Planning for the future of Horseshoe Bay

Port Elliot



Community consultation is open until 5pm, Thursday 30 October 2025

Council is seeking feedback on mitigation options to manage the impacts of coastal erosion at Horseshoe Bay into the future.

Background

- Council adopted the Coastal Adaptation Study in 2021 which identified that Horseshoe Bay was at risk of erosion, a risk that would increase in the future if no action was taken.
- The Coastal Adaptation Study recommended a detailed analysis of the risks and management options.
- Council received a Federal grant to engage expert coastal engineering consultants to conduct data collection in Horseshoe Bay during 2024 and model the impacts from sea level rise.
- The results indicate the shoreline will recede up to 12m by 2050 and 25m by 2100, placing beachside infrastructure at risk (If nothing is done and existing seawall was not in place).
- By 2100, erosion is projected to reach 25 metres, threatening the structural integrity of:
  - Port Elliot Bowling Club
  - Flying Fish Café
  - Surf Life Saving Club
  - Carparks, footpaths, public toilets
  - Adjacent reserve areas.
- The data collection was undertaken by coastal engineering consultants Wavelength, with support from modelling experts Coasts and Ports Solutions.
- Expert consultant Cape Advisory considered the data and modelling and identified and assessed five coastal adaptation options (with two variations) to manage the projected impacts.
- Cape Advisory has also provided initial estimates of possible capital and operational costs for four of the options. (Details page 2-4).

Decision making and roles

Community: The community's role is to help ***inform*** the decision about the preferred option. Council needs to understand the level of community support for each option including the community's preferences and concerns.

Council: This consultation process presents the options identified by the consultants with the aim of understanding community views on each.

Once Council has an understanding of the community's views, it will consider these in conjunction with the estimated costs, environmental and cultural impacts, effectiveness of measure, flexibility of measure and the ease of implementation.

Council will consider all of the information, including the community feedback via a Council Report that will be tabled at a Council Meeting, late 2025 or early in 2026 (TBC). The information provided in the report will enable Council to determine a preferred option. Once a preferred option is endorsed, the relevant material required to inform a development application will be prepared and submitted. The development application will be referred to the Coast Protection Board.

Final Say: The State Government's Coast Protection Board has 'power of direction' for anything that is 'development' in this area. This means that the Board will have the ability to support, refuse, or direct changes to the proposal. This applies to any of the options. Other referrals may also be required to government agencies, such as the Environment Protection Authority.

For more information and to provide your feedback, visit

mysay.alexandrina.sa.gov.au/horseshoe-bay-study

ALEXANDRINA



Adapting to changes in our coasts

Coastlines are always changing. The natural forces of waves, winds, tides and currents over time break down (erode) rocks, cliffs, and beaches, transporting the sediment from one location to another. This can lead to loss of sand/and or land and damage to infrastructure such as playgrounds, roads and buildings. As sea levels rise, storm surges will exacerbate natural processes, meaning the coast might erode faster than it has in the past.

Types of coastal adaptation options used around Australia

The coastal erosion identified is not unique to Horseshoe Bay. Erosion is a natural process happening across Australia's coastline.

For example, many metropolitan Adelaide beaches are managed through a combination of seawalls and breakwaters and actively piping or carting sand to replenish beaches where more sand is needed.

Every beach environment is different. Not all management options will work in all locations. Sometimes combinations of options are used. The main categories of adaptation options are:

Hard options	Building hard physical structures to protect the coast. For example, seawalls, groynes and breakwaters.
Soft options	Working with natural processes to manage sand. For example, beach nourishment (putting extra sand on the beach) or dune regeneration.
Managed retreat	Accepting that the coastline will recede and gradually moving infrastructure to new locations.

Horseshoe Bay

The Data Collection and Modelling Study conducted at Horseshoe Bay considered:

- the shape of the Bay
- breakwater and ocean floor through to beach
- bathymetric surveys (such as underwater topography)
- pre/post storm surveys
- wave measurements across summer and winter using a wave buoy with data logger.



If we do nothing

The data collected was used by the consultant to model how much the shoreline would recede (move back) into the future.

The results indicate that without management, the shoreline could recede up to 12m by 2050 and 25m by 2100, placing beachside infrastructure at risk. Coastal adaptation options to manage these impacts were identified and assessed.

Adaptation options assessed for Horseshoe Bay

The Study modelled the effectiveness of different management options and identified potential economic, social and environmental trade-offs (pros and cons) of each option. These are summarised below:

**None of these options are ordered in preference or priority.*

Option 1 Raise existing breakwater height and length

This option intends to protect a greater extent of the Bay from high wave energy by increasing the height and length of the existing breakwater.

Capital cost: $17.9M
30-year operating cost: $0.6M

Pros

- Effective at reducing recession due to storm erosion in short term
- Limits disruption to the beach.

