

Kōrero mai | Let's talk

Adapting to sea-level rise

Koukourarata Port Levy

Let's find a way

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Let's talk about sea-level rise in Koukourarata Port Levy

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 Koukourarata Port Levy 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 Koukourarata Port Levy, we're also wanting feedback on draft adaptation pathways for Allandale, Teddington, Purau, 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 Rūnanga o Koukourarata is a legislated authority (Ngāi Tahu Claims Settlement Act 1998) and represents the many hapū and whānau on the northern bays of Te Pataka o Rakaihautū Banks Peninsula. The hapū has a long history in the area, including the landing of the waka taua Makawhiu. The harbour at Koukourarata is known as Te Ara Whānui o Makawhiu. The entire area is culturally significant and sustains the hapū and whānau that live there. To ensure this continues, Te Rūnanga o Koukourarata has a 500-year strategy, Te Mahi Tamariki – for our future generations. The embodiment of the strategy has three pou: Tāhua Taiao (Environment), Tuakiri Taketake (Indigenisation), Toiora Takata (Health and Wellbeing). Protecting the environment and people will always be the forefront for the hapū. Te Rūnanga o Koukourarata will be a part of the leadership in climate action for the 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 Te Rūnanga o Koukourarata over the 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 Koukourarata Port Levy 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 Koukourarata Port Levy 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 the following community objectives, which we shared earlier this year. These community objectives have been used by the Coastal Panel to weigh up options and guide the development of the draft adaptation pathways.



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

“The peace and quiet”, “the lack of people”, “coastal landscapes” and “the abundant native wildlife” that make the area so tranquil.

The “great sense of community”, “whakapapa, traditional whānau settlement, and marae”.

Having “easy access to the water” and the “ability to feed our families from the sea”.

Having “access to the wharf” and “the ability to kayak, paddleboard, swim or sail in the harbour”.

Some of your key concerns for Koukourarata Port Levy centred around the roads:

You want to see a “functional, smooth coastal road and access to Koukourarata”, with a “better road to Pigeon Bay and Akaroa Harbour as an alternative”.

You don't want to see “Port Levy being cut off due to road issues”.

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



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 Koukourarata Port Levy

The roads

Purau-Port Levy Road, Fernlea Point Road and Pa Road are local roads that provide important access to Koukourarata Port Levy. Around 200–350 vehicles use these roads each day during the peak holiday season. The roads provide an alternative access route for some communities and are used for agriculture, logging activities, by pedestrians and seasonally by tourists. Sections of the roads, and also the less-used Wharf Road and Old Port Levy Road, are vulnerable to coastal hazards, particularly Pa Road which is only metres from the high-tide line in places.

The wharf

Historically used to export goods alongside the transportation of animals and passengers, the wharf is still a highly valued asset in Koukourarata Port Levy. It's mainly used for recreation now, but it remains accessible and could be used in the event of an emergency if roads in and out of the area were closed. The wharf already floods during spring and king tides, and rising sea levels and the larger storms expected in the future will only increase the impacts of this.

The natural environment

At the head of Port Levy Bay tidal mudflats and inter-tidal zones support a range of native salt-tolerant plant species, such as sea rush and glass wort, and shellfish, such as cockles, which are significant for their mahinga kai value. The mudflats merge into a diverse saltmarsh ecosystem as the land rises. These ecosystems are nationally rare and threatened because humans have changed many of the natural environments they live in. Together with the shingle fans that form around stream outlets across the bay, the saltmarsh provides important habitat for the estuarine birds and seabirds that feed and roost in the area. A range of bird species can be found here at any time, including the South Island pied oystercatcher and the reef heron, a nationally endangered species.

