

Tai Timu Tai Pari

# Sea change

Hauraki Gulf Marine Spatial Plan

## HAURAKI GULF MARINE SPATIAL PLAN

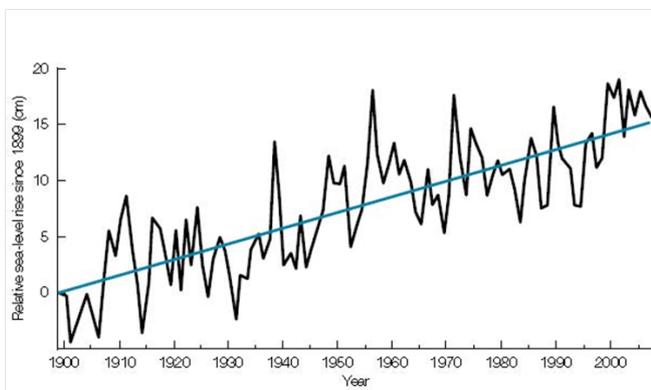
### SEA LEVEL RISE

Sea level rise is a natural process that occurs over thousands of years. It is primarily linked to the oceans getting warmer (known as thermal expansion) and the melting of ice caps and glaciers. The changing climate plays a role in sea level rise as a warmer planet affects the melting of glaciers and ice caps, and heats the sea, causing thermal expansion.

We are currently in an interglacial period where the ice caps are melting. This interglacial period started about 20,000 years ago when the sea was approximately 120-130m lower than present levels. At this time, the Hauraki Gulf was a river valley and New Zealand's three main islands were joined together as a single island (see map).

Sea levels are continuing to rise. As shown in the graph below, the sea level around the Hauraki Gulf has risen by around 15cm over the last century.

#### Trend of sea level change in the Hauraki Gulf



Annual mean relative sea-level data [black line] from the Port of Auckland, Waitemata Harbour, and the sea-level trend line [straight blue line] (1899–2007). Source URL: <http://www.mfe.govt.nz/publications/climate/preparing-for-coastal-change-guide-for-local-govt/html/page1.html>

#### How high will it go?

Most climate change researchers agree that global temperatures will continue to rise, and sea levels will continue to rise as well.

When it comes to predicting the amount of sea level rise we can expect the numbers vary, but the currently accepted estimates suggest we can expect another 0.5m of sea level rise from current levels by the end of this century.

Planning guidance from the Intergovernmental Panel on Climate Change and Ministry for the Environment suggests that over the next 100 years we should be planning for an increase of at least 0.8m.

#### Potential effects

Predicted sea level rise will affect low-lying areas and estuaries. This will influence where people live, work and play and put pressure on our coastal environment.

As the sea moves landward coastal habitats like salt marsh and coastal wetlands will need to move as well. This shift in habitats is known as inland migration.

In many instances inland migration may encroach onto private land or reserve areas. At the same time landowners are likely to want to protect their land from inundation using structures like stopbanks. This could result in habitats having nowhere to migrate to, which will shrink their size and function.

Rising sea level will also increase the rate of land erosion at the coast and the extent of coastal flooding and damage during high tide and storm events. Within the existing built environment, planning should include strategies to manage the likely increased risk from sea level rise, such as increased coastal erosion and inundation. The New Zealand Coastal Policy Statement 2010 provides guidance on these matters.

## Sea level rise map



Source: Keith Lewis, Scott D. Nodder and Lionel Carter. 'Sea floor geology - The continental shelf', Te Ara - the Encyclopedia of New Zealand, updated 4-Sep-13  
URL: <http://www.TeAra.govt.nz/en/map/5599/new-zealands-coastline-in-the-ice-age>