Cape Grenville - Temple Bay QLD03.03.01

Regional Setting

The dominant regional processes influencing coastal geomorphology in this region are the wet tropics to humid sub-tropical climate, south-east trade winds, mega-meso tides, strong tidal currents, low to moderate south-east seas (local wind-waves), the 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 Grenville to Temple Bay.

Justification of Sensitivity

Sensitivity rating is a 4. The shoreline is stable at present, with protective reefs and backing sand supply from dunes. Sediment is predicted to decline.

- Most of the beaches are fronted by fringing coral reefs which affords protection
- The Cape Grenville dunefield comprises massive Pleistocene and Holocene, transgressive, longwalled parabolic dunes up to 70 m in height and extending 29km. In total, the dunes cover an area of 42 500 ha (Short, 2006).

Other comments

- Olive River is the first significantly sized river south of Cape York. The Olive-Pascoe rivers currently deliver around 340 kt/yr of suspended sediment, which is roughly 5.7 times what it would be under natural vegetation and runoff conditions (see Brodie et al 2011), although bedload is only likely to comprise ~10% of the total.
- The impact of cyclonic events is likely to be more severe, with longer beach recovery times.
- This compartment has the protective effect of both fringing reefs and the main reefs of the Great Barrier Reef.

Confidence in sources

Medium confidence in sources.

Additional information (links and references)

Brodie, J, Lucy A. McKergow, I P. Prosser, M F, Hughes, A and Hunter, H (2011) Sources of Sediment and Nutrient Exports to the Great Barrier Reef World Heritage Area, *Australian Centre for Tropical Freshwater Research report 03/11*

Short, A D (2006) *Beaches of the Northern Australian Coast: The Kimberley, Northern Territory and Cape York*, Australian Beach Safety and Management Program, University of Sydney Press