a result, there could be unnecessary restrictions on people's ability to develop outside the urban area. Conversely, within urban areas, it may not adequately manage development in areas at higher risk where avoidance may be more appropriate.

We want to hear from you

We are at the start of this plan change process and we want to hear from you. We have a preferred option that we believe would best manage coastal hazards in the District Plan, but we want your feedback on the issues and options for addressing these before we go any further.



- Which option do you think is the most appropriate way forward?
- Are there other options we should be considering?
- Are there other types of innovative development e.g. relocatable or amphibious that could be considered suitable within areas of low or medium risk?
- Are there other types of vulnerable/susceptible development or activity that need to be more carefully managed in areas of risk?
- Should the District Plan manage areas at risk of a tsunami?
- Should we have specific policies and rules on groundwater, or rely on policies and rules for managing coastal flooding?



If you have any questions call Mark Rushworth, Senior Planner **03 941 8809**

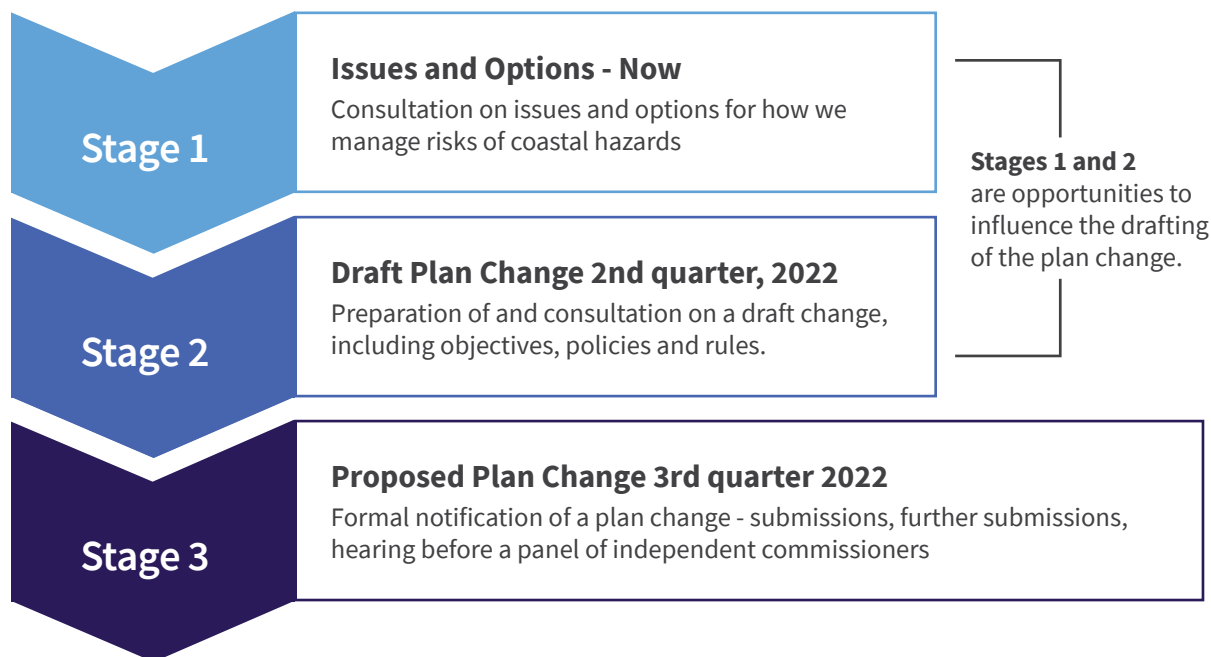
To give your feedback, go online to

ccc.govt.nz/haveyoursay

Next steps

Preparing the draft change to the District Plan

We will consider the feedback received on this issues and options paper, and then prepare a draft change to the District Plan. Currently we are planning to have a draft plan change completed in the first half of 2022 for informal feedback. We'll then invite submissions on it as part of the formal notification process under the Resource Management Act.



Stage 3 is a statutory process which starts with notification of the Plan Change, when we invite submissions. After this, further submissions can be made, supporting or opposing what others have said. This will be followed by a hearing before an panel of independent commissioners who will make recommendations to Council on whether the Plan Change is approved or rejected. By appointing an independent panel, we want to ensure there is thorough testing of the Plan Change and supporting documents.

Resource Management reforms and the timing of the Plan Change

The Government is proposing a reform of the planning system, including replacement of the Resource Management Act. Changes proposed include the replacement of District Plans and regional planning documents with a single plan for each region, being Canterbury. It will take time for new plans to be prepared and for the Christchurch District Plan to be replaced.

