Korero mai | Let's talk Adapting to sea-level rise

Purau

Let's find a way

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Let's talk about sea-level rise in Purau

We know that sea levels are rising in response to climate change. Locally, they've risen by more than 10 centimetres over the last 15 years in Whakaraupō Lyttelton Harbour. We expect to see a further 14 to 23 centimetres by 2050, and between 38 centimetres and 1 metre by 2100. Over time, this is going to have a big impact on how we live, use and move around our coastline and low-lying inland areas. We don't have all the answers about what life is going to look like in the future, but we know there are some important decisions we can all be making now to make sure we're better prepared.

You can help us all get ahead of the impacts of sea-level rise in Purau and the wider Whakaraupō Lyttelton Harbour to Koukourarata Port Levy area by being a part of this kōrero.

Kōrero mai | Let's talk

Head online to **letstalk.ccc.govt.nz** to find out more about this and other draft adaptation pathways and provide your feedback. Alongside Purau, we're also wanting feedback on draft adaptation pathways for Koukourarata Port Levy, Allandale, Teddington, Te Wharau Charteris Bay and Rāpaki.

You can pick up a consultation booklet for any of the other areas at Lyttelton and Diamond Harbour libraries, or get in touch with us and we'll send them out to you.

You need to give us your feedback by 10 December 2023.

Phone us on 03 941 8096 or email letstalk@ccc.govt.nz

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Te Hapū o Ngāti Wheke Inc is the Papatipu Rūnanga legal entity that represents Ngāti Wheke, the hapū with manawhenua status over the Whakaraupō basin and surrounding areas as outlined in the Port Cooper Deed. This entire area is culturally significant to Ngāti Wheke and sustains the hapū. Te Hapū o Ngāti Wheke has a strategic plan, a key part of which is the protection and enhancement of the whenua, moana and awa. Ngāti Wheke hopes to be a part of the leadership in climate action for future generations.

Mō tātou, ā, mō kā uri ā muri ake nei. For us and our children after us.

Christchurch City Council recognises the rangatiratanga of Ngāti Wheke over its whenua and is working in partnership to plan for impacts on public assets and places of value.

Timeline

2021

You provided feedback on the Coastal Adaptation Framework and Catalogue of Coastal Hazard Adaptation Options. Members of the community expressed interest in joining the Whakaraupō Lyttelton Harbour – Koukourarata Port Levy Coastal Panel.

2022

The Coastal Adaptation Framework was adopted by the Council. The Coastal Panel was established.

2022-2023

You told us what you value most about living in the area. The Coastal Panel turned this information into community objectives that were shared with the public.

The Coastal Panel identified six Priority Adaptation Locations to focus on in this round of planning based on the level of exposure to coastal hazards. These locations were shared with the public.

Each adaptation option was considered for alignment with the community objectives by the Coastal Panel. The options were also scored for effectiveness, feasibility, and environmental impact by the Specialist and Technical Advisory Group, alignment with mana whenua values by rūnanga, and the Council's guiding principles by Council staff.

Private property owners at risk from coastal hazards in the short term have been contacted directly with more information about their individual risk.

Here now

Based on this information and input, the Coastal Panel has drafted adaptation pathways for each Priority Adaptation Location and is seeking your feedback.

2023-2024

Preferred pathways will be identified and shaped up with greater detail. These will be shared with the public for input.

Preferred pathways will be presented to the Council for a decision to either accept, amend or reject the recommendation.

Our conversation to date

This isn't the first conversation we've had with you about coastal hazards, and it won't be the last.

Guided by your feedback to date, the Coastal Panel has drafted adaptation pathways that outline different ways we could address the risks from coastal hazards in Purau over time. The process to come up with these draft pathways has been supported by the Specialist and Technical Advisory Group.

Before we go any further with this work, we'd like to know what you think about these pathways, to make sure we're on the right track.

On the left is a reminder of the work to date and what's yet to come.

The Coastal Panel is a diverse group of 13 community members and rūnanga representatives from the Whakaraupō Lyttelton Harbour and Koukourarata Port Levy area, alongside a couple of city-wide representatives. The Coastal Panel will present adaptation pathways for each Priority Adaptation Location to the Council, who will make the final decision on whether to accept, amend or reject the pathways.

The Specialist and Technical Advisory Group is made up of various experts from across a range of fields and organisations. It supports the Coastal Panel's decision-making by providing information, advice and guidance.



