



## Cooper Point - Double Point QLD03.07.03

### 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 Cooper Point to Double Point.

### Justification of Sensitivity

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

The narrow Ella Bay beaches are backed by the extensive Ella Swamp. Sediments have been derived from the Johnstone River, with the sands and mud driven northward and into the bay by waves and strong tidal currents (Short 2000).

Johnstone River has a 300 m wide entrance, and tidal shoals extending up to 1 km seaward. Erosion of beaches at Flying Fish Point and Coconut Bay relates to migration of the river.

Johnstone River currently delivers around 380 kt/yr of suspended sediment, which is roughly 7.6 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.



### **Other comments**

The impact of cyclonic events is likely to be more severe, with longer beach recovery times

### **Confidence in sources**

Medium confidence in sources.

### **Additional information (links and references)**

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Coventry, R J, Hopley, D, Campbell, J, Douglas, I, Harvey, N, Kershaw, A P, Oliver, J, Phipps, CVG. and Pye, K (1980) The Quaternary of Northeastern Australia, *Chapter in Henderson, R.A. and Stephenson, P.J. (eds.), The Geology and Geophysics of Northeastern Australia*, Geological Society of Australia, Queensland Division, Brisbane (pp 375-419), ISBN 0 909714 67 3

Pringle, A W (1991) Fluvial Sediment Supply to the North-East Queensland Coast, Australia, *Australian Geographical Studies*, Vol.29(1), pp.114-138

Short, A D (2000) *Beaches of the Queensland Coast: Cooktown to Coolangatta*, Australian Beach Safety and Management Program, University of Sydney Press