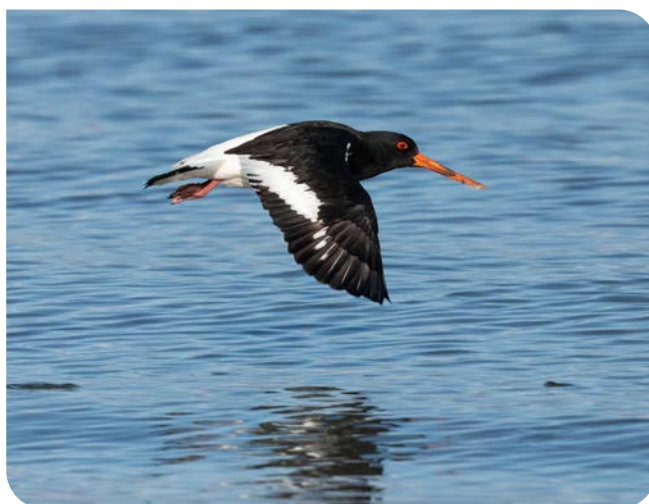
It's important to note that there are other assets and places of value in Koukourarata Port Levy that are not public. Close collaboration with Te Rūnanga o Koukourarata will be needed to support the long-term management of the area.



Coastal flooding of Jetty Road in Koukourarata Port Levy during a king tide in August 2023.



The wharf at Koukourarata Port Levy.



A South Island pied oystercatcher in flight.

Koukourarata Port Levy will be increasingly impacted by coastal hazards

Rising groundwater, coastal flooding and coastal erosion all pose risks to Koukourarata Port Levy. It's also significantly impacted by stream flooding, the effects of which will only get worse as sea levels rise. The images below show that as sea-level rise happens, the area will experience deeper flood events over larger areas. The floodwater may 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 from 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



40cm sea-level rise



1m 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.

Vulnerability of the road	
	High
	Medium
	Low
	Potentially prone to erosion

Depth of flooding*	
	0–20cm
	20–50cm
	50–100cm
	>100cm

*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 Koukourarata Port Levy, this means the focus of adaptation planning will be the public roads, the wharf, and the public toilet, 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/coastal hazardsinfo
- 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 Koukourarata Port Levy?

The wharf and parts of Purau-Port Levy Road, Fernlea Point Road, Wharf Road and Pa Road are all at risk from coastal hazards. If nothing is done, coastal hazards will increasingly cause road interruptions and closures, making it harder to move around and in and out of Koukourarata Port Levy. The area around the shorefront will become damper as sea levels rise and flooding occurs more often. The wharf will be increasingly affected, becoming unusable during flood events and high tides. The parking area and public toilet that support the public use of the wharf will also be affected.

It's important to note there are other important assets and places of value in Koukourarata Port Levy that are not public. Close collaboration with Te rūnanga o Koukourarata will be needed to support the long-term management of the area.

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 manage one asset will have an impact on how the other assets could be affected by coastal hazards and the options we have available to manage those risks. In Koukourarata Port Levy, the decision to protect the roads in their current location or to move them out of the hazard zone will have an impact on 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 wharf and at-risk sections of road in their current locations for several decades. This option could be used to buy a bit more time or a lot more time, depending on the amount of investment before we need to switch to a 'work with nature' approach and move away from coastal hazards.

Long term, holding the line would involve a combination of coastal protection, raising the road and improved drainage. Some of these options might impact the ability of water from the streams, or heavy rain events to drain away from behind the road. Improved drainage, such as new or larger culverts, may be needed to ensure private properties aren't affected.

Over time, the mudflats, beach and foreshore will be lost in some areas as sea levels reach the hard edge of the road.

The existing wharf could be flood-proofed by raising the deck above predicted future flood levels. This would increase its resilience to coastal hazards for a time and ensure it was available as a way to access the community in the event of an emergency, particularly if the roads were closed. The land to either side of wharf would need to be armoured to protect against erosion and ensure the wharf is accessible. Armouring this section of foreshore would also provide some protection to the land directly behind, but it may increase the rate of erosion in neighbouring, unprotected areas.

A new flood-proof and removable toilet, or a temporary one, could be built in a location with less coastal-hazard risk.

2. Work with nature

In time, it may be better to move at-risk sections of the road away from the shorefront and out of the hazard zone, to help keep access to the community. This option could be used when it becomes harder and more expensive to maintain the roads – likely in around 10 to 20 years from now – or when actions to protect the road ('hold the line') become less effective.

