

Background

Council acknowledges that coastal management challenges, such as erosion and inundation, will only increase into the future and require a well-informed, planned approach for effective and responsible coastal management for future generations. As a result, Council is in the process of working to develop a Coastal Adaptation Plan to inform future pathways and priority actions.

What is coastal adaptation planning?

Coastal adaptation planning is the strategic and systematic approach of anticipating and responding to the risks to our coast.

Coastal adaptation planning involves several steps, including engaging stakeholders and local communities, evaluating the coastal context and hazards, assessing current and future coastal risks, exploring options that respond to these risks, and action planning.

This fact sheet has been developed to provide an overview of the steps undertaken in the adaptation planning process to date.

Hazard mapping

In line with adaptation planning best practice and the South Australian Coast Protection Board Policy, coastal erosion and inundation hazards were quantified for present day, to 2050 and 2100 using locally measured data and empirically based shoreline models. This requires the consideration for:

- storm induced erosion and inundation (100-year ARI event)
- underlying shoreline trends
- projected impacts due to sea level rise (*in line with CPB Policy: 0.3m 2050, 1m 2100*).

The extent of erosion and inundation hazards are presented in the maps on the following pages.

The hazard maps show that:

- without mitigation the priority area at risk is Segment 3 (extend of the existing vertical seawall), followed by Segment 1 (north of the existing sandbag wall).
- without intervention (if no action was taken) a considerable section of the Tumby Bay foreshore will be impacted by both erosion and inundation by 2050. A number of assets along the foreshore area including Tumby Terrace would be at risk.
- the risk is only exacerbated with the projection impacts of sea level rise by 2100; several roads and private properties are likely to be impacted.

Adaptation options assessment

An exhaustive list of adaptation options were considered to mitigate the understood coastal hazard risk.

In line with adaptation planning best practice, these options included planning, structural and environmental mitigation measures. An engineering and environmental fatal flaws analysis confirmed the following viable adaptation options for the short to longer term:

Short to medium term (to 2050):

1. Rock revetment with levee.
2. Vertical concrete seawall with levee.
3. Nourishment with dune strengthening.
4. Move back with dune strengthening.

Beyond 2050 (to 2100) options 3 and 4 are not considered viable given:

- nourishment with dune strengthening >\$500M from 2050 to 2100, and difficult to source volume of sand required
- a move back with dune strengthening is considered an intolerable social impact, including retreating hospital, and cost (>\$120M from 2050 to 2100).

Of the viable options available, it is an important step to assess the options via a multi criteria assessment (MCA). A workshop was held with Council staff and elected members to confirm the criteria for the MCA and the weighting of each criteria; acknowledging not all criteria is considered equal.

The workshop confirms the criteria as:

- 1. Effectiveness** – Does the option mitigate the coastal hazard risk?
- 2. Flexible** – How difficult is this option to change?
- 3. Environmental impact** – Does the option have a detrimental or beneficial impact to the environment?
- 4. Cost** – What is the capital and ongoing operational cost of the options?
- 5. Planning and implementation** – How ‘shovel ready’ is this option?
- 6. Social impact** – Does this option impact what people value? Does this option impact everyday life?

A summary of the benefits and constraints of the viable adaptation options assessed in the MCA is presented in the table on the following page.

The confirmed influence (or weighting) of each criteria is set out in the table below. Council acknowledges that the social and environmental impacts are important considerations, however, resolving that it is a higher priority to ensure the option adopted is financially sustainable and can effectively mitigate coastal hazard risks for the longer term.

Criteria	Weighting
Effectiveness	30%
Financial	30%
Social impact	20%
Environmental impact	10%
Planning and implementation	10%
Flexibility	0%

Subsequently, the MCA resolved that a protection structure, more specifically a rock revetment with levee, scored better than other options given the comparative cost and effectiveness of mitigating the coastal hazard risk for the longer term (beyond 2050).

Whilst Council appreciates there has been opposition to a rock revetment protection structure in the past, there has been equal support for such structure and equal opposition to alternative viable options presented.

Next step

Prior to construction of any protection structure, an important next step in the design process is to work with the community and Council on the alignment, and to look for opportunities to maximize the amenities and features of the foreshore that the community value most.

For example:

- ensure adequate space on the beach
- maintain safe and easy access
- minimize impacts of stormwater run-off
- maintain valued features such as the walking trail, recreational areas and play spaces.

Any concept design prepared will be put to the community for consultation as part of the planning process.

Further information

If you wish to understand more about the adaptation planning process, the hazard mapping results or the adaptation options assessment undertaken, a drop-in session will be available on 5 and 6 April 2024, please reach out to Council if you wish to book in a time.

Contact Us

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FACT SHEET - COASTAL ADAPTATION PLANNING

Option	Cost Upfront and ongoing (to 2050)	Effective At mitigating coastal hazards	Flexibility	Planning & Implementation	Environment impacts	Social impacts	
						Maintains foreshore reserve	Reduces beach width
Rock revetment with levee	\$22M	Highly effective	Inflexible	Straightforward	Yes	Yes	Yes
Vertical seawall with levee	\$53M	Highly effective	Inflexible	Straightforward	Yes	Yes	Yes
Nourishment with dune strengthening	\$138M	Partial – not feasible in long term	Flexible	Difficult	No	Yes	No
Move back with dune strengthening	\$34M - \$40M	Partial – not feasible in long term	Partial	Difficult	No	Partial	No