



## Bowling Green Bay QLD03.08.01

### Regional Setting

The regional processes dominating this region include the wet tropics to humid sub-tropical climate, south-east trade winds, meso tides (2.5m), 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 Cleveland to Cape Bowling Green.

### Justification of sensitivity

The overall sensitivity rating is a 4, as much of shoreline is highly susceptible to inundation from storm surges and sea level rise in the south. The potential destruction of Cape Bowling Green would increase wave energy in the bay, leading to future shoreline erosion.

### Other comments

Bowling Green Bay is an open, 35 km wide, north-facing bay with 90 km of generally low energy shoreline, arranged in four sectors. Fifteen kilometer long Cape Bowling Green forms the eastern boundary. The Cape is unstable and already susceptible to overwashing and erosion, and could be destroyed by both sea level rise and decreasing sediment supply from the Burdekin River. The 40 km long southern shore is dominated by tidal flats, mangroves and several tidal creeks (incl. Barratta,



Barramundi & Haughton creeks) - all of which are susceptible to inundation and have unstable, west migrating shorelines. All will be susceptible to inundation and erosion. The western, 15 km long Big Beach and barrier will be more resilient, but still susceptible to shoreline erosion, especially around each of the tidal creeks, with more extensive inundation of the backing supra-tidal salt flats. Much of the western and southern shores of the bay are predicted to erode by between 150-400 m. The 12 km long Cape Cleveland shore, including AIMS, is more resilient, displaying low susceptibility apart from the beaches.

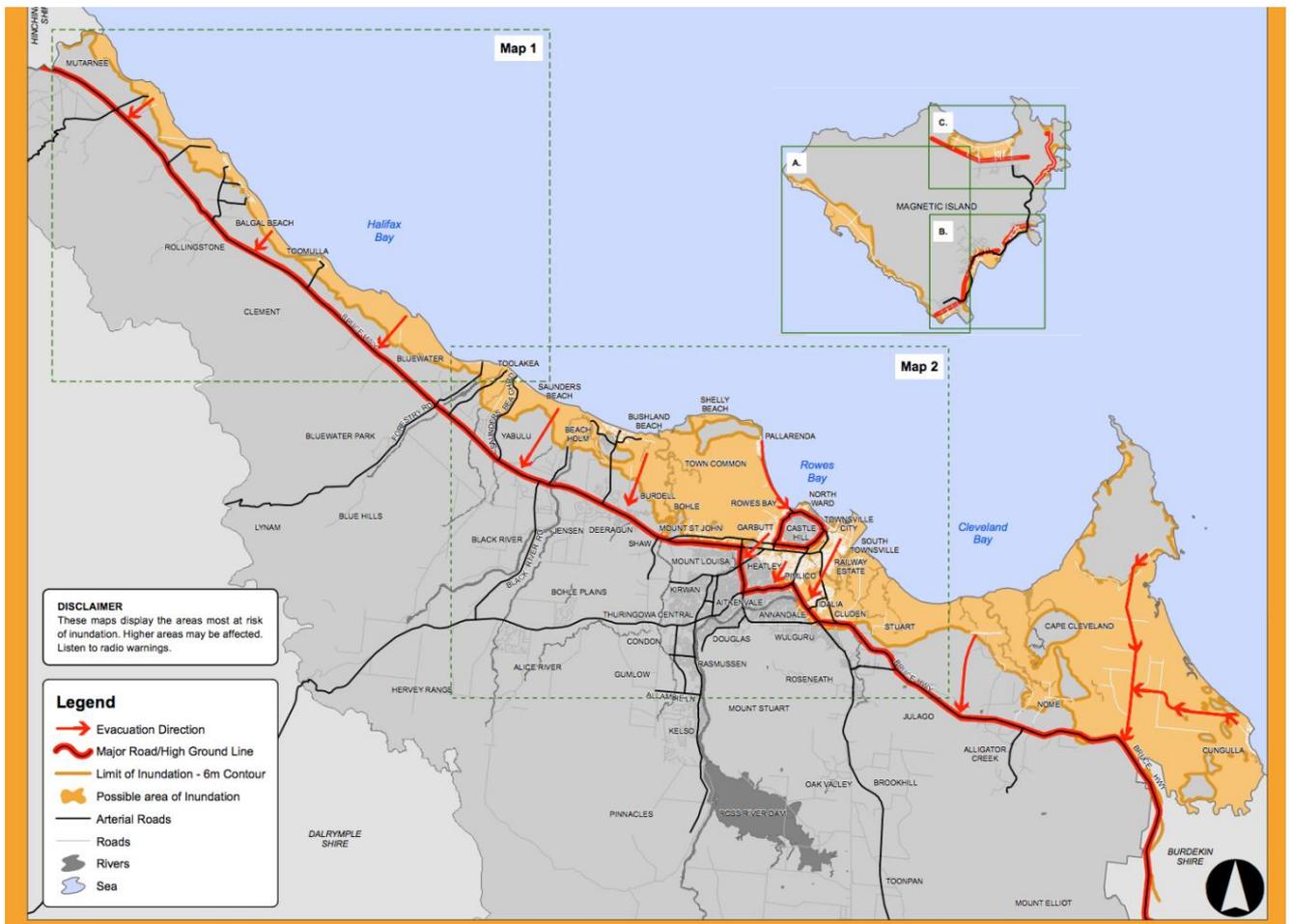
#### **Additional information (reference and links)**

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>



*Bowling Green Bay – Cape Cleveland to Cape Bowling Green. (Red arrows indicate shoreline progradation, river sources and longshore sand transport.)*



Townsville regional tsunami inundation map.