



Newcastle Bight NSW02.01.05

Regional Setting

The dominant regional processes influencing coastal geomorphology in this region are the humid warm to cool temperate climate, micro-tides, south-easterly Tasman Sea swells, easterly seas, dominantly quartz (terrigenous) sediments with northerly longshore transport in the northern part, and the El Nino Southern Oscillation (driving beach erosion/accretion cycles, cyclone frequency).

Regional hazards or processes driving large scale rapid coastal changes include: East Coast Lows (extra-tropical cyclones), mid-latitude cyclones (depressions), and storm surges (<1m).

This compartment extends from Birubi Point to Nobbys Head.

Justification of sensitivity

Sensitivity rating is a 4. The sediment budget is potentially in deficit, with loss of sand into dunes, exacerbated by sand mining, and with erosion at the western end already rated a 5.

Other comments

Stockton Beach borders Newcastle Bight and is the longest beach in NSW (32km). It comprises extensive transgressive dunes described by Thom et al. (1992), overlying a prograded Holocene strandplain. At its western end, training walls associated with the mouth of the Hunter River have had an effect on the beach, leading to localised erosion at the Newcastle end and a requirement for protection (Figure 1). A seawall protects Mitchell Street at Stockton, with noticeable end erosion effects. The longer beach continues to be subject to sand extraction from the rear of the transgressive dunes behind the active dune belt.



This beach will be a slow responder; it is experiencing active foredune construction and destruction, and sand drift into the mobile dune field from its exposure to southerly winds will continue. The beachface position is quite variable that locally result in closure of sections of beach where the beach has narrowed and the foredune undergoes erosion. Large sections of the beach and dune field are managed by the National Parks Wildlife Service.

The Sygna was wrecked at the southern end of Stockton Bight in 1974; the wreck still remains a short distance off the foreshore, indicating little net long-term movement of the shoreline at this location, but implying erosion rather than overall progradation. The sediment budget is in deficit due to loss of beach sand landwards into the mobile dunes, with historic recession of 1-2m/yr (Roy and Crawford, 1980). Sediment studies have been conducted on the shoreface as part of investigations into the future of port facilities in the area (Gordon and Roy, 1977; PWD, 1977).

Confidence in sources

High confidence: Quaternary history is well-studied and modern management considered by NPWS.

Additional information (links and references)

Gordon, A.D., Roy, P.S., 1977. Sand movements in Newcastle Bight, Proceedings 3rd Australian Conference on Coastal and Ocean Engineering, Melbourne.

PWD, 1977. Sediment movement in Newcastle Bight. Manly Hydraulics Laboratory, report 206.

Roy, P.S., Crawford, E.A., 1980. Quaternary geology of the Newcastle Bight inner continental shelf, New South Wales, Australia. Records of the Geological Survey of New South Wales 19, 145-188.



Thom, B.G., Shepherd, M., Ly, C.K., Roy, P.S., Bowman, G.M., Hesp, P.A., 1992. Coastal Geomorphology and Quaternary Geology of the Port Stephens-Myall Lakes Area. Australian National University, Canberra.



Figure 1. Protection at Newcastle end of Stockton Beach (photo C. Woodroffe).