



## Moreton Bay (north) QLD05.02.01

### Regional setting

The regional processes dominating this region include the wet tropics to humid sub-tropical climate, south-east trade winds, micro tides (2.0m), strong tidal currents, low to moderate south-east seas (south-east 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 Northern entrance to Brisbane River-South Passage.

### Justification of sensitivity

Overall sensitivity rating of 4. This coastline contains variable sensitivity – rating of 3 on bedrock sections, 4 on beaches and Moreton Island, and 5 in the tidal channels.

### Other comments

Northern Moreton Bay extends from Bribie Island, including the Pumicestone Passage, down to the Brisbane River mouth and across to South Passage, with Moreton Island forming its eastern boundary. This compartment contains about 130 km of shoreline. The bay has a 15 km wide opening between Bribie and Moreton Islands where some swell and strong tidal currents flow, with tidal currents also flowing through South Passage. The bay is a massive sink for marine and fluvial sediment, with two massive flood tide deltas deposited inside both entrances, and the Brisbane River at its southern boundary delivering freshwater and terrestrial



sediments. The bay shore is a mix of sand (Bribie and Moreton Islands) and, along its mainland: western shore bedrock, low energy beaches (50%) and some tidal flats. There is considerable development on southern Bribie Island, including canal estates, along the western mainland, and in the small Tangalooma and Bulwer communities on the Moreton Island shore. The bay shore is susceptible to sea level rise and any change in tidal range, as well as flooding from the Brisbane River. The large tidal deltas and adjacent sandy shores are dynamic and undergo periodic changes in position, resulting in shoreline erosion. Moreton Island western shore is predicted to erode by up to 100 m by 2100, while the mainland shore will range from resilient on the bedrock sections to erosion along the sandy beaches and tidal flats. The tidal entrances and tidal deltas will be particularly susceptible to wave, tide and sea level induced changes.

#### **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/coastal hazards.html>

<https://www.moretonbay.qld.gov.au/BribieSEMP/>



*Moreton Bay (N) – Northern entrance to Brisbane River-South Passage.*