

Apollo Bay sand movement

Coastal geomorphology, coastal processes and the management of coastal hazards from Marengo to Skenes Creek

Coastal Management Fact Sheet 2.4

Like most of Victoria's open coast, the beaches of Apollo Bay and surrounds are very dynamic. Sand from the beach can erode and accrete dependant on the movement of water and sediment along the coast known as littoral drift. This is further influenced by swells, storms and wind. Land managers look to longer term sand management strategies to build resilience in the foreshore and aid in severe erosion responses.

The beaches of Apollo Bay are in a constant state of change. Following seasonal variations in wave, current and wind processes (littoral drift processes), net movement of sand is estimated to be 80,000m³ to the north east annually.

Coastal geomorphology and process

Marengo, Apollo Bay and Skenes Creek all form part of the Apollo Bay Terrace. Within this terrace the bluffs behind each township are remnant of the cliffed shoreline of the mid Holocene era some 6,000-7,000 years ago. A lowering of the sea level and shoreward drifting sediments from the floor of Bass Strait following the end of the last glacial phase has resulted in the sandy beaches we see today.

Shoreline changes

In 2004 an analysis of historical aerial photography from 1942 to 2004 showed recent shoreline changes ranged from minor erosion to severe erosion events. It was also evident that there are cycles of recovery where sand would once again accrete on the beach.

The construction of the Apollo Bay Harbour in 1956, and two years later the Point Bunbury groynes, disrupted the longshore transport of sand to the north. The change to sand transportation is further characterised by the wave shadow that the harbour creates. This change in wave direction and energy results in segments of the Apollo Bay foreshore either eroding or accreting.

Impacts of coastal hazards

The open coast is subject to coastal hazards resulting from storm surge (very high tides combined with strong wind or atmospheric pressure) including inundation, erosion and recession. These hazards can cause damage to community infrastructure and create short term risks from dune scarps and exposed underground assets.

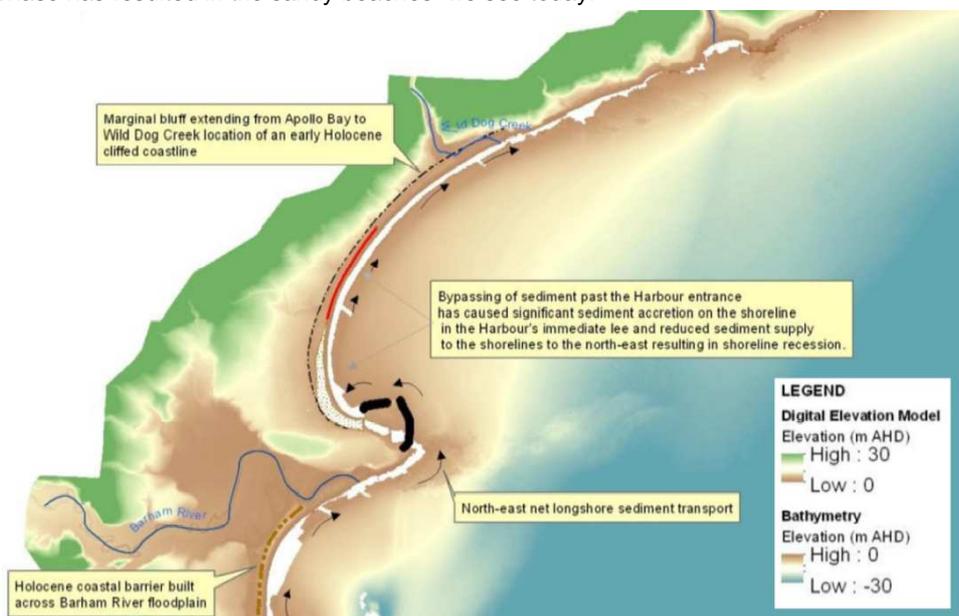


Figure 1: Apollo Bay sand movement

Apollo Bay sand movement

Managing sand and coastal risk

The *Victorian Coastal Hazard Guide* 2012 offers land managers a risk based frame work for decision making. This includes strategic adaptive management that considers how the site is used by the community, how the site responded to previous erosion events and any residual impacts of works.

Applying a static solution to a dynamic, high energy environment can have detrimental flow on effects. For example, hard structures can transfer wave energy and create residual impacts such as sand scour. Previous attempts to mitigate erosion with the placement of rocks on Mounts Bay failed and resulted in residual erosion in the immediate south and north.

Severe erosion events are cyclical and the capacity for the beach to recover is reliant on the resilience of that coastal system. Implementation of a comprehensive range of strategies offers the most effective treatment of risk brought on by coastal hazards.

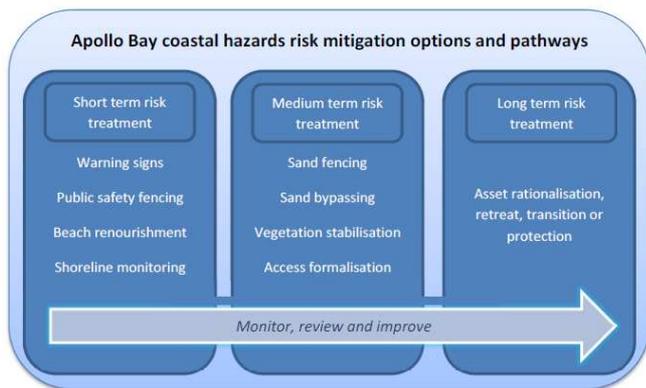


Figure 2: Risk treatment

Where possible the use of 'soft engineering' options such as sand carting can accelerate the recovery process. Sand sources and how much sand can be removed before there are residual impacts (removal capacity) have been identified for Apollo Bay. Soft engineering options provide both maintenance and event mitigation solutions. (see Coastal Management Fact Sheet 2.2).

Following severe erosion events land managers need to mitigate risks to the foreshore and the public and may need to fence sections of the foreshore that have been damaged.

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Often no direct intervention is required other than the immediate management of public safety. Not far from Apollo Bay, Separation Creek provides an example of where the beach eroded during the storm surges of winter 2011 and has recovered naturally.



Figure 3: Separation Creek foreshore August 2011



Figure 4: Separation Creek foreshore July 2013

What can you do to help?

If you notice significant erosion on the beach, especially when foreshore assets are exposed or vulnerable, please contact your local land manager, the Otway Coast Committee.

Obey warning signs and other barriers restricting access to dangerous or sensitive areas.

Use formalised beach access points to minimise your impact on the dunes and the vegetation.

Join your local volunteer group or become involved in the protection of our coastline.

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