

Kingborough geotextile sandbags protect Coningham Beach

Summary

Kingborough municipality is situated 10 km south of Hobart in Tasmania. It has 336 km of coastline, one of the longest stretches in the state, and covers a total area of 717 km². Increasingly this coastline is at risk of damage due to coastal erosion and so Kingborough Council has installed geotextile sandbags to reduce erosion in one of its highly affected areas, Coningham Beach (see Figure 1).

Coastal erosion is a natural process in which the removal of beach and dune material causes a loss of land along the shoreline. Strong winds, changing wave conditions, high tides and storms all contribute to coastal erosion and as a result the coastline continually changes over time.

Coastal erosion is expected to become more severe in the future, especially along soft shores, as a result of climate change and sea-level rise. Sea-level rise will allow waves to reach higher up the beach and the bank behind. Other impacts of climate change include changes to the frequency, severity and distribution of storms, which will lead to the loss of some sandy beaches and the flooding of low-lying areas.

Keywords

Coastal erosion, sandbags, protection, Kingborough

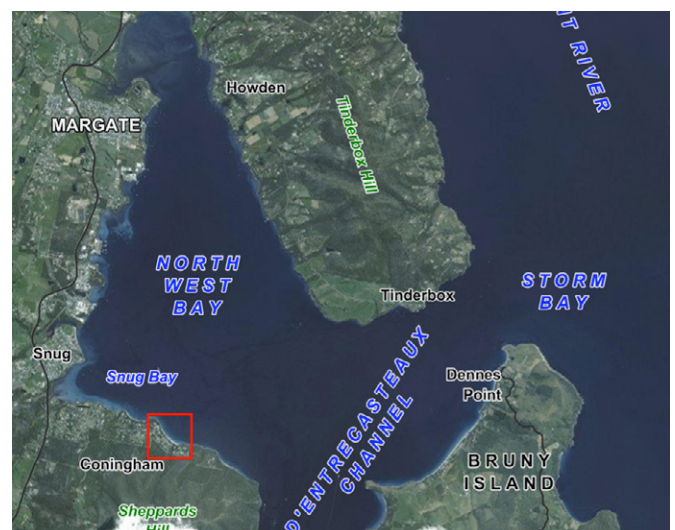


Figure 1: Sandbags now protect 65 metres of coastline at Coningham Beach in Kingborough Council. Source: © Kingborough Council.

Coastal erosion and Coningham Beach

Coningham Beach is a narrow sandy beach backed by clay and gravel sediments that are vulnerable to coastal erosion (Figure 2). Surface water runoff and beach goers' foot traffic have contributed to the appearance of large eroded notches at the back of the beach. In recent years, Coningham Beach has been impacted by significant storm events and in 2014 it was declared a high hazard erosion area.

Behind the beach the land is made up of soft sediments which also have the potential to erode. This means the beach could move back approximately 10 metres by 2100 in response to sea-level rise. This presents an immediate risk to the black gum trees along the bank (Figure 3) and the critically endangered swift parrots (which feed exclusively on blue gums and black gums) that rely on them (Figure 4). It will also pose a longer-term risk for the car park, road and, potentially, residential dwellings.



Figure 2: Coningham Beach. Source: © Kingborough Council, 2016.



Figure 3: The black gums (*Eucalyptus ovata*) along Coningham Beach bank are currently under threat from coastal erosion. Large storm events are eroding the sand which supports these trees. Photo: © Climate Planning, 2016.

Sandbags protecting Coningham Beach

The natural setting of Coningham Beach makes this area an iconic and much loved place to visit. Kingborough Council is actively protecting Coningham Beach from coastal erosion through infrastructure and ecological projects.

In 2012, Council upgraded the stormwater system and built a channel (or swale) behind the beach that collects, filters and reduces stormwater runoff from the car park. A subsequent project installed sandbags at the back of the beach and planted coastal species to reduce the erosive impact of wave action on the bank. The sandbags have a lifespan of 5 to 15 years, and will provide the beach with temporary protection while a longer-term coastal strategy is developed in consultation with the community (Figures 5 and 6).

Important considerations about the use of sandbags at Coningham Beach:

- **Jurisdiction:** The coastal area in question is owned by the Crown and leased by the Council, therefore, there is a legal requirement and community expectation that Council will protect the coastline and adjacent assets.
- **Cost:** Coastal protection works are notoriously expensive but this project was required to be completed for less than \$30,000. In the end, 65 metres of coastline were protected at a total cost of \$23,200, or approximately \$360 per metre. This cost would have risen to just over \$500 per metre if labour costs were added, taking the project cost to \$32,500.
- **Bag construction:** It was essential that a cost-effective, bulk (geotextile) material was chosen that had appropriate environmental and durability qualities. A local sail-making company undertook the construction of the bags.
- **Bag logistics:** Access to the beach with a vehicle was limited so the size and shape of the bags was carefully considered from weight (once filled) and work place health and safety perspectives.
- **Bag sand:** Compatible sand was sourced from an off-site location. Off-site sand was needed because the sand at the beach is shallow and difficult to harvest.
- **Bag filling and placement:** This was undertaken (at no cost to the Council) by Community Corrections Program personnel, who assist with a number of NRM-related projects in Kingborough throughout the year. Construction was supervised by NRM staff and required great flexibility due to contingency situations that arose during the project.
- **Monitoring:** A carefully designed and community based coastal monitoring program will help to gauge the effectiveness of the sandbag fortifications as well as any negative impacts to the adjacent coastline.



Figure 4: A swift parrot (Lathamus discolor) perched in a black gum. During the breeding season they feed on the nectar of blue gums and black gums. Photo: © J. J Harrison, 2010.



Figure 5: Coningham Beach experienced a 'King' high tide event on the 24th of January 2011. Sandbags and replanting of coastal vegetation were used to protect the shoreline against erosion. Photo: © P. Donaldson, 2011.



Figure 6: Initial stages of the sandbagging project have been undertaken by Council to protect Coningham Beach from coastal erosion. Photo: © Kingborough Council, 2016.

Community celebration

After the completion of the sandbag project, Council organised a community event at Coningham Beach to discuss coastal vulnerability and adaptation as well as cultural and heritage connections to this iconic place (Figure 7).

This Snapshot was prepared by Jon Doole of the Kingborough Council. Please cite as: Doole, J., 2017: Kingborough geotextile sandbags protect Coningham Beach. Snapshot for CoastAdapt, National Climate Change Adaptation Research Facility, Gold Coast.



Figure 7: Handprints were printed on the sandbags while a high tide washed around the ankles of nearly 100 participants, illustrating the reason why Kingborough Council has taken this measure to temporarily decrease erosion damage. This activity was also a reminder of the importance of the area to the Tasmanian Aboriginal community. Photo: © Kingborough Council.



Australian Government
Department of the Environment and Energy