Rottnest WA06.02.x1

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 mixed sand and rock coast compartment includes Rottnest Island, Carnac Island and Garden Island.

Justification of sensitivity

The sensitivity rating is a 3 as the shoreline is currently stable and likely to remain stable.

The compartment includes limestone islands - such as Garden, Carnac and Rottnest - and ridges of reef separating the mainland shore from the mid to outer continental shelf. Some sediment may be moved along the seaward side of the reef chain but this is likely to be a small volume. Small beaches on the islands may have a higher susceptibility rating (4).

Other comments

The compartment includes limestone islands (such as Garden, Carnac and Rottnest Island) and ridges of reef separating the mainland shore from the mid to outer

continental shelf. Intermittent sediment transport through reef gaps is pulsatory, occurs over long time spans and may be bidirectional under different phases of wind and wave dominance. In other respects, the reefs contribute to sediment storage and supply as well as affecting the local wave regime of the inshore waters.

Confidence in sources

Moderate confidence: The landforms of the islands are well described in available management literature and confidence in describing them is high. However, the sediment movement along and through the reef, and sediment budgets for the small island beaches are not well known. Interpretation of landform assemblages comes from satellite imagery, marine LiDAR imagery and aerial photography, as well as site visits to the islands and published information.

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);

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