



Burdekin River Delta QLD03.08.02

Regional Setting

The regional processes dominating this region include the wet tropics to humid sub-tropical climate, south-east trade winds, meso tides (1.9m), 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 Cape Bowling Green to Cape Upstart.

Justification of sensitivity

The overall sensitivity rating is 4.5, as the delta shoreline is already highly dynamic and will become increasingly susceptible to inundation and erosion from sea level rise and decreased sediment load. Upstart Bay is susceptible to inundation and erosion.

Other comments

The compartment contains 110 km of shoreline arranged in four sectors. In the south are the 15 km long high rocky shores of Cape Upstart, which has a low sensitivity rating, apart from the tidal flats along its southern base. The 25 km long, southern shoreline commences in the funnel shaped mangrove-lined Nobbies Creek, which has extensive supra-tidal flats connecting with Abbot Bay in the east. This entire area is susceptible to inundation and erosion from storm surges and sea level rise; it



grades west into 17 km of tide-dominated, sandy beaches bordered and backed by tidal creeks and flats, which are all susceptible to inundation. Wave energy increases from the Burdekin River northwards. The 15 km wide Burdekin River mouth is highly dynamic, responding to flood events, longshore (quartz rich) sand transport and storm surges. North of the mouth are 40 km of highly dynamic tidal creeks (Branch, Plantation & Alva), sand beaches and recurved spits extending all the way to the tip of Cape Bowling Green. This shore is prone to episodic erosion and accretion associated with the migratory sand spits, as well as overwashing and inundation. Damming of the Burdekin River is likely to substantially decrease sediment supply, which will impact the entire delta. The lower and the upper deltaic plain will become increasingly susceptible to both saltwater intrusion and inundation. By 2100, the entire Cape Bowling Green spit is predicated to be eroded, the river mouth to erode by up to 400 m, Alva Beach and the sand spits by up to 150 m, and the southern Upstart Bay shore by between 150-400 m.



Burdekin River delta – Cape Bowling Green to Cape Upstart. (Delta extends for ~55 km from southern mouth to tip of Cape Bowling Green.)

Additional Information (references and links)

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<https://www.ehp.qld.gov.au/coastalplan/coastal hazards.html>