



Gnarraloo WA10.01.02

Regional Setting

The dominant regional processes are the Mediterranean to arid climate; the El Nino Southern Oscillation (driving sea-level variability); Southern Annular Mode (driving south-westerly swells and storms); strong sea breezes; micro to meso tidal, mainly diurnal; south-westerly swells; southerly seas; and carbonate sediments with moderate northerly longshore transport.

This coastline is susceptible to regional hazards, including extra-tropical cyclones, mid-latitude cyclones (depressions), storm surges, and river flooding (sub-regions only).

This rocky coast compartment extends from Cape Cuvier to Gnarraloo Bay.

Justification of sensitivity

The sensitivity rating is a 4 as the shoreline is currently stable but likely to start eroding. South of Red Bluff, the high cliffs are unlikely to alter in future and have a susceptibility rating of 3. North of Red Bluff, many of the sandy beaches between rocky headlands are perched on coral platform or beachrock. While their sediment budgets are unknown, these are susceptible to change in sea level and storminess, and have a susceptibility rank of 4.

Other comments

Common landform assemblages:

The WNW facing shoreline has four shallow embayments, each with a distinctive morphology. Beachrock, perched beaches and occasional sandy sections dominate the coast. Beachrock and adjacent fringing coral reef formed the coast with some beaches between headlands north of Red Bluff. Mainly cliffed coast exists south of Red Bluff, with some transgressive dunes ramping over them. Overall, beachrock which may form a low



undercut cliff dominates the shore, with occasional sandy sections (87%); although, there is some beach formation between rocky headlands (10%).

Geomorphological features include fringing coral reefs, rocky headlands and embayments, beaches and dunes.

This compartment has a WNW aspect.

Confidence in sources

Low confidence: Limited or no information describing landforms or coastal landform change over the historical period is available. Interpretation of landform assemblages comes from satellite imagery, site visits and aerial photography.

Additional information (links and references)

Australian Beach Safety & Management Program (ABSAMP) database of over 12,000 beaches can be accessed at http://www.ozcoasts.gov.au/coastal/beach_intro.jsp (also see Surf Life Saving site)

Australian Maritime Safety Authority (AMSA). (2006) Oil Spills Response Atlas. Australian Government Canberra. Available at <https://www.amsa.gov.au/environment/maritime-environmental-emergencies/national-plan/general-information/OSRA/index.asp>

Baker C, Potter A, Tran M & Heap AD. (2008) Geomorphology and Sedimentology of the Northwest Marine Region of Australia. Geoscience Australia, Record 2008/07. Geoscience Australia, Canberra. 220pp.



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http://www.transport.wa.gov.au/mediaFiles/marine/MAC_R_ShiresOfSharkBayAndExmouthFullReport.pdf.

Eliot I, Nutt C, Gozzard B, Higgins M, Buckley E & Bowyer J. (2011). Coastal Compartments of Western Australia: A Physical Framework for Marine & Coastal Planning. Report to the Departments of Environment & Conservation, Planning and Transport. Damara WA Pty Ltd, Geological Survey of Western Australia and Department of Environment & Conservation, Western Australia

Gozzard JR. (2011d) WACoast –Gascoyne. Geological Survey of Western Australia

Short AD. (2005) Beaches of the Western Australian Coast: Eucla to Roebuck Bay: A guide to their nature, characteristics, surf and safety. Australian Beach Safety and Management Program. University of Sydney Coastal Studies Unit and Surf Life Saving Australia. Sydney University Press. Sydney, New South Wales.

Sharples C, Mount R, Pedersen T, Lacey M, Newton J, Jaskierniak D & Wallace L. (2009) The Australian Coastal Smartline Geomorphic and Stability Map. Version 1: Project Report. Geoscience Australia & Department of Climate Change, www.ozcoasts.gov.au/pdf/SmartlineProjectReport_2009_v1.pdf