Wilsons Promontory West VIC03.01.01

Regional Setting

This compartment extends from South Point to Tongue Point.

This is an exposed, relatively high energy coast directly exposed to south-westerly swells and westerly seas moving through the Bass Strait. It experiences meso-tides.

The dominant regional processes influencing coastal geomorphology in this region are the humid warm to cool temperate climate, micro-tides, south-easterly Tasman Sea swells, easterly seas, dominantly quartz (terrigenous) sediments with northerly longshore transport in the northern part, and the El Nino Southern Oscillation (driving beach erosion/accretion cycles, cyclone frequency).

Regional hazards or processes driving large scale rapid coastal changes include: East Coast Lows (extra-tropical cyclones), mid-latitude cyclones (depressions), and storm surges (<1m).

Justification of sensitivity

Sensitivity rating is a 3 or 4. With stable sand budgets, the swell-exposed embayed beaches are likely to continue recovering from erosion events for some decades, and are likely medium-term responders to sea-level rise. The rocky shores are very resilient.

The sand in the five short embayed beaches in this dominantly hard-rock coastal compartment was probably mainly derived from Bass Strait shelf sands, worked shoreward during post-glacial marine transgressions. However, at Oberon Bay, there is probably also a contribution from wave erosion reworking terrestrial (fluvial) Quaternary sands at the shoreline during interglacial high sea stands, including the Holocene.

Sediment mobility modelling (Harris & Heap 2014) indicates there is unlikely to be any ongoing supply of sand moving onshore from Bass Strait at the present time. Prominent headlands between the beaches suggests there is unlikely to be any significant alongshore exchange of sand between beach embayments (except possibly between the two beaches within Oberon Bay). There is some loss of sand to landwards in Oberon Bay via transgressive dunes, but probably little other loss of sand from the beach embayments.

With probably stable sand budgets, neither gaining nor losing in most beach embayments, and minor sand loss from the largest beach barrier in Oberon Bay, the embayed beaches within this compartment are likely to be medium-term responders to sea-level; their direct swell-exposure and likely lack of sand leakage should enable the beaches to continue recovering from erosion events without progressive recession for some decades at least. However, a lack of modelled capacity for continuing onshore sand supply suggests these beaches might be best characterised as medium-term rather than late responders.

The dominant, hard, rocky granite coasts making up the remainder of this compartment (including a number of rocky granite islands) are very resilient and unlikely to show any noticeable change in response to sea-level rise for centuries.

Other comments

This is an uninhabited coast within Wilsons Promontory National Park, with little infrastructure at risk.

Most of this coast slopes moderately or steeply and has negligible inundation risk. However, some backshore areas at Oberon Bay and Norman Bay may be increasingly susceptible to inundation with sea-level rise.

Figure 1: *Compartment VIC03.01.01 Wilsons Promontory West. Red arrow indicates the only notable leakage of sand (via active transgressive dunes) from any of the well-embayed beach systems in this compartment.*

Confidence in sources

Medium confidence: No detailed coastal geomorphic studies are available. Expected shoreline behaviour is inferred from basic information, including geological and topographical mapping.

Additional information

Geological and topographic mapping provide information pertinent to understanding coastal processes in this compartment. The following reference has also been referred to:

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.