What we've heard from you so far

Last time we touched base, you told us what you value about living in Purau and the wider Whakaraupō Lyttelton Harbour to Koukourarata Port Levy area, and the things you'd like to see in the future. The Coastal Panel turned this important feedback into community objectives (see below), which were shared in early 2023. The panel has since used these objectives to help come up with adaptation options and to guide the development of adaptation pathways.

In your feedback to us it was clear that some of the things you value most about Purau are:

"Being surrounded by nature", with just "a short walk up the valley to pockets of native bush and fantastic bird life", and having the ability to "walk along the beach and Camp Bay Road".

Having "access to the harbour" and "swimming off the jetty and beach, kayaking, paddle-boarding and launching our boat".

Having a "beautiful, tranquil place to live" with "a great community and atmosphere".

You also have a clear vision about what you do and don't want to see in the future:

You want to see "safe and reliable access" and "thoughtful roading with alternative routes should the ocean rise above the existing roading".

You want to see "increases in native vegetation" with "native bush to the shoreline where possible" to support "more birdlife".

You don't want to see "more building on land in lower-lying areas" and in at-risk areas.

These are all things the Coastal Panel has kept in mind when thinking about how to address coastal hazards in Purau.

Community objectives

Community resilience

Foster the preparedness of communities (current and future) to determine how best to support themselves through times of disaster and disruption.

Community and culture

Retain a sense of community, social connectivity and sense of place by recognising the importance of heritage, identity, community spaces, places (such as parks and marae) and neighbourhoods.

Infrastructure

Ensure infrastructure, such as roads, jetties, waste, communications, electricity and water networks, are sufficiently resilient to support the health, safety and wellbeing of communities now and in the future.

Access to natural areas

Protect and enhance access to the land and the sea for mahinga kai, cultural activities, recreation, leisure and enjoyment for current and future generations.

Environment and landscapes

Protect landscape amenity and protect the natural environment for mahinga kai, natural resources and native biodiversity.

Important features in Purau

The natural environment

The inter-tidal mudflats and cobble beach in Purau add to the overall ecological value of Whakaraupō Lyttelton Harbour, providing important habitat for sea and estuarine bird species. The mudflats are also home to shellfish and cockles, which are significant for their mahinga kai value.

The beach in Purau is highly valued by locals and visitors for recreation. As sea levels rise, there's a risk that both the beach and mudflats - and their ecological and recreational values – will be lost, unless room is made for this environment to shift inland as conditions change.

The roads

Purau Avenue, Camp Bay Road and Purau-Port Levy Road are all vulnerable to coastal hazards. Purau Avenue and Purau-Port Levy Road provide key access to Purau and through to Koukourarata Port Levy. An average of 600 and 300 vehicles use these roads respectively each day. Purau Avenue is particularly vulnerable to flooding and rising groundwater because it's low-lying and close to the outlet of Purau Stream.

Camp Bay Road is a low-volume road that provides access to properties on the eastern side of the Purau and through to Camp Bay. During peak holiday seasons around 100 people use this road every day. The section of Camp Bay Road in Purau Bay is particularly at risk of erosion because it's close to the beach.



A pair of oystercatchers down on the beach.



A bird's-eye view of Purau.

Community facilities

Purau has several community facilities, including:

The jetty and boat ramp in Purau are valued and well-used community assets, providing one of the only inter-tidal boatlaunching facilities in the harbour. Both assets are currently at risk from coastal hazards and will become increasingly impacted as sea levels rise. They have some protection from the rock armouring that protects Purau Avenue. The boat ramp is scheduled for a major upgrade at some point over the next 12 months, which aims to improve its access and resilience. There are no works planned for the jetty which is currently maintained as needed.

The Purau Recreation Ground, the esplanade reserve – which runs up either side of Purau Stream for a distance – and the strip of foreshore reserve that sits between the beach and road are all at risk from coastal hazards. The recreation ground has a playground and temporary toilet facilities (the original toilet has been closed since the Canterbury Earthquakes), both of which are at risk of coastal hazards. The foreshore reserve is often used for parking and is already experiencing erosion in some places. Over time, rising sea levels will cause greater erosion of the foreshore reserve which will result in increased risk of flooding and ponding at the recreation ground.

Purau will be increasingly impacted by coastal hazards

Coastal flooding, coastal erosion and rising groundwater all pose a risk to Purau. The images below show that as sea levels rise, the area will experience deeper flood events and the public assets in the area will become more and more at risk. The floodwater will also stay around for longer as groundwater levels rise and it gets harder for surface water to drain away into the soil. Areas at risk of erosion are likely to lose land at a faster rate as sea levels rise.