Managing the risks of hazards remains a priority in the emerging reforms and existing national direction in the New Zealand Coastal Policy Statement is not anticipated to change significantly²⁴. With this in mind, and given the risks to communities of coastal hazards, we think there is a need to act now and to start a conversation on how land use and development is managed in the future.

²⁴The governments proposed National Planning Framework proposes the “consolidation of national direction” rather than significant changes to the direction (para. 101 of Cabinet Paper https://environment.govt.nz/assets/Publications/Cabinet-papers-briefings-and-minutes/cabinet-paper-reforming-the-resource-management-system_1.pdf)

²⁵Simonson, T., & Hall, G. (2019). *Vulnerable: the quantum of local government infrastructure exposed to sea level rise*. Wellington: Local Government New Zealand.

²⁶Parliamentary Commissioner for the Environment. (2015). *Preparing New Zealand for rising seas: Certainty and Uncertainty*. Wellington

²⁷The 2021 Coastal Hazard Assessment data would potentially impact around 16,000 properties across the city and Banks Peninsula. Of these, around 15,000 are at risk of coastal flooding and 1,000 are at risk of erosion over the next 120 years. The 2017 Coastal Hazard Assessment also included areas further up the rivers, where coastal flooding is less dominant (but remains a factor) and from that assessment, approximately 9,000 additional properties (outside of the 2021 assessment) are also likely to experience some coastal flooding.

Appendix A: Issues to be addressed by a Plan Change

Managing risks to areas and communities of coastal hazards

Christchurch communities have lived through the devastating impacts of the Canterbury earthquakes and understand the importance of being proactive in addressing known risks.

Data on sea level rise and climate change continues to be updated, and our knowledge of the extent and nature of potential risks associated with this is improving. However, despite the increasing risk from coastal hazards, the levels of investment in residential property in areas exposed to coastal flooding in Christchurch (and in urban centres across New Zealand) are continuing to increase.

As a region, Canterbury has around \$1B of local government owned infrastructure exposed to coastal hazards, the majority of which is in Christchurch. As sea levels rise, Canterbury has the most public infrastructure exposed to coastal hazards in New Zealand²⁵.

As a city, Christchurch is more exposed to coastal hazards than either Auckland or Wellington²⁶. Across the Christchurch District approximately 25,000 properties are exposed to coastal hazards risks over the next 120 years²⁷. NIWA estimates that with 1m of sea level rise, the replacement value of buildings is approximately \$6.7B, the majority of which are residential properties²⁸.

We need consistent and up-to-date direction in the District Plan to manage development, subdivision and land use in areas affected by coastal hazard risks. People, property and infrastructure could otherwise be at risk of harm, damage and loss in the future. Assets in these areas will become increasingly exposed to damage, and some may become uninsurable. There will likely be increased costs of recovery, together with reduced productivity and associated impacts on economic growth for both property/business owners and the district. In addition, the potential harm to future residents and visitors could be significant. This will also increase social costs as people and communities recover from natural hazard events that have adversely impacted them.

National and regional requirements, and legislative compliance

National and regional direction to manage the risks of coastal hazards:

- Both the Christchurch City Council and Environment Canterbury are responsible for managing the risks of natural hazards and work together in an integrated way to manage land use activities and development. This integration is achieved, in part, through the Regional Policy Statement and Canterbury Regional Coastal Environment Plan, which contain policies and rules relating to the wider coastal environment.

Objective 11.2.1 of the Regional Policy Statement directs that in Canterbury any new subdivision, use and development that increases the risk to people, property and infrastructure is avoided, or where avoidance is not possible, mitigation measures minimise such risks.

- Policy 25 of the New Zealand Coastal Policy Statement directs that councils across New Zealand avoid increasing the risk of social, environmental and economic harm from coastal hazards, in areas potentially affected by coastal hazards over at least the next 100 years. In identifying areas potentially affected by coastal hazards, Councils are to prioritise the identification of those areas at high risk of being affected²⁹.
- In planning for coastal hazards under the Resource Management Act, the Council is required to control the effects of land use and development in a way that avoids or reduces the effects of hazards on people and property.

