



## Collier Bay WA13.02.01

### Regional Setting

The dominant regional processes are the wet-dry tropical climate (trade winds, monsoons); El Niño Southern Oscillation (driving high sea-level variability); Madden-Julian Oscillation (driving weather patterns including monsoons and tropical cyclones); mega to meso (limited) semi-diurnal tides; waves dominantly seas; episodic high river sediment discharges; mixed carbonate-terrigenous sediments; tidal sediment transport, and limited longshore transport.

This coastline is susceptible to regional hazards, including tropical cyclones, storm surges and river flooding.

This rocky coast compartment extends from Marnebulorgne Community (north point) to Battery Point.

### Justification of sensitivity

Sensitivity rating is a 2 as the shoreline is stable but likely to start accreting. Low susceptibility is attributed to the rocky cliffed coast. Fringing coral reefs, as well as tidal flats and fluvial deltas, are depositional features of the highly irregular ria coast, particularly in Walcott Inlet. However, a higher local rating (4) may be given to the Montgomery Reef, an ancient bioherm of high scientific significance.

### Other comments

High landform diversity and the uniqueness of the ancient Montgomery reef bioherm indicate this coast has a number of values of World Heritage significance. The compartment has attracted recent attention by researchers (Duke et al., 2010). However, there is scope for more detailed investigation of landform dynamics and their relationships to the biota.



In addition to several elongate inlets, the compartment has three common components: [1] Cliffs, beachrock, fringing coral reefs and beaches may be formed between headlands due to high tidal range (36%). [2] Tidal channels and flats backing onto low cliffs and sand ridges (44%). [3] Gently-sloping beach with an extensive intertidal zone and which may be backed by an extensive supratidal zone (10%).

Geomorphological features include coral reefs, islands, elongate embayment and mangroves.

This compartment has a WNW aspect.

### **Confidence in sources**

Low-Moderate confidence: Limited or no information specifically describing landforms or coastal landform change is available for the historical period. However, multiple photographic runs and other regional investigations of landforms have been published. Detailed investigations of the natural resources and coastal process affecting key areas in the compartment, such as Montgomery Reef, are warranted.

Interpretation of landform assemblages from satellite imagery, aerial photography and available literature.

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

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Duke N, Wood A, Hunnam K, Mackenzie J, Haller A, Christiansen N, Zahmel K & Green T. (2010) *Shoreline Ecological Assessment Aerial and Ground Surveys, 7-19 November 2009*. Report to PTTEP Australasia as part of the Scientific Monitoring Study of the West Atlas Monitoring Plan. 244 pages. University of Queensland with Uniquist, Brisbane.

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Wilson B and Blake S. (2011) Notes on origins and biogeomorphology of Montgomery Reef, Kimberley, Western Australia, *Journal of the Royal Society of Western Australia*, 94: 107-120.