



Kalbarri (Murchison River) WA09.01.01

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 Murchison River mouth to Nunginjay Spring Coast (N).

Justification of sensitivity

The sensitivity rating is a 3 as the coast is currently stable and likely to remain stable. High natural resilience to erosion linked to the Zuytdorp Cliffs, which are comprised of limestone and have a platform close to sea level. The cliffs and platform drop into deep water. Landforms in the vicinity of the Murchison River mouth have a higher ranking (4) than the compartment as a whole.

Other comments

Common landform assemblages:

Narrow sandy beach without extensive beachrock but backed by continuous, stable, well-vegetated high dunes which may include a calcarenite core (67%). Broad sandy beach, which may be cusped or crenulate, formed between or in association with resistant headlands (33%).



Geomorphological features include rock platforms, beaches, dunes and the Murchison River.

This compartment has a WSW 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 and aerial photography. Southern boundary is the start of aerial photographic runs between Kalbarri and Israelite Bay that have been flown at approximately five year intervals since 1950.

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.

Eliot I, Gozzard B, Eliot M, Stul T and McCormack G. (2012c) The Gascoyne Coast, Western Australia: Shires of Shark Bay to Exmouth. Geology, Geomorphology & Vulnerability. Damara WA Pty Ltd and Geological Survey of Western Australia, Innaloo, Western Australia.
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