



Ahrberg TAS02.03.03

Regional Setting

This compartment extends from Trial Harbour and Conical Rocks.

It is a high energy coast, exposed to south-westerly swells and storms, and to seas driven by strong, generally westerly winds. Micro-tides occur here.

The dominant regional processes influencing coastal geomorphology in this region are the Mediterranean to humid cool-temperate climate, micro-tides, high energy south-westerly swells, westerly seas, carbonate sediments, interrupted swell-driven longshore transport, and the Southern Annular Mode (driving dominant south-westerly swells and storms).

Regional hazards or processes driving large scale rapid coastal changes include: mid-latitude cyclones (depressions), storm surges and shelf waves.

Justification of sensitivity

Four Mile Beach probably has a stable sand budget in equilibrium, and is likely to be a late responder to sea-level rise (sensitivity rating 3). The hard sloping to cliffed rocky shorelines that dominate this compartment are resilient.

The sands comprising Four Mile Beach and its backing dunes at Ahrberg Bay likely originated as glacial outwash, transported down the Henty and King Rivers to the shelf from extensively glaciated highlands during glacial low sea stands, and reworked landwards and northwards by south-westerly swells as sea levels rose during post-glacial marine transgressions. However, there is little or no supply of sand to the coast from rivers at the present time. There is probably also no alongshore drift of sand towards Ahrberg Bay, along the extensive rocky coast separating it from the next beach to the south - Ocean Beach - whose sands instead dominantly drift southwards into Macquarie Harbour. Conical Rocks, to the north of



Ahrberg Bay, is probably also a major barrier to alongshore sand movement northwards out of Ahrberg Bay ([Davies 1973](#))

Sediment mobility modelling ([Harris & Heap 2014](#)) suggests there could be some ongoing wave-driven supply of sand from the shelf to the beach at Ahrberg Bay at the present time, and active bare transgressive dunes are removing some sand inland from the bay. Information on historic shoreline changes (from air photos) has not been compiled for Ahrberg Bay / Four Mile Beach, and the current state of the beach is unknown. However, with no alongshore sand transport into or out of Ahrberg Bay, and cross-shore sand transport likely to be in equilibrium or close to it, swell-exposed Four Mile Beach is likely to retain the capacity to fully recover from erosion events for some time, and so is likely to be a late responder to sea-level rise (sensitivity rating 3).

Other comments

There is little infrastructure on the coast in this compartment, apart from shack settlements at the rocky Granville Harbour and Trial Harbour.

With a mostly sloping rocky shoreline and backing dunes at Ahrberg Bay, coastal inundation hazards in this compartment are mostly limited to the shoreface and immediately adjacent areas.

Confidence in sources

Medium confidence: Based only on interpretation of available geological, topographical and other existing information, as listed below. No detailed coastal hazard studies are available for this compartment.



Figure 1: Compartment TAS02.03.03 Ahrberg.



Additional information

Topographic and geological mapping is available at several scales for this area. In addition the following information sources have been referred to above:

Davies, JL 1973, 'Sediment Movement on the Tasmanian Coast', in *1st Australian Conference on Coastal Engineering*, vol. Australia National Conference Publication No. 73/1, pp. 43-46.

Harris, PT & Heap, A 2014, 'Geomorphology and Holocene Sedimentology of the Tasmanian Continental Margin', in KD Corbett, PG Quilty & CR Calver (eds), *Geological Evolution of Tasmania*, Geological Society of Australia (Tasmania Division), pp. 530-539.