Building new sections of road will be very expensive and difficult. To build new roads, we'd need to purchase private property at some point in the future, which the Coastal Panel and the Council acknowledge could be a difficult process for the landowners. Relocating Pa Road would mean crossing over Māori land or Papakāinga zones, so it could only be considered as an option with the support of Te Rūnanga o Kōkourarata.

Once new access is built, existing roads could either be removed, or maintained to a lower standard until no longer workable. Removing the existing sections of road would provide space for the mudflats, beach and foreshore to move inland as sea levels rise, meaning they'd continue to provide ecological and recreational benefits.

In time, a new wharf could be built further inland, giving it more resilience against flooding and keeping it available as a way to access the community in the event of an emergency. Under this approach, the foreshore would not be armoured, providing it with space to naturally adapt to rising sea levels.

The toilet would be removed from its current location. There would be an option to build a new, removable or temporary toilet outside of the hazard zone (away from the foreshore) if a suitable location could be found.

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. Importantly, 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.
- **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.

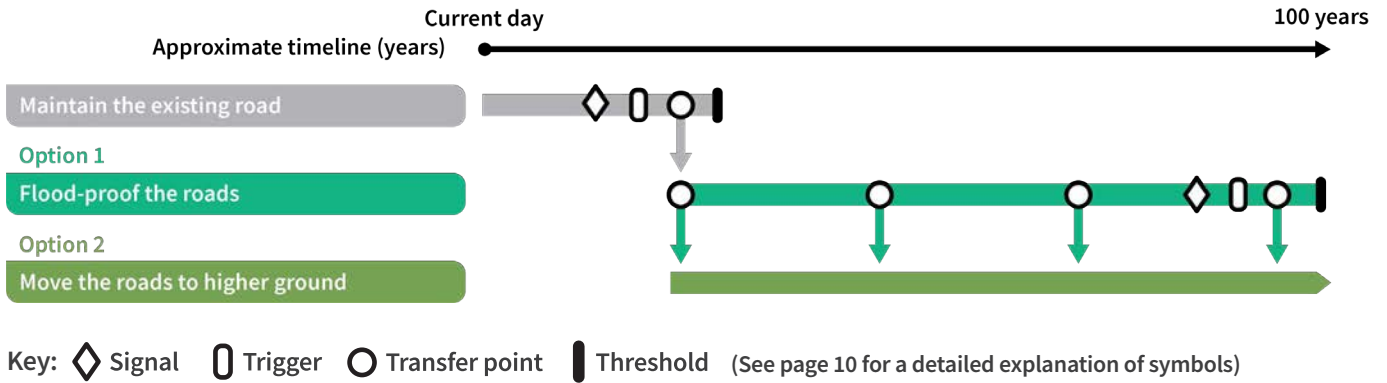
- **Transfer points** indicate switching from one option to another.
- ▮ **Thresholds** are conditions we want to avoid or a level of risk that's unacceptable. Identifying thresholds helps us to understand when we need to put a new option in place. In some cases, a threshold might reflect the community's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



Roads

The adaptation pathway map below shows that at a certain point – likely around 10 to 20 years from now – changing conditions will mean action is needed to avoid increasing maintenance costs and disruption. As we near this point, we could look to flood-proof the roads to different levels to buy us a bit more time or a lot more time, depending on the type and scale of work.

Alternatively, we could look to move the roads sooner, or at a point when flood-proofing the roads becomes less effective.



Options	Opportunities	Risks
Flood-proof the roads (‘Hold the line’ approach)	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.
	The short-term costs would be lower than moving the road.	The road would be more resilient for a time but would still be located in a risky area, meaning there will be ongoing costs.
	Flood-proofing and protection can be done in many ways for different lengths of time, making it a flexible option.	Raising the road could affect the way water drains from local streams, heavy rain and storm events.

