

# Rāpaki



**The Rāpaki area** is significantly elevated and generally out of reach of coastal flooding and rising groundwater impacts. However, over time, as sea levels rise, we should expect the shorefront to become increasingly impacted by coastal erosion which will affect green spaces, the local urupā and public walkway, as well as private properties and wastewater and drinking water pipes.

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.

	Short-term	Long-term
Coastal flooding	Yellow	Yellow
Coastal erosion	Orange	Red
Rising groundwater	Yellow	Yellow

The colours in this table\* show how exposed this area is to each of the coastal hazards and are indicative only. Yellow refers to low exposure to the hazard, orange to moderate exposure and red to high exposure.

## Environmental setting

On the northern shores of Whakaraupō-Lyttelton Harbour, Rāpaki is located within a steep valley, beneath the mountain Te Poho o Tamatea (the breast of Tamatea). The shoreline at Rāpaki is comprised of near-vertical cliffs (west), a rocky beach and revetment (middle) and a sandy beach (east). The Rāpaki Bay Mātaitai Reserve is recognised to support mahinga kai – areas of food gathering, valued habitats and diverse ecosystems.

\* The table is intended to provide a sense of what hazards are most relevant to the location and how severe the impacts might be. The colouring has been informed by Christchurch City Council's 2021 Coastal Hazard Assessment and data held by the Council about risks to assets.

# Rising seas

## Sea level rise

The long-term record at Lyttelton Port tells us that sea level rose by around 30cm between 1901 and 2018, at a rate of 2.2mm/year. Over this period the rate of sea level rise increased slightly.

Projections from the Intergovernmental Panel on Climate Change (IPCC) indicate that we should expect between 17-23cm of sea level rise to occur by 2050, and 52cm-1m by 2100 depending on how significantly we are able to reduce greenhouse gas emissions.

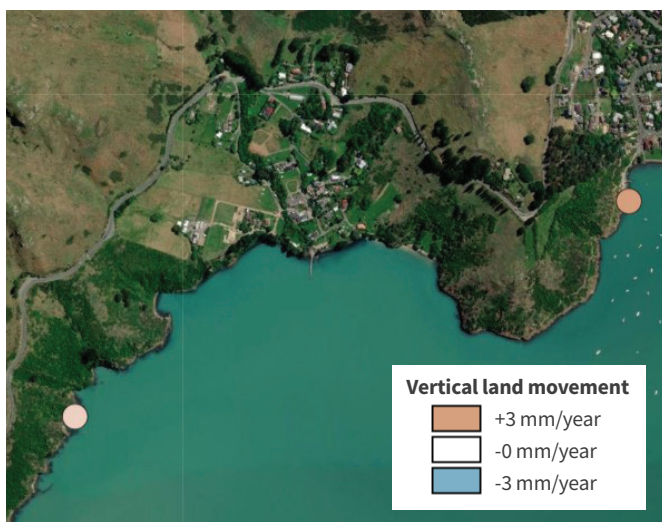
The amount of sea level rise that we experience can also depend on where we are located within New Zealand, because the land that we stand on also moves.

## Vertical land movement

The NZ SeaRise Programme ([www.searise.nz/](http://www.searise.nz/)) estimated local rates of land movement to help us understand where land is going up (uplift) and where it is going down (subsidence). These changes in land level, known as vertical land movement, can slow local rates of sea level rise in areas experiencing uplift and speed up sea level rise where land is subsiding.

**When thinking about how we can adapt, it is useful to understand ‘relative sea level rise’ which includes the effects of local vertical land movement.**

The areas around Rāpaki have historically been relatively stable, with minor uplift occurring at a rate of between 0.6-1.0mm/year. If this rate of uplift continues over the next 30 years (to 2050), the rate of sea level rise could be slowed by roughly 10 percent, from around 6.5mm/year to around 5.8mm/year.



Land is shown to be uplifting, as per orange-coloured dots (Source: NZ SeaRise). There is uncertainty associated with this data, so this information should be considered indicative only.



Te Poho o Tamatea (mountain).

## Coastal hazards in Rāpaki – today

Like all coastal areas in the harbour, the Rāpaki shorefront can be affected by storm surge, which is a temporary rising of water levels that occurs during a low pressure weather system. The height of the land means that there is no real risk of coastal flooding or rising groundwater in Rāpaki.

Storm surge will however cause erosion, particularly when it occurs during spring or king tides or during southerly winds which create waves in the harbour. The water off the Rāpaki coast is relatively deep, meaning it is affected by bigger waves than other areas in the harbour with shallower water.

A rock revetment has been installed along the Rāpaki shorefront in the past to stop the land from eroding.

You might have photos or stories about previous storms in this area. If you would like to share these with us then please get in touch at [coastalcommunities@ccc.govt.nz](mailto:coastalcommunities@ccc.govt.nz)



Coastal flooding extent and depths with 40cm of sea level rise during a rare (1 in 100 year) storm event – sourced from Coastal Hazard Assessment 2021 (Tonkin & Taylor).

## Coastal hazards in Rāpaki – the future

### Coastal flooding & rising groundwater

Due to the height of the land, rising sea levels are unlikely to increase the risk of coastal flooding and rising groundwater. The image above shows the projected flooding extents and depths with 40cm of sea level.

### Coastal erosion

With higher sea levels in the future, the Rāpaki shorefront will be impacted by erosion more frequently and to a

greater extent over time, making this the most relevant hazard for the area. Erosion will cause the loss of land via the undermining and collapse of the beach, banks and cliffs. The image below shows the storm erosion distances we can expect with 40cm of sea level rise. The maximum erosion distances are around 30m, meaning that this much land could be lost to coastal erosion.



This image shows the probability of storm term erosion with 40cm of sea level rise. The dashed orange lines represent areas of cliff prone to future instability. The brown areas are where more detailed assessment has been undertaken and show the probability of short-term storm erosion – sourced from Coastal Hazard Assessment 2021 (Tonkin & Taylor).



## What is at risk?

Coastal hazard impacts will increase as sea levels rise. At Rāpaki, this is likely to mean poorer access to the beach as the hillside starts to erode. Residential properties and the historic Rāpaki schoolhouse located close to the beach could be impacted, as could wastewater and drinking water pipes.

Rāpaki is a culturally significant area and the loss of land from coastal erosion is not only about the risk to physical assets and spaces, but also the social, cultural and spiritual connections to place. In particular, it is recognised that coastal erosion threatens the urupā located near the shorefront. Christchurch City Council will support Te Hapū o Ngāti Wheke to plan for such risks.

## Where to find out more:

- Christchurch City Council webpage on coastal hazards and adaptation planning [ccc.govt.nz/adapting-to-coastal-hazards/](https://ccc.govt.nz/adapting-to-coastal-hazards/)
- Christchurch City Council coastal hazards portal [gis.ccc.govt.nz/hazard-viewer/](https://gis.ccc.govt.nz/hazard-viewer/)
- NZ SeaRise webpage, for information on sea level rise and vertical land movement [www.searise.nz/](https://www.searise.nz/)