



Abbot Bay QLD03.08.03

Regional setting

The regional processes dominating this region include wet tropics to humid sub-tropical climate, south-east trade winds, meso tides (2.0m), 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 Upstart to Abbot Point.

Justification of sensitivity

The sensitivity ratings in this compartment range from 4 in the south, to 1 on the Cape. The southern tidal flats and creeks are prone to inundation from storm surges and sea level rise, while the central Elliott River is also prone to river flooding. The western Cape Beach is prone to overwashing and erosion, with longshore sand transport also increasing to the west. Sea level rise could permanently connect Abbott and Upstart Bays via Nobbies Creek.

Other comments

Abbot Bay is a 40 km wide, north to east facing bay with 60 km of shoreline, consisting of three sectors. In the east is the low beachrock Abbott Point, containing the Abbot Point jetty and coal loader. The shore extends 7 km west to Mount Bruce as steep rocky coast containing two embayed beaches. Sand sourced from the Don



River may be moving along this shore. Between Mount Bruce and Mount Curlewis are 9 km of predominately low tidal flats and mangroves, containing a series of west trending sand spits at the mouths of the tidal creeks – all are highly susceptible to change. From Mount Curlewis to the base of Cape Upstart are three longer beaches, separated by upland creeks (Elliott River and Saltwater, Splitters & Branch creeks) and each backed by extensive mangroves and exposed to northwesterly sand transport, as indicated by the multiple north-trending, recurved spits. The longer Cape Beach has a 2.5 km wide inner and outer barrier. These beaches are moderately susceptible to erosion and inundation from flooding, storm surge and sea level rise. Sea level rise could permanently connect Abbott and Upstart bays via the Elliott River mouth and Nobbies Creek. The 15 km of steeply sloping, rocky Cape Upstart shoreline is highly resistant to erosion, apart from several small embayed beaches along its base, including Kingfisher and Coconut bays. The western bay shore, including the Elliott River mouth, is predicted to erode by up to 400 m by 2100; the southern shore by between 150-400 m. Much of the Lake-Mount Stuart Creek area in lee of Abbott Point will be inundated.

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>



Abbot Bay – Cape Upstart to Abbot Point