

KINGSTON DISTRICT COUNCIL FACT SHEET

COASTAL ADAPTATION STRATEGY (CAS)

WYOMI ADAPTATION PATHWAYS



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 has developed a Coastal Adaptation Strategy (CAS) to assist in its future pathways and priority actions. This CAS has been summarised in a series of fact sheets on Council's website, with the full CAS also available online at:

<https://www.kingstondc.sa.gov.au/our-services/major-projects/coastal-adaptation-strategy>

A key recommendation of the CAS was to undertake a detailed study of the long term, feasible adaptation options for Wyomi Beach.

This fact sheet has been developed as an overview to the detailed Wyomi Beach adaptation pathways study.

Wyomi Beach Erosion Risk

Over the last few decades, Wyomi Beach has experienced on-going erosion in the order of 1 m/yr. In 2016, a series of storm events also caused around 15m of beach erosion (see photograph below), eroding the dune and damaging the footpath in the area.



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Existing Management

In recent years, Council have implemented a range of measures to manage coastal erosion at Wyomi Beach, including:

- **Rock Seawall** – the 400m rock seawall in the center of Wyomi Beach installed in 2018 is in a good condition and is likely to provide long term protection, with on-going maintenance and upgrades for sea level rise.

Since its construction, erosion, has occurred at both ends of the rock seawall, particularly on the

northern side. This is common for seawalls and often referred to as terminal scour.

- **Geotextile Sand Container (GSC) Seawalls** – From 2018 to 2019, Council constructed a series of GSC seawalls to manage the terminal scour. Whilst in reasonable condition, these seawalls are not a suitable long-term option, as they are likely to be eroded and damaged in a significant storm event, such as a 100 year event.
- **Sand Nourishment** – Over the last two winters, sand has been placed to the north and south of the rock seawall. Providing protection in the critical terminal scour locations, whilst longer term adaptation options were being developed in this study.

Nourishment placed in the south of Wyomi has helped to maintain a beach in front the seawall through 2020. However, the winter of 2021 was particularly severe and much of the sand has been lost. Whilst effective at providing erosion protection, nourishment is required each year, which can be costly.



Patrick Hesp Flinders University

Why is further adaptation required?

Even with the existing seawalls in place, the CAS showed the following assets are currently at risk of erosion (under a Do-Nothing approach):

- Beach
- GSC Seawalls
- Footpath
- Telstra Cable (underneath footpath)
- Marine Parade

By 2050, multiple properties on Marine Parade could also be at risk of erosion. Details of the erosion risk are presented in the CAS. Longer term adaptation pathways are required to manage the erosion risk.

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What are the adaptation options?

A number of adaptation options have been investigated in the study, with staging plans presented at the end.



Seawall (Defend) pathway

Use seawalls to protect land from the sea. At Wyomi, the future Defend pathway would involve:

- On-going extensions and maintenance of seawalls to protect assets.
- Over time the seawall rocks and crest level would also be upgraded to accommodate higher water levels and larger wave heights due to sea level rise.



Seawall and Nourishment (Defend) pathway

The study also investigated the potential volumes and cost of maintaining a beach in front of the seawalls with beach nourishment. This would require:

- Placement of approximately 20,000 m³ of sand each year to the ends and in front of the seawall.
- Nourishment volumes would increase to ~100,000 m³/yr to counter sea level rise by 2050.



Managed retreat pathway

Planned relocation of assets and properties away from the coastline, providing a suitable buffer for erosion.

At Wyomi, managed retreat would involve:

- The existing seawalls are removed.
- Council and state assets are removed and relocated.
- Affected roads are removed, while maintaining continued access to properties where possible.
- Affected private properties are acquired/ purchased and removed, with the land remediated to allow natural erosive processes to continue.










Hybrid pathway

A combination of the above approaches was also investigated. At Wyomi, this would consist of:

- A seawall protecting the most at risk areas in the centre of Wyomi Beach.
- Managed retreat on the north and south of the seawall.

Key factors

The following factors should be considered when selecting adaptation options:

	 Beach Impact	 Environment	 Planning & Implementation
 Seawall	Beach lost in front of seawall (without nourishment)	Dune and beach ecosystems lost	Straightforward
 Seawall & Nourishment	Beach maintained by nourishment	Dune and beach ecosystems remain	Annual planning and implementation required
 Retreat	Beach maintained	Dune and beach ecosystems remain	Difficult
 Hybrid	Beach lost in front of seawall and remains in retreat areas	Dune and beach systems lost in front of seawall and remain in other areas	Difficult

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What are the costs and who pays?

The Net Present Value (NPV) costs of the options to 2050 are summarised in the table below. NPV analysis provides an indication of the relative costs of the pathways over time, considering capital and on-going costs. A smaller number indicates a less expensive pathway overall.

Option	NPV to 2050
Seawall	-\$3.9M
Full Retreat	-\$13.2M
Hybrid Seawall in centre with retreat north and south	-\$5.9M
Seawall with Nourishment	-\$17.7M

The question of who pays is more difficult to answer and requires careful consideration. A common hurdle to implementing adaptation options is the lack of clarity around future funding of adaptation options.

Some examples of approaches used elsewhere:

- Collaroy-Narabeen (NSW), a benefits distribution analysis was used to assess who benefits from seawall construction and nourishment, which showed residents had 95% of benefit and should pay.
- Bundaberg Council (QLD), a Steering Committee was established to assist with sourcing internal and external funding opportunities.
- Albany (WA), where the proposed management options have the potential to protect private business or private leasehold interests, Council intend to establish a Specified Area Rate to support the ongoing maintenance and future replacement of protection structures. This rate

would apply to those properties who will directly benefit from management options.

Where to Next?

Each adaptation pathway has its advantages and disadvantages, which should be considered by Council and the community.

Community Engagement and Option Selection

Council has developed a Community Engagement Strategy to facilitate discussion of these options with community members. These discussions will help Council choose a preferred option for implementation.

Planning and Implementation

Once a preferred option has been selected by Council, with input from the community, grant options, including funding opportunities will be sought and detailed planning for the preferred option will begin.

Want further information?

If you are interested in this or you require further information on the project, please refer to the Council website 'Coastal Adaptation Strategy' project page or contact us at:

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