



Lloyd Bay QLD03.03.03

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 Weymouth to Cape Direction.

Justification of Sensitivity

Sensitivity rating is a 4. The shoreline is stable but sediment supply is limited and predicted to decline.

- Most (11) of the 19 beaches in this compartment are east-south-east facing, with narrow strips of backing dunes and evidence of some blowout activity. A number of these are protected by fringing reefs.
- The Lockhart River has created a wide delta which is reworked and transported onto nearby beaches.
- The southern north facing section of this compartment appears to be a sediment sink, with extensive mangrove development in the southeast and a narrower mangrove fringe immediately to the west of Cape Direction.



Other comments

- This compartment receives sediment leaking from the compartment to the south. At Cape Direction, there is a long ridged sand spit which is 1 km wide off the beach (Short, 2006).
- The impact of cyclonic events is likely to be more severe, with longer beach recovery times.
- Lockhart River currently delivers around 150 kt/yr of suspended sediment, which is roughly 5 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.

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.