



Bass North-West TAS03.01.02

Regional Setting

This compartment extends from North Point to East Devonport.

The coastline receives highly refracted, low-energy swells originating from south-westerly swells and refracted into the Bass Strait. The coastline may receive more energetic seas and storms driven by mainly north-westerly winds. A meso-tidal range up to 3.5 metres occurs 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

The sensitivity rating is a 3 for sandy beaches; the sand budget is stable. While storm seas may erode beaches, swell allows recovery, so they are probably late responders to sea-level rise. The rocky shores are mostly resilient (with minor soft rock exceptions).

The major source of coastal sand in this compartment was shelf sands from Bass Strait moved onshore by wave action during post-glacial marine transgressions, together with some erosion of bedrock and reworking of older sand bodies at the shore ([Davies, J.L. & Hudson 1987](#)). Cobble beaches and beach berms are common in the coastal stretches between the Leven, Forth and Mersey Rivers, and are the result of Holocene re-working of glacially-eroded material transported by these rivers during glacial climatic phases.



Sediment transport modelling suggests low capacity for present day onshore sand movement from Bass Strait ([Harris & Heap 2014](#)), and geomorphic evidence indicates both little ongoing supply of sand to the coast from offshore, as well as little potential for alongshore sand transport between beach compartments, with Rocky Cape and Table Cape in particular creating major barriers to sand transport (Davies, J.L., 1973; Davies, J.L. and Hudson, 1987). There is negligible present day sand supply from most rivers ([Davies, J.L. & Hudson 1987](#)) and only minor contributions from local bedrock erosion and biogenic carbonate sand production ([Davies, J.L. & Hudson 1987](#)). However, with limited alongshore sand transport potential, there is also little potential for sand loss from most beach embayments whose sand budgets are probably mostly stable.

Thus, whereas wind-driven storm seas may cause notable beach and dune erosion, continuing swell-driven recovery is likely, and these beaches are likely to be late responders to sea-level rise. The most troublesome recent beach erosion issue in this compartment – at Hellyer – is driven by migration of the Detention River channel in the estuarine zone.

There are minor occurrences of soft-rock shorelines in this compartment, including: semi-lithified fossiliferous Tertiary limestones at Fossil Bluff (Wynyard); Pleistocene boulder-clay talus backshores at Boat Harbour; and some occurrences of deeply-weathered Tertiary-age basalts. These are likely to be early responders to sea-level rise and present significant risks where infrastructure has been built on them close to the shoreline (as at Boat Harbour, where former shacks in this situation have acquired freehold status).

Other comments

This compartment is one of Tasmania's most densely-settled coastal strips, and features considerable infrastructure development in the near-shore coastal zone, including roads, residences and commercial facilities. Much of this infrastructure is safely sited on rising bedrock shores with minimal present-day or future susceptibility to erosion, recession or inundation. However, there are a number of locations along this coast where assets are at risk from either or both shoreline recession and inundation.

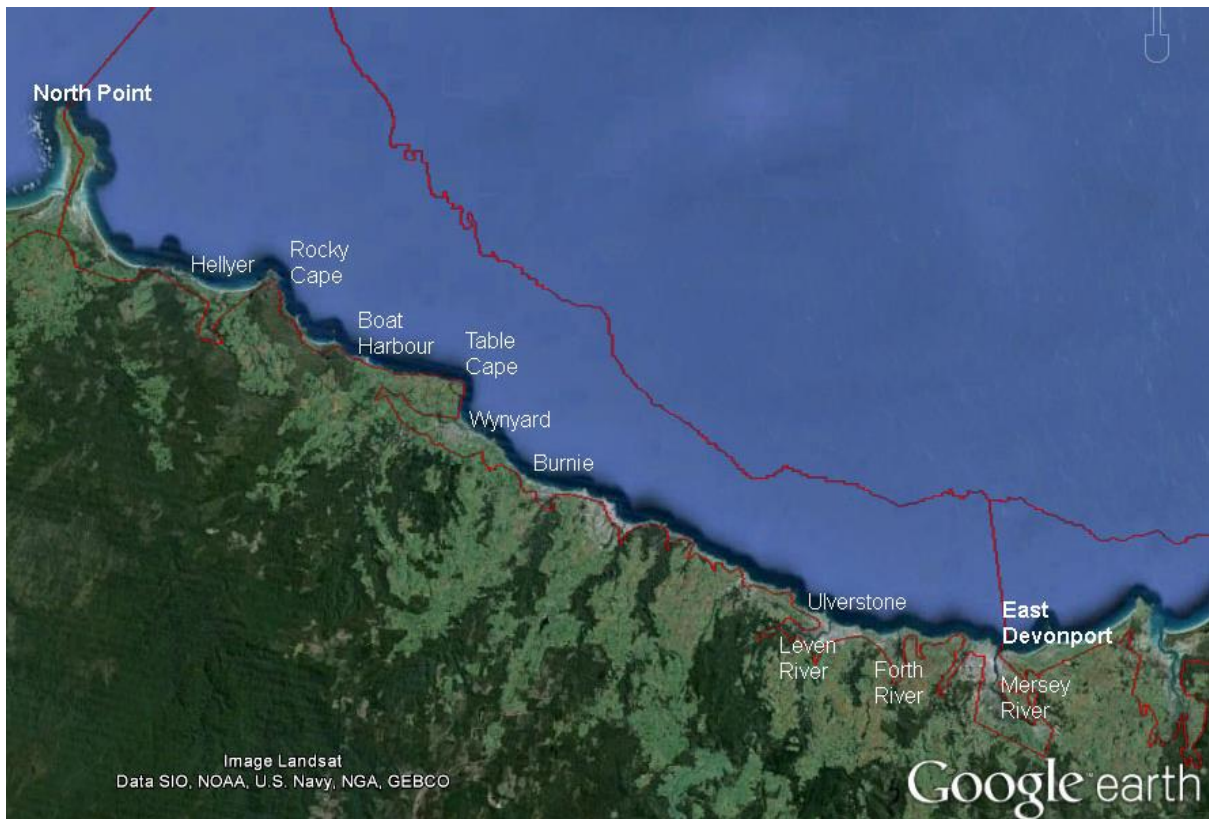


Figure 1: *Compartment TAS03.01.02 Bass North-west.*

Confidence in sources

Moderate confidence: A number of previous local coastal hazard assessments have been conducted and pertinent sediment source and transport studies are available, e.g. [Davies, J.L. and Hudson \(1987\)](#) and [Davies, J.L. \(1973\)](#).



Additional information

Beach profile monitoring for several beaches within compartment: www.tasmarc.info

A number of local coastal hazard studies have been conducted for a range of sites in this compartment.

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.

Davies, JL & Hudson, JP 1987, 'Sources of shore sediment on the north coast of Tasmania', *Papers and Proceedings of the Royal Society of Tasmania*, vol. 121, pp. 137-151.

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.