Estimated cost: Our best estimate right now is about \$52 million to \$62 million to protect and raise at-risk sections of Fernlea Point Road, Pa Road, Purau-Port Levy Road and Wharf Road by one metre.*

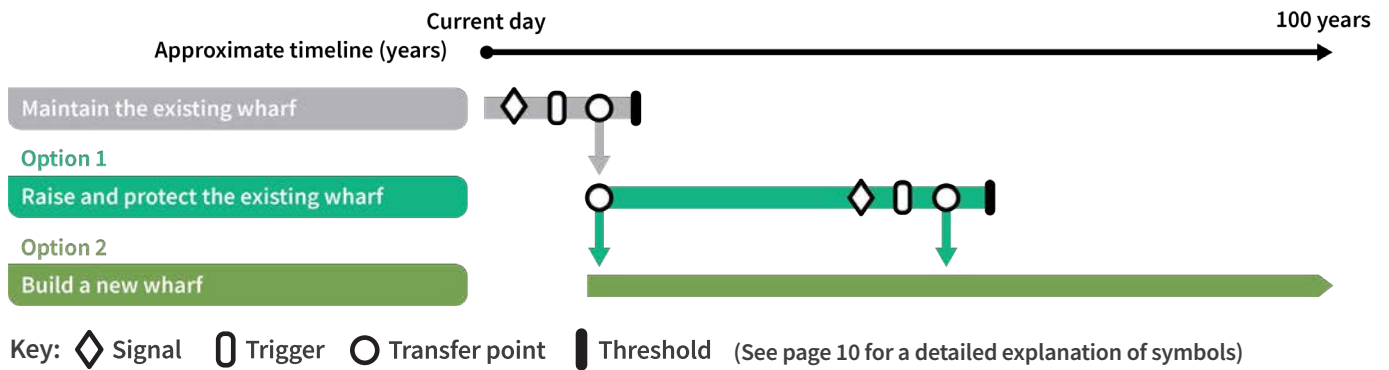
Move the roads to higher ground (‘Work with nature’ approach)	It’d completely avoid the risk of coastal hazards.	Suitable land would need to be found to move the road to. This may mean the purchase of private property. In other areas, the new road would potentially cross over Māori land or Papakāinga zones and could only be considered with the support of local rūnanga.
	It’d reduce future maintenance costs.	It’d be very expensive to build a new road. Property owners may need new access routes to and from their homes.
	The mudflats, beach and foreshore could move inland in response to rising sea levels, protecting ecological and recreational values.	While this road is very important to its users, its usage numbers are low when compared to other roading projects of this scale across the district. This could be a challenge when trying to weigh up the large cost of moving it versus spending the money on other projects or options.

Estimated cost: Our best estimate right now is about \$26 million to \$40 million to relocate the most at-risk sections of Fernlea Point and Pa Road and provide long-term access to Koukourarata. It is unlikely that we would look to relocate at-risk sections of Old Port Levy Road and Wharf Road, because the low levels of use would make it hard to justify the cost.*

*We don’t yet have enough information to understand exactly what the cost of this option would be.

Wharf

The adaptation pathway map below helps to show that at a certain point – likely around 2 to 10 years from now – changing conditions will mean maintaining the wharf is no longer workable and upgrades will be needed. As we near this point, we could flood-proof the wharf to extend its useable life, but how long this lasts would depend on the type and scale of work carried out. Alternatively, a new wharf could be built sooner, or at a point when the cost to maintain the existing wharf becomes too great.



