

Sellicks Beach

Coastal Adaptation Study

Assessing the coastal impacts of rising sea levels

What did the study investigate and why?

Changes in our climate are causing sea levels to rise over the long term. The aim of the Coastal Adaptation Study was to understand how people, the natural environment and built assets might be impacted by rising sea levels. This information will help council and other stakeholders, such as state government and private landowners, to plan and take action for the future. The study was undertaken by consultancy Integrated Coasts with input from Flinders University coastal experts.

The study is just another step in an ongoing journey of adaptation that is likely to take place over the coming years, decades, and even centuries. Our next step is to engage with our communities and develop a Coastal Adaptation Plan that responds to the identified risks and lays the groundwork for effective coastal management now and into the future.

The City of Onkaparinga has already completed extensive coastal adaptation work over previous decades. Our long history of proactive coastal adaptation means that we have built a solid foundation upon which to respond to future coastal hazards and climate risks.

What is coastal adaptation?

Coastal adaptation involves adjusting our practices in response to the impacts of our current and expected climate. This means identifying actions to manage our coastline that provide benefits across many sectors (e.g. safety, tourism, health, environment and recreation). It also means avoiding things that would make it more difficult to cope with coastal hazards and climate risk in the future.

There is a range of potential adaptation options available in the areas of planning, engineering, environmental management, and community awareness and education.

Onkaparinga's coastline is of significant cultural, social, environmental and economic value to the Kurna people, our wider communities and visitors.



Cell: 12

Sellicks Beach

What were the focus areas of the study?

Onkaparinga's coastline was divided into 12 sections or coastal 'cells', with a separate report prepared for each cell. This fact sheet summarises the key findings for the Sellicks Beach cell.

There are fact sheets available for the other 11 coastal cells. There is also an 'About the project' fact sheet explaining the study and its overall findings in more detail.

How has each cell been studied?

The study investigated the current and future risks (for now, 2050 and 2100) to built assets, people and ecosystems located along Onkaparinga's coastline in the context of projected global sea level rise. A range of data was gathered to inform the analysis.

The nature of the coastline was analysed, for example, whether the coast is sandy or rocky, or whether it is at low elevation or high elevation.

The history of each cell was evaluated to see how the coast in that area has changed over time and how people have interacted with it in different time periods.

The impacts of various storms and tides have been modelled using a 3D computer model to assess current risks and also the future risks associated with sea level rise. The study has adopted South Australian Coast Protection Board sea level rise policy projections for a 0.30m rise by 2050 and a 1.00m rise by 2100, which the board believes is based on the best available advice, including advice from the Intergovernmental Panel on Climate Change.

The impact of previous storms was studied, including the storm of 9 May 2016, which was the highest storm on record in Gulf St Vincent. This storm was significant because it almost reached the risk level set by the South Australian Coast Protection Board known as the 1-in-100-year extreme event.

Taking into account current risks from actions of the sea and the risks from projected sea level rise, the study has evaluated the risks to public assets, private assets, public safety and the potential for disruption to ecosystems. For example, a low-lying freshwater ecosystem would be disrupted if sea water flowed into the area.

Historical comparison

We compared aerial photographs of Sellicks Beach from 1949–2018 to assess how much the coastline has changed over time and where available, we have also used land-based photography to assess coastal change and the impact of storms. For example, historical analysis of aerial photos in the vicinity of the Sellicks Beach onramp showed approximately 2m of recession of the pebble bank since 1979.



Sellicks Beach 1930s



Sellicks Beach 1979



2050
Extreme event

Forecast impact

Example: modelling of an extreme event projected for 2050 shows that water would flow over the pebble bank and impact the soft sediments of the cliff behind. The carpark does not appear flooded in the modelling but, seawater would also be likely to flow into the carpark.

What past storms tell us

Studying past storms provides a window into the future. The storm event of 9 May 2016 damaged the ramp at Sellicks Beach and rock was installed. It also impacted the pebble bank along the backshore.



Key findings for Sellicks Beach

Sellicks Beach is characterised as a sandy foreshore with a shingle beach and pebble bank backed by soft sediment coastal cliffs. The nearshore is dominated by sand and patchy seagrass. A low-profile reef is situated in the south of the cell adjacent to the limestone cliffs.

Sellicks Beach was established in the 1930s, first as a holiday destination before becoming a more established township from the 1970s. The township is elevated well above sea level and therefore it won't be vulnerable to seawater flooding due to sea level rise.

Motorcycle racing was popular along Sellicks Beach in the 1930s to 1960s, and the revived Sellicks Beach Historic Motorcycle Races continue today (now held at Silver Sands).

Historical analysis indicates the coastline in this cell has been largely stable over the last 70 years. The coastline undergoes periods of accretion (when the shoreline builds out) and erosion (when the shoreline recedes) that takes place over decades.

While the major storm event of May 2016 did cause damage to the Sellicks Beach backshore adjacent to the onramp, the backshores generally remained intact.

The beach in this cell is afforded protection by a pebble bank and therefore current impacts are contained. Modelling for 2050 indicates minor recession of the pebble bank. Modelling for 2100 indicates that both storm surge action and routine high-water events would likely flow over and erode the pebble bank. The soft coastal cliffs would then be vulnerable to rapid erosion and significant recession would be likely to occur.

Key adaptation issues for Sellicks Beach

IF SEAS RISE AS PROJECTED:

- most public assets will not be impacted because they are set well back from the shoreline. However, if the pebble bank erodes away post 2050, then the embankment under the beach access road is likely to be undermined and become unstable. The existing location of the lower carpark is unlikely to be viable later in this century
- private assets are not expected to come under threat over the course of this century
- freshwater ecosystems are unlikely to be impacted by saltwater intrusion due to the elevated nature of the backshore
- public safety could be impacted due to increased undermining and erosion at the base of cliffs increasing the likelihood of rock falls and slides.



Motorcycle racing on Sellicks Beach, South Australia, 1930s – 60s

Next steps

Now that the study is complete, we'll be engaging with our communities and developing a Coastal Adaptation Plan that responds to the identified risks and lays the groundwork for effective coastal management now and into the future.

COASTAL ADAPTATION PLANNING AND ENGAGEMENT PROCESS



More information

To learn more about the Coastal Adaptation Study visit yoursay.onkaparinga.sa.gov.au/coastal-adaptation-study, email mail@onkaparinga.sa.gov.au or phone 8384 0666.



The Coastal Adaptation Study was delivered by Integrated Coasts with input from Flinders University coastal experts.

Historical photos courtesy of Onkaparinga Libraries

Disclaimer

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