



Edgecumbe Bay QLD03.08.05

Regional setting

The regional processes dominating this region include wet tropics to humid sub-tropical climate, south-east trade winds, meso tides (2.0m), strong tidal currents, low to moderate south-east seas (local wind-waves), dominantly terrigenous sediments with interrupted northerly longshore sediment transport (low-moderate), the El Nino Southern Oscillation (driving sea-level variability, tropical cyclone frequency, beach erosion/accretion cycles); and the Madden-Julian Oscillation (driving weather patterns including monsoons and tropical cyclones).

Regional hazards or processes driving large scale rapid coastal changes include: tropical cyclones, storm surges, river flooding, and variable longshore sand transport.

This compartment extends from Cape Edgecumbe to Gloucester Head.

Justification of sensitivity

The compartment's sensitivity rating is 3.5 overall, with a mix of 3 and 4. The bedrock shore will remain stable (3), while the tidal flats will be inundated by storm surge and sea level rise (4). The Bowen shoreline is at risk of substantial sea level induced erosion by 2100 (4).

Other comments

Edgecumbe Bay is a sheltered, northeast facing embayment, 18 km wide at its entrance, with 75 km of generally crenulate shoreline. The large Gloucester Island and smaller bay islands shelter the shore for the SE waves, with only smaller wind waves within the bay. The only tide-dominated beach forms along the southeast-facing Bowen shoreline. The bay shore is a mixture of resilient bedrock and mangrove-lined tidal flats, and about 10 tidal creeks. The shore is largely



undeveloped, apart from Bowen city, port, salt ponds, a section of the Bruce Highway in the northern corner, and fish farms in the southern corner between Eden Lassie Creek and the small Gregory River.

No bedload sediment is entering the bay, with the only source of sediment being in-situ carbonate production (sediments are approx. 30-40% carbonate). Rising sea level will inundate the tidal flats and creeks, threaten the salt and fish ponds and exacerbate erosion of the Bowen shoreline. By 2100, erosion in Edgumbe Bay is predicated to be between 0-140 m along the Bowen waterfront, up to 400 m in the Bowen salt ponds area, and between 0 m on bedrock and 140-400 m along the southern tidal flats and creeks.

Additional information (links and references)

Short, A D, 2000, Beaches of the Queensland Coast: Cooktown to Coolangatta. Sydney University Press, Sydney, 360 pp.

<https://www.ehp.qld.gov.au/coastalplan/coastal hazards.html>



Edgumbe Bay – Cape Edgecumbe to Gloucester Head.