



Port Bradshaw NT03.01.01

Regional Setting

The dominant regional processes influencing coastal geomorphology in this region are the wet-dry tropical climate, trade winds, monsoons, irregular meso-tides, large seasonal mean sea-level range, low to moderate seas, seasonally high river sediment discharges, terrigenous sediments, the El Nino Southern Oscillation (driving sea-level variability & tropical cyclone frequency), 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 and river flooding.

This compartment extends from Cape Arnhem to Wanyanmera Point.

Justification of sensitivity

Sensitivity rating is a 3 overall. Most of the shoreline is rocky and not sensitive. Extensive dunes are present but appear to still be accreting.

Other comments

This compartment is part of the Carpentaria Basin and is largely Mesozoic, but with Proterozoic Arnhem province outcrops. South of Cape Arnhem, there are extensive transgressive dunes. The Cape is composed of undulating lateritised Mesozoic sediment forming a dissected plateau 30-60 m high. The dunes extend about 60 km along the coast and as much as 5 km inland, with some parabolic dunes up to 8 km inland. Some reach 60 m high. Port Bradshaw is a broad embayment, anchored by granite outcrops on either side of its entrance around which there are mangrove shorelines, and the meandering Holly Inlet winds behind the dune barrier to the southwest. Phases of dune activity are inferred from TL ages as 9-6 ka, ~4ka and 2-1



ka. There are also lithified Pleistocene dunes along this coast, which can be inferred to be relatively resilient.

Confidence in sources

Medium confidence: There is little evidence on which to base assessment.

Additional information (links and references)

- *An inventory of all the beaches in northern Australia has been compiled by Short (2006). This provides details of the geomorphology of each beach and other information that will be useful in determining the functioning of tertiary compartments:*
 - Short, A.D., 2006. Beaches of the northern Australian coast: the Kimberley, Northern Territory & Cape York. Sydney University Press.
- *There has been little comprehensive study of the coast of the Northern Territory. There is little information on the offshore characteristics of NT. A workshop was held in 2007 that summarised the nature of the offshore environment, recognising Joseph Bonaparte Gulf in the west, Arafura in the north, and the Gulf of Carpentaria in the east. The report is available at www.environment.gov.au/system/.../characterisation-workshop-report.rtf*
- Lees, B.G., Stanner, J., Price, D.M., Yanchou, L., 1995. Thermoluminescence dating of dune podzols at Cape Arnhem, northern Australia. Marine Geology 129, 63-75.
- http://www.lrm.nt.gov.au/_data/assets/pdf_file/0003/13917/24_gove.pdf