It's important to note that while we have a good understanding of how coastal hazards will impact us, it's hard to predict the rate at which sea levels will rise further in the future. The rate of change will depend on global greenhouse gas emissions and what impact this has on our climate. If different tipping points are reached, it's possible we'll see sea levels rise much more quickly. That's why it's important to have a plan in place for the future of our coastal communities.

Current sea level



1m sea-level rise

40cm sea-level rise

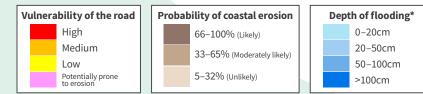


2m sea-level rise





These images show how this area will be affected by coastal hazards as sea levels rise, during a 1-in-100-year-storm event. Over this time, the roads will become more and more at-risk.



*In many places, the areas at risk from flooding are also at risk from rising groundwater.

Important things to know

- While we're planning for communities as a whole, the Council will focus its public funds towards public infrastructure. In Purau, this means the focus of adaptation planning will be the public roads, the foreshore reserve, the recreation ground and facilities, and the jetty and boat ramp, some of which are more critical than others.
- While the Council is focusing its planning on public assets, we're aware that privately owned assets are also at risk, and some property owners will feel anxious and uncertain about their future. We've prepared a factsheet for property owners, which you can find on our website at **ccc.govt.nz/coastalhazardsinfo**
- It's also important to note that some adaptation options and pathways will, if progressed, have an impact on private property owners. For example, if privately owned land needs to be purchased to allow for things like building a new road, or if Council-owned assets are moved away from their current location, this may affect nearby properties. You might want to follow the Council's work over time so that you'll be aware if it affects you directly.
- Some adaptation options for the Whakaraupō Lyttelton Harbour to Koukourarata Port Levy area would need significant investment from residents and ratepayers, yet may only benefit relatively small numbers of people. The Council and residents have limited resources and need to balance the considerable investments needed for climate adaptation with other investments needed across the district. It's also important to remember that any major works will take time to happen. These factors mean we'll all need to learn to live with some of the impacts of rising seas and a changing climate.
- Given these challenges, there's no guarantee that existing Council assets will be maintained and available into the future. The closure, removal, or retreat of different assets are options that may be considered for any asset in response to changing conditions and needs across the district.
- We don't yet have all the information about what these options might look like if put in place, but we think it's important to get your thoughts on them now, before we invest time and money drawing up plans that might not align with the community's views for the area.



What can we do about coastal hazards in Purau?

The road, reserves, jetty and boat ramp are all at risk from current and future coastal hazard impacts. If nothing is done, coastal hazards will increasingly cause road interruptions and closures, making access to and through Purau more difficult. The area will become damper as groundwater levels rise and flooding occurs more often, making the reserve areas and public toilet less useable. The shorefront will be eaten away by erosion, impacting the road and access to the beach. The ability to access and use the boat ramp and jetty will also become harder over time.

The Coastal Panel has considered the workable options that would address the risks to each of these assets. These options are set out in the section titled 'Adaptation pathways'.

Sometimes, the way we decide to address the risks to one asset will have an impact on how other assets could be affected by coastal hazards and the options we have available to manage those risks. In Purau, the decision to either protect the roads in their current location or move them out of the hazard zone will have a big impact on the other assets.

The Coastal Panel has identified two approaches that help to show how different adaptation options might fit together. These are outlined on the opposite page.



1. Hold the line

We could flood-proof and protect the at-risk sections of road in their current location for several decades. This option could be used to buy a bit more time or a lot more time before we need to switch to a 'work with nature' approach and move away from coastal hazards.

Over the long term, holding the line would involve a combination of coastal protection, raising the road, improved drainage, and groundwater pumping. Over time, this means the mudflats, beach and foreshore will be lost as sea levels rise and reach the hard edge of the road.

Under this approach, the recreation ground would be given some protection from coastal hazards, but it's likely it would become boggy and unusable over time. One option would be to build a new, flood-proofed toilet facility on a higher part of the reserve which could be used in the short term and then moved when the reserve becomes too wet to use, access is lost, or when the risk of flooding becomes too great.

Maintaining and improving existing rock armouring along Purau Avenue would also protect access to the jetty and boat ramp. The resilience of these structures could be improved for some time through flood-proofing – which may involve raising the jetty and boat ramp and adding to the existing armouring – or the existing jetty could be replaced with a more resilient one.