The District Plan needs to be reviewed every 10 years and must implement national direction in the New Zealand Coastal Policy Statement 2010³⁰ and regional direction in the Canterbury Regional Policy Statement 2013³¹ about how land use activities and development should be managed in areas at risk from coastal hazards. The current District Plan provisions were developed prior to the New Zealand Coastal Policy Statement and the Regional Policy Statement. Consequently, those provisions do not define the full extent of areas at risk of coastal hazards, and only manage some activities. For example, the City Plan has rules only for an area 20m from around the high tide mark³², and the Banks Peninsula District Plan only considers the risk of coastal hazards for subdivision, not development.

²⁸NIWA. (2019). *Coastal Flooding Exposure Under Future Sea-level Rise for New Zealand*. Wellington: The Deep South Challenge.

²⁹Policy 24 of the NZCPS

³⁰Prepared by the Department of Conservation

³¹Prepared by the Canterbury Regional Council

³²Mean High Water Springs mark

Furthermore, the opportunity to respond to coastal hazards through new ways of building is not currently expressly supported by the District Plan. Options for better enabling communities to adapt and live with the changing hazards, including relocatable or removable houses or innovative forms of housing such as floating or amphibious homes, are not specifically identified in the District Plan. Instead, they are treated the same as traditional forms of housing under a broader category of residential activity. A plan change would provide an opportunity to consider how different approaches could be better enabled.

The Council has previously notified possible changes to the District Plan on coastal hazards as part of the District Plan review in July 2015. However, the government (at the request of the Council) amended the Canterbury Earthquake (Christchurch Replacement District Plan) Order in Council in 2015 to recognise that coastal hazards were not a recovery matter that required a fast-tracked process. The amendment removed coastal hazard provisions from the District Plan review and directed that the Council address that separately. This plan change is intended to take this process forward and enable the Council to fully meet its statutory obligations to review the District Plan, and to give effect to the New Zealand Coastal Policy Statement and Regional Policy Statement. Undertaking a comprehensive review of how we manage the risks of coastal hazards through the District Plan now will provide greater certainty as to where the New Zealand Coastal Policy Statement applies and what it means in a Christchurch context, and will improve the future resilience of the district to these growing risks.

You can read more information about regional and national guidance in the Coastal Hazards Management Framework summary. This is found in the Reference Library at:

ccc.govt.nz/adaptation-planning

Appendix B: Assessment of options

Each option has been assessed against the following criteria:

- Effectiveness in achieving the objective of ensuring that coastal hazard risks are addressed by managing activities in areas prone to coastal hazards, having regard to the level of risk.
- Effectiveness in enabling people and communities to provide for their social, economic and cultural well-being and their health and safety
- Benefits
- Cost implications
- Responsive to risk of hazards and changes in the level of risk over time (this acknowledges that the District Plan needs to be flexible enough to respond to changing circumstances while also continuing to enable people and communities to provide for their wellbeing).

Consideration	Option 1 (Preferred option) Risk-based approach	Option 2 Do minimum	Option 3 Avoidance of the risk of harm across District	Option 4 Avoid outside urban area, risk based approach within rural areas
Effectiveness in ensuring that coastal hazard risks are addressed by managing activities in areas prone to coastal hazards, having regard to the level of risk	Option 1 manages subdivision, land use and development in a way that risk of harm or damage is avoided, having regard to the level of risk. In areas exposed to the risk of harm, for instance, depths of coastal flooding pose a risk to life, this option seeks to avoid development being located in these areas.	Option 2 enables the risks of coastal hazards to be managed where resource consent is otherwise required. However, it does not adequately manage all subdivision, land use and development in areas at risk, and could result in harm to people, the environment and the economy.	Option 3 reduces the risk of exposure of subdivision, land use and development by seeking the avoidance of harm from coastal hazards. This contributes to improved resilience.	Option 4 reduces the risk of exposure, similar to option 3, in rural areas. In doing so, it will avoid the location of urban expansion into rural areas that may not be suitable for development. This option is as effective as Option 1 in the urban area.

