



Wellesley QLD01.01.02

Regional Setting

The dominant regional processes influencing coastal geomorphology in this region are the wet-dry tropical climate, trade winds, monsoons, irregular meso-tides, large seasonal mean sea-level range, low to moderate seas, seasonally high river sediment discharges, terrigenous sediments, the El Niño Southern Oscillation (driving sea-level variability & tropical cyclone frequency), 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 and river flooding.

This compartment extends from Bayley Point to Karumba.

Justification of sensitivity

Sensitivity rating is 2 or 3. The coast has prograded over millennia and appears to continue to have plenty of sediment, primarily mud.

Other comments

Bayley Point is a low outcrop of Holocene calcarenite that forms a promontory opposite Bayley Island, the southernmost in the Wellesley group of islands. Mangrove extension, both landward and seaward, has been inferred to be associated with sediment supply from adjacent catchments (Asbridge et al., 2015). A dated sequence of chenier ridges spanning 1.5 km indicates progradation of the coast at the eastern end of this compartment over the past 5,400 years (Rhodes, 1982). Norman River and estuarine plains are low-lying and subject to inundation (Wolanski and Chappell, 1996).



Confidence in sources

Medium confidence: Some evidence for progradation on geomorphological and historical time scales.

Additional information (links and references)

Asbridge, E., Lucas, R., Accad, A., Dowling, R., 2015. Mangrove response to environmental changes predicted under varying climates: case studies from Australia. *Current Forestry Reports* 1, 178-194.

Rhodes, E.G., 1982. Depositional model for a chenier plain, Gulf of Carpentaria, Australia. *Sedimentology* 29, 201-221.

Wolanski, E., Chappell, J., 1996. The response of tropical Australian estuaries to a sea level rise. *Journal of Marine Systems* 7, 267-279.