2. Work with nature

In time, it may be better to move at-risk sections of road away from the shorefront and out of the hazard zone, creating a new way to access Purau and connect to Purau-Port Levy Road and Camp Bay Road. This option could be used when it becomes harder and more expensive to maintain the road – likely around 10 to 25 years from now – or when actions to protect the road ('hold the line') become less effective.

Removing these sections of road would provide space for the mudflats, beach and foreshore to move inland as sea levels rise, meaning they will continue to provide recreational and ecological benefits. We could also encourage the naturalisation of the reserve and recreation ground through the planting of native plants that would provide some small defence against coastal hazards and enhance the ecological values in the area.

As mentioned, the recreation ground will become wetter as groundwater levels rise and eventually become too boggy to use. The options for the toilet are workable under both approaches.

Depending on which sections of road are relocated, it's possible that access to the wharf and boat ramp might be affected over time. The resilience of these structures could be improved for some time through flood-proofing as described above.

Both of these approaches come with their own opportunities, risks and costs, and they may need to be used at different times or could be more appropriate for some assets than others. Regardless of what we do, it's going to get harder, more expensive and environmentally disruptive to keep public assets in this area, particularly near the shorefront where coastal erosion, flooding and groundwater all pose a risk.



Adaptation pathways

The adaptation pathway maps on the following pages help to show which adaptation options could be used to address the risks of coastal hazards for each asset. How we use or combine these options over time is something we want your feedback on.

Acting at the right time is an important part of a pathway. For example, it's hard to predict when it will become too costly and disruptive to keep repairing the road, and it's likely some parts will have issues before others. To get around this uncertainty, we'll make the decision to move from one option to another based on signals and triggers. In other words, we'll act when we start to see changes in conditions. The Coastal Panel will be thinking about what these signals and triggers might look like in more detail.

Some key terms explained

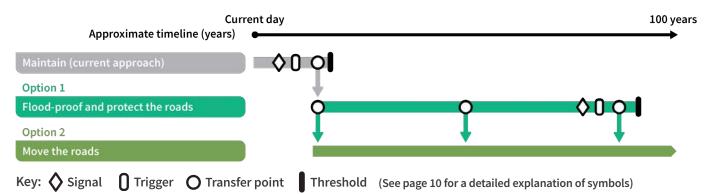
- Signals are early warnings that the current option isn't working and that a different one will be needed soon. Signals may be environmental, such as sea-level rise, or other indicators such as increasing maintenance costs.
- **O** Triggers happen after signals and tell us it's time to act and change options. Making changes to infrastructure, like roads, can take a long time, so it's important that triggers take these lead-in times into account, before a threshold is met.
- Transfer points indicate switching from one option to another.

Thresholds are conditions we want to avoid or a level of risk that's unacceptable. Identifying thresholds helps us to understand when we need to put a new option in place. In some cases, a threshold might reflect the community's tolerance for something (such as road closures) and can be shaped by community input.



Roads

Maintaining the at-risk sections of Purau Avenue, Purau-Port Levy Road and Camp Bay Road is expected to become harder and more expensive over time. The adaptation pathway map below shows that at a certain point – likely around 10 to 25 years from now – changing conditions will mean maintaining the existing roads is no longer worth the increasing costs and disruption. As we near this point, we could look to flood-proof and protect the roads to different levels to buy us a bit more time or a lot more time. Alternatively, we could move the roads straight away, or wait until a point in time when flood-proofing doesn't work as well, and then move them.



Options	Opportunities	Risks
	It'd allow the roads to be used for longer in the same location.	The work would impact the environment and may be hard to consent.
Flood-proof and protect the roads	The short-term costs would be lower than moving the road.	
('Hold the line' approach)	Flood-proofing and protection can be done in many ways for different lengths of time, making it a flexible option.	The road would be more resilient for a time but still in a risky area.

