Don River Delta QLD03.08.04

Regional setting

The regional processes dominating this region include wet tropics to humid sub-tropical climate, south-east trade winds, meso tides (2.2m), 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 Abbott Point to Cape Edgecumbe.

Justification of sensitivity

The overall sensitivity rating is a 4, owing to: the highly dynamic nature of the Don River delta, its migrating recurved spits and extensive areas of tidal flats and mangroves, the decrease in sediment supply owing to the damming of the river, and the aggradation of the deltaic plain following sea level rise.

Other comments

The Don River delta occupies the center of a 28 km long shoreline extending from Abbot Point south to Cape Edgecumbe. The delta protrudes several kilometres into the bay, dividing the shore into three sectors. Between the base of Cape Edgecumbe and the river is the 4 km long Queens Beach, which will become increasingly susceptible to inundation from storm surge, river flooding and sea level rise. The highly susceptible Don River delta and its west-trending, multiple recurved spits

occupy the central 14 km. The spits are backed by Euri Creek and extensive mangroves of the lower deltaic plain, then by the rich farmland of the upper deltaic plain. This sector is susceptible to inundation from storm surge, flooding and sea level rise, as well as saltwater intrusion into the upper deltaic plain. The northern sector is a relatively straight sandy beach, backed by a narrow regressive barrier, with minor dune transgression along its northern half, which extends up to Abbot Point and the coal loading facilities. By 2100, erosion is predicated to be up to 140 m at Queens Beach, 400 m along the Don River mouth, and up to 175 m along the sand spits extending north of the river mouth.

Additional information (links and references)

Short, A D, 2000, Beaches of the Queensland Coast: Cooktown to Coolangatta. Sydney University Press, Sydney, 360 pp.

https://www.ehp.qld.gov.au/coastalplan/coastalhazards.html

Don River delta – Abbott Point to Cape Edgecumbe. The delta is a substantial sandy delta supplying sediment to the delta and coast to the west.