



Whitsunday Bays QLD03.08.06

Regional setting

The regional processes dominating this region include the wet tropics to humid sub-tropical climate, south-east trade winds, meso tides (2.5m), 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 Gloucester Head to Pioneer Point.

Justification of sensitivity

Sensitivity rating is a 3.5 overall. Areas largely rated 3 are associated with steep resilient bedrock, while areas rated 4 are associated with tidal creeks which will be inundated, esp. in Airlie Beach area.

Other comments

The Whitsunday Bays are a highly indented series of approx. ten deep, funnel-shaped bedrock bays extending from Cape Gloucester to Pioneer Point. They contain 130 km of predominately steep bedrock shoreline, with the bays generally increasing in size to the east; 7 km wide Pioneer Bay being the largest. Small mangrove-lined creeks and tidal flats occupy the head of most of the bays. Most of the shore is undeveloped apart from the northern Hideway Bay-Dingo Beach and southern Cannonvale-Airlie Beach areas. Wave energy is very low within the bays,



with tides being the dominant process. Sediments are very limited, with coarse, carbonate sand making up ~50% of the beach sands.

Most of the shore will be resilient to change apart from inundation of the tidal flats and creeks. Hideway Bay and Dingo Beach are predicated to erode by up to 75 m and 100 m respectively by 2100. The Cannonvale-Airlie beach area contains both bedrock and tidal flats. The bedrock will be resilient to change, while the tidal flats are exposed to inundation from storm surges and sea level rise. The predicated retreat of the tidal flats by 2100 is 75-90 m at Cannonvale, 400 m at Mandalay and 90 m at Flametree.

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/coastalhazards.html>



Whitsunday Bays – Cape Gloucester to Pioneer Point.