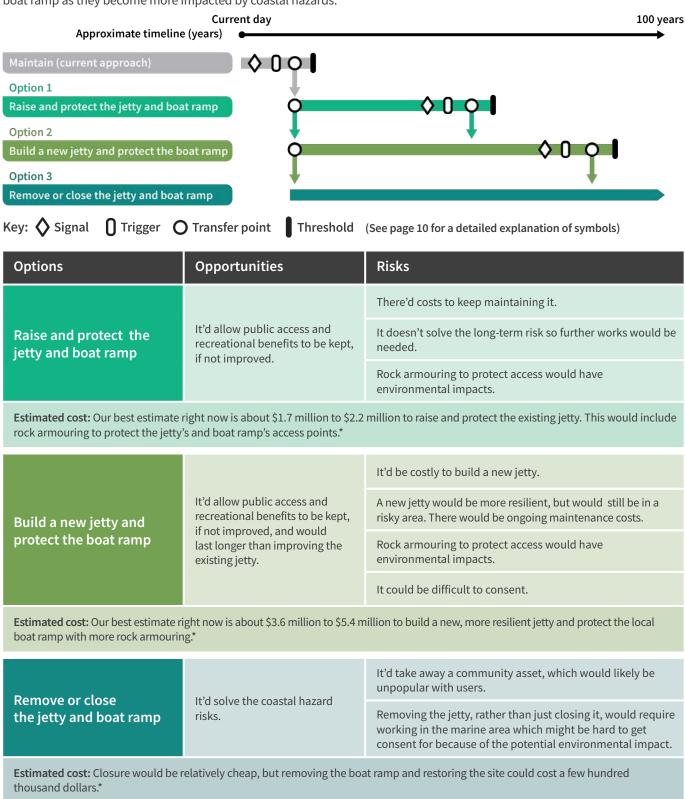
Estimated cost: Our best estimate right now is about \$15 million to \$22 million to protect and raise at-risk sections of Purau Drive and Camp Bay Road by one metre.*

Move the roads	It'd completely avoid the risk of coastal hazards, providing long-term access.	It'd likely require the purchase of private property at some point in the future, which the Coastal Panel and the Council acknowledge could be a difficult process for the landowners.
('Work with nature'	It'd reduce the future maintenance costs.	
approach)	The mudflats, beach and foreshore could move inland in response to rising sea levels, protecting ecological and recreational values.	Property owners may need new access routes to and from their homes.

Estimated cost: Our best estimate right now is about \$37 million to \$55 million to move at-risk sections of Purau Drive and Camp Bay Road away from coastal hazards.*

Jetty and boat ramp

The jetty and the boat ramp are both at risk from coastal hazards, although planned upgrades will increase the resilience of the jetty for a time. The structures themselves and the ability to access them will be increasingly impacted by coastal hazards. The adaptation pathway map below shows that in around 10 to 25 years from now, a decision will need to be made to either flood-proof and protect the existing jetty, or build a new and more resilient jetty in the same location, or close the jetty and/or boat ramp as they become more impacted by coastal hazards.

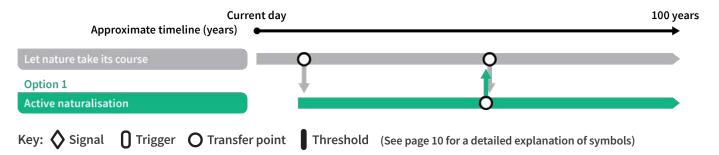


Reserve

As sea levels rise, we expect the reserve areas will be increasingly impacted by coastal flooding, rising groundwater and coastal erosion.

The adaptation pathway map below helps to show that while the reserves may continue to function in the same way for a time, nature will eventually take its course. This will mean the shorefront reserve is increasingly eroded and the recreation ground will become damper and difficult to use.

The pathway map shows that we could do very little and let this area change naturally over time, or we could take a more active approach and plant and landscape these areas to better support ecological values. This could happen straight away or once the reserves can no longer be used and maintenance becomes too difficult. These decisions are something we want your feedback on because they'll influence the way the area can be used.

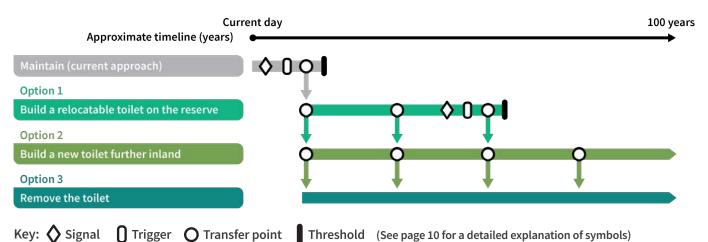


Adaptation option	Opportunities	Risks
Naturalise the reserve	There's an opportunity to encourage the regeneration of native ecosystems in the area which would benefit local wildlife.	There'd be an upfront cost to do any planting, landscaping and other development if an active approach was taken.
	After some upfront costs, there'd be low ongoing maintenance costs to support the regeneration.	
		The way we use this space would change over time. This change would happen more quickly if we took a natural approach.