Effectiveness in enabling people and communities to provide for their social, economic and cultural well-being and their health and safety	<p>Option 1 enables subdivision, land use and development in areas of risk where the effects of coastal hazards can be adequately managed.</p> <p>In areas of lower risk, this option provides for the ongoing use of land and development until such time that the risk emerges i.e. sea levels reach a defined point. In doing so, it enables people to provide for their social and economic well-being.</p>	<p>Option 2 enables subdivision, use and development where resource consent is not required or is otherwise enabled by the plan.</p> <p>While introducing additional matters of discretion for restricted discretionary activities, it is more permissive than the other options and similar to the status quo.</p>	<p>Option 3 restricts people and communities in how they use their property in seeking to avoid subdivision, land use and development that increases any level of risk of harm. In doing so, it does not enable people to provide for their social and economic well-being to the extent as other options.</p>	<p>Option 4 provides measured flexibility to enable new activities within established urban areas at risk subject to appropriate mitigation. It is therefore as effective as Option 1 in the urban area.</p> <p>In rural areas, the effectiveness of this option is as described for Option 3. It could harm the ability of rural communities to meet their social and economic needs.</p>
Benefits	<p>Option 1 is enabling of development where there is a lower level of risk, providing certainty of opportunities for subdivision, land use and development.</p> <p>It also provides certainty for landowners by clearly defining the extent of areas exposed and enabling landowners to plan, even if the risk is deemed high.</p>	<p>Option 2 provides flexibility for landowners where resource consent is currently not required, consistent with the status quo. In doing so, there is a reduced level of regulation compared with the other options.</p> <p>It provides certainty for those in areas subject to risks of coastal hazards by increasing awareness of the risk.</p>	<p>Option 3 provides for resilience by restricting subdivision, land use and development, avoiding further risks of harm.</p> <p>In defining the extent of areas exposed, it provides certainty for communities while increasing awareness of the risks of hazards. It gives people a level of confidence that Council is acting to address the risks of climate change.</p>	<p>This option supports an outcome of urban growth being located away from areas at risk of coastal hazards. In doing so, it provides confidence to communities that Council is acting to address the risks as well as providing certainty in defining areas exposed to hazards.</p> <p>In urban areas, this option is enabling in the same way as option 1.</p>
Costs	<p>In managing the risk of harm, there are reduced economic and social costs of recovery (including repair and rebuilding) from future events relative to the status quo, allowing communities to recover faster.</p> <p>This option has the potential to increase compliance costs relative to the status quo, due to controls on subdivision, land use and development that do not exist at present. Methods to mitigate the risk may result in additional costs of development e.g. higher floor levels.</p> <p>This option limits or precludes development opportunities in areas defined as having a high risk of harm. This may reduce investment and property values, leading to a reduced level of amenity.</p>	<p>Option 2 does not manage the risk posed by coastal hazards for all subdivision, land use and development. While it will reduce the costs of recovery relative to the status quo, it will continue to result in harm to communities in the absence of comprehensive management of the risks. This will contribute to costs from repair and rebuilding.</p> <p>There are additional compliance costs with floor level requirements introduced where they may not apply at present and additional matters of discretion for restricted discretionary activities.</p>	<p>Option 3 will have reduced economic and social costs of recovery (including repair and rebuilding) from future events relative to the status quo, allowing communities to recover faster.</p> <p>Option 3 would introduce a high level of additional regulatory burden, with costs associated with a consenting process.</p> <p>While resource consent may be obtained, this option may reduce the potential for subdivision, land use and development across all areas identified as prone to coastal hazards. This would lead to reduced levels of investment and property values, leading to reduced levels of amenity.</p>	<p>This option would have the same costs for rural landowners as option 3.</p> <p>Option 4 would not provide an equitable approach for land owners and developers across the district, increasing the regulatory burden for rural communities more than urban areas.</p> <p>In not having regard to the different levels of risk, it places a burden on landowners wishing to use or develop their land. Even if consent may be obtained, it necessitates a consenting process.</p>
Responsive to risk of hazards and changes in the level of risk over time	<p>Option 1 enables a nuanced approach to managing risk, with restrictions varying according to levels of risk.</p> <p>It allows communities to make informed decisions that avoid increasing risk.</p> <p>The categorisation of areas at risk has regard to changing sea levels. It does this by defining areas with a lower level of risk where coastal flooding / erosion is not anticipated to occur in the short term.</p>	<p>Option 2 is not comprehensive in managing risks where resource consent is already required. It is therefore not responsive to the risk of hazards where activities are otherwise enabled by the District Plan.</p> <p>The option includes the identification of areas of risk. In doing so, people and communities are better informed of risks and can respond as they see fit where there is not a requirement for resource consent.</p>	<p>Option 3 fails to recognise differing levels of risk across the District and unnecessarily restricts subdivision, land use and development even where there are changes in risk e.g. sea levels not rising at the rate anticipated.</p>	<p>Option 4 uses the spatial extent of the urban area to determine the approach for managing risks, which does not have regard to varying levels of risk in rural areas. It is therefore a blunt approach that is not responsive to the nature or extent of risk and places greater restrictions in areas that are less populous and where there is a lower level of development.</p>

Coastal Hazards District Plan Change