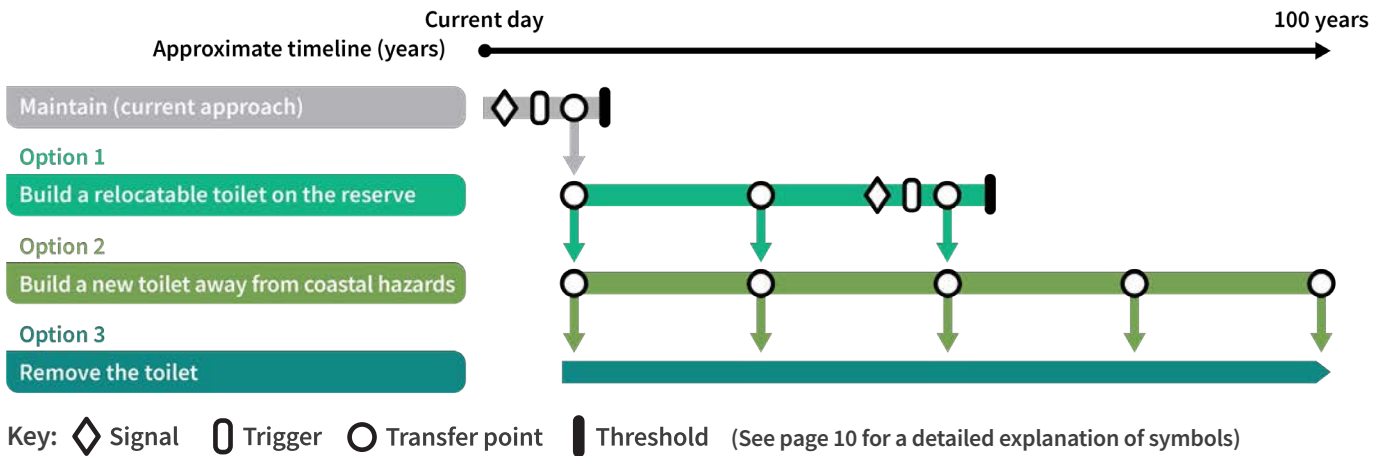
Options	Opportunities	Risks
Raise and protect the existing wharf	It'd allow public access and recreational benefits to be kept.	The wharf would be more resilient for a time but would still be located in a risky area, meaning there will be ongoing costs.
	The wharf would be available to use in the event of an emergency to get in and out of the community if roads were closed.	The work would impact the environment and may be hard to consent.
Estimated cost: Our best estimate right now is about \$1.3 million to 2 million to raise and protect the existing wharf.*		
Build a new wharf	A new wharf would be more resilient, and access could be improved.	It would cost a lot to build a new wharf and there'd be ongoing maintenance costs.
	There'd be an opportunity to improve the recreational and economic benefits of the wharf.	The work would impact the environment and may be hard to consent.
	The wharf would be available to use in the event of an emergency to get in and out of the community if roads were closed.	
Estimated cost: Our best estimate right now is about \$4.3 million to 6.5 million to build a new, more resilient wharf in Koukourarata.*		

*We don't yet have enough information to understand exactly what the cost of this option would be.

Public toilet

The adaptation pathway map below helps to show that the location of the current toilet isn't suitable and that something will need to be done. Even at current sea levels, king tides cover the area surrounding the toilet.

We could look to build a new toilet on higher ground along the shorefront and flood-proof it to buy extra time. Alternatively, we could look to relocate the toilet further away from the hazard zone or remove it altogether.



Options	Opportunities	Risks
Build a relocatable toilet on the reserve	Alternate locations would be less hazardous than the current one.	The toilet would be more resilient for a time but still in a risky area.
	A toilet would be available for visitors and locals.	A suitable site would need to be found and agreed on with local whānau.
	A relocatable toilet could be put in place until the coastal-hazard risk was too great, at which point it could be moved to a different, more suitable location.	There'd be a possible risk to the environment because of how close the toilet would be to the coast.
Estimated cost: Our best estimate right now is about \$185,000 to \$275,000 to build a relocatable toilet on the shorefront reserve.*		
Build a new toilet away from coastal hazards	It'd reduce the risk from coastal hazards.	There's no public land further from the coastline that would be suitable for a new toilet's location.
	It'd be a long-term solution.	The toilet may not get enough use to justify this option.
Estimated cost: Our best estimate right now is about \$400,000 to \$600,000 to build a new toilet further inland.*		
Remove the toilet	It's the most cost-effective option and would reduce maintenance costs.	There'd be no toilet facilities in Koukourarata available for public use.
Estimated cost: Our best estimate right now is about \$50,000 to \$75,000 to remove the existing public toilet and restore the vacated area.*		

*We don't yet have enough information to understand exactly what the cost of this option would be.

Moving around in the future

The main roads in Koukourarata and in many surrounding communities are 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 Koukourarata Port Levy'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 Koukourarata Port Levy, 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



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

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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.

letstalk.ccc.govt.nz

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