Estimated cost: To naturalise the reserve, a number of different things could be done. We could do very little and allow the area to change naturally as sea levels rise. Or we could do things like landscape and plant natives to support the restoration of the area. Depending on the scale of work, this option could have a low cost (tens of thousands of dollars) or a much higher cost if large amounts of planting and landscaping was undertaken, potentially over \$1 million.*

Public toilet

Temporary toilet facilities have been in place in Purau since the permanent toilet was damaged in the Canterbury Earthquakes. The toilet is located on the recreation ground which is vulnerable to coastal hazards, particularly coastal flooding and rising groundwater. The adaptation pathway map below shows that a decision needs to be made about whether to build a new, resilient and relocatable toilet facility on the recreation ground, or in a new location further away from the hazards, or whether to remove the toilet altogether.



Options	Opportunities	Risks
Build a relocatable toilet on the recreation ground	An improved toilet facility on the recreation ground would be less at-risk than the current one.	Even with flood-proofing, the surrounding area will still be impacted and very damp at times, getting worse over time.
	It could be moved when needed.	There would be an option to raise the land under the toilet, which may affect how water floods and pools in the area. This effect could be very minor if the area raised was small.

Estimated cost: Our best estimate right now is about \$380,000 to \$580,000 to build a relocatable toilet on the Purau Recreation Ground.*

Build a new toilet further inland	It'd reduce the risk from coastal hazards.	The toilet may not be used often enough to justify the high costs for this option.
	It's a long-term solution.	Requires finding a suitable site, this may require land purchase.

Estimated cost: Our best estimate right now is about \$770,000 to \$1.2 million to build a new toilet and purchase land to place it further inland.*

	It's the most cost-effective option.	There'd be no toilet facilities available in Purau for public use.
Remove the toilet	It'd reduce the number of public assets at risk from coastal hazards.	The removal of the toilet may lead to fewer people using the recreation ground or to people using the environment as a toilet instead, or both.

Estimated cost: Our best estimate right now is about \$115,000 to \$170,000 to remove the existing toilet and restore the site afterwards.*

Moving around the harbour in the future

The main road here and in other communities around the harbour is at risk from coastal hazards, placing the whole network under threat. Over time, it may be realistic and necessary to live with more frequent road disruptions and inconveniences as storms and king tides cause damage. There are also other hazards, such as landslips, that will impact the roads more in the future. Better communication about road closures and detours, such as timely updates to a website or to people's phones, could help road users plan their trips or plan to work from home when it's a better option.

Similarly, jetties, wharves and boat ramps could provide alternative access during or after extreme weather events. In the long term, water access may even provide an alternative to roads, but this would depend on things like the size of the populations that would benefit from it and the cost and alternatives.

Help us plan for Purau's future

Let us know what you think by 10 December 2023.

Your feedback will help the Coastal Panel work out which combination of options to put forward to Christchurch City Council as the preferred pathway for Purau, once the options have been developed in greater detail. If approved by the Council, this pathway will guide the management of the public assets in this area over the coming decades – so it's important we get as much feedback from communities as possible.

Spread the word and make sure your friends and whānau living in the area also have a chance to shape their futures.



Online (preferred): letstalk.ccc.govt.nz

Email: letstalk@ccc.govt.nz

Deliver to: Attention: Krystle Anderson, Engagement Advisor Te Hononga Civic Offices at 53 Hereford Street

by 10 December 2023

Post to: Freepost 178 (no stamp required) Adapting to sea-level rise Attn: Krystle Anderson, Engagement Advisor Christchurch City Council PO Box 73016 Christchurch 8154

Let's find a way





Webinars

We're holding online webinars to talk about the options and to answer questions.

Rāpaki and Allandale Wednesday 8 November, 6–7.30pm

Teddington and Charteris Bay Wednesday 15 November, 6–7.30pm

Purau and Koukourarata Tuesday 21 November, 6–7.30pm

If you're unable to attend, the webinars will be recorded and uploaded

to our webpage and can be watched anytime.

Please register online at letstalk.ccc.govt.nz



Community meetings

If there's a community meeting you'd like us to attend, please let us know. You can also phone to speak to us.

Krystle Anderson, Engagement Advisor 03 941 8096 letstalk@ccc.govt.nz Help us all get ahead of the impacts of sea-level rise in the wider Whakaraupō Lyttelton Harbour to Koukourarata Port Levy area by being a part of this kōrero.



Find out more about the draft adaptation pathways and provide your feedback.



You need to give us your feedback by 10 December 2023.