Cons

- **Does not reduce recession due to sea level rise in the longer term**
- Does not improve recession on most eastern extent
- Expensive ($18.5M) and challenging to construct
- Impact to sea grass and heritage breakwater.



Option 2 Offshore underwater breakwater in the nearshore

This option intends to reduce exposure to wave energy and increasing beach widths in the central extent of the Bay by constructing an offshore, submerged breakwater.

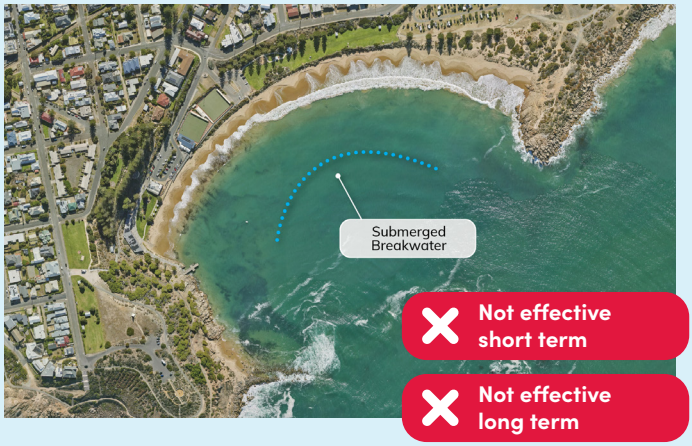
Capital cost: $9.3M
30-year operating cost: $0.3M

Pros

- Nature-based recreation opportunity
- Limits disruption to the beach.

Cons

- **Does not reduce recession due to storm surge or sea level rise in the longer term**
- Challenging design and construction
- Increase erosion risk east and west of structure.



Option 3a Sand nourishment (bay sand)

This option intends to increase the volume of sand in the central part of the Bay by borrowing sand from the eastern part of the Bay (beach not dunes in the short term) to increase capacity for erosion during storms.

In this case the beach profile on the eastern side of the bay would retreat by 10m to provide the source of sand.

Capital cost: $0M
30-year operating cost: $0.35M - $1.5M ongoing every 1-5 years depending on seasonal weather impacts.

Pros

- Effective at reducing recession in the short term
- Moderate reduction in recession due to sea level rise in the longer term
- Lower comparable longer-term costs
- Flexible (for example, Council can pursue this option now and decide to do something else later)
- Increase beach width in high-use area
- Retains beach amenity
- Promotes environmental value of the foreshore and dunes.



Cons

- Disruption to beach during sand operations
- In the long-term the eastern part of Bay will retreat due to sourcing sand and eventually impact the dunes
- Council requires State Government authority approval for each campaign (every 1-5 years).

Option 3b Sand nourishment (quarry sand)

This option intends to increase the volume of sand in the central part of the Bay by sourcing sand from outside of the system.

Capital cost: $0M
30-year operating cost: $1.25M–$5.4M (every 1-5 years depending on seasonal weather impacts)

Pros

As for Option 3a but also:

- No impact to the eastern section of the bay as using external sand instead.

Cons

- Disruption to beach during sand operations
- Need authority approval for each campaign (every 1-5 years).



Option 4a Buried seawall & existing seawall replacement

This option intends to 'hold the line' against beach erosion by extending the vertical seawall. This will remove the risk to infrastructure. However, the beach in front of the wall will continue to erode/deepen and reduce the amount of usable beach overtime.

Capital cost: $3.6M
30-year operating cost: $0.2M

Pros

- 'Holds the line' - limits recession past the wall in the short and longer term
- Straightforward approvals, design and construction.

Cons

- Loss of useable beach over time (as sand gets erodes in front of the wall)
- Impact on beach amenity (subjective)
- Impact on the beach environment
- Significant rebuild costs after 30 years
- Disruption during construction
- Significant loss of useable sand beach (impact tourism and use).



Option 4b Buried seawall & existing seawall replacement with nourishment

This option intends to 'hold the line' against beach erosion by extending the vertical seawall but also brining in approximately 9000m3 of external sand to better maintain a useable sandy beach.

Capital cost: $3.6M
30-year operating cost: $1M-$4M

Pros

- 'Holds the line' - limits recession past the wall in the short and longer term
- Straightforward approvals, design and construction
- Maintains useable sandy beach
- Lower comparable rebuild cost due to maintenance of sand in front of wall.

Cons

- Impact of sea wall on beach amenity (subjective)
- Impact on beach environment
- Disruption during construction and sand campaigns.



Option 5 Managed relocation of assets

This option would seek to progressively move buildings and assets out of the areas where shoreline recession is anticipated. This would need to be done collaboratively with asset users. Due to complexities of this option, it was not costed or assessed in detail by the consultant.

Pros

- Removes assets and infrastructure from the recession areas (mitigates the hazard)
- Allows natural bay processes to occur
- Does not interfere with habitat.

Cons

- Community may not wish for assets to be moved
- Challenging to implement
- Sea level rise beyond 2100 may still require protection.

