



## Sydney Eastern Beaches NSW02.03.04

### 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 South Head to Cape Banks.

### Justification of sensitivity

Sensitivity rating is a 3. However, individual beaches within closed tertiary compartments may not recover post-storm as sea level rises; in such cases, the rating would be 4.

### Other comments

This is a cliffed headland and bay coast containing a number of small but highly popular city beaches with sea walls. Sand returns to the beaches after being cut by storms (Gordon, 1987, 1989, 2009), and there is no evidence of a net loss of beach area, except in isolated cases. Offshore sand bodies exist along this stretch of coast (Field and Roy, 1985), but sediment features of these sand bodies suggest they are not connected to the beach system (Roy, 1984; Ferland, 1993). The offshore rock and sand surface has been well mapped as part of the sewer outfall investigation in the early 1980s. Bondi is backed by a continuous seawall and is highly exposed; the photographic record dating back to 1876 shows little sign of change in shoreline position at Bondi, indicating a high level of resilience to storm erosion within a closed tertiary compartment.



### **Confidence in sources**

Medium confidence: Uncertain as to when there will be net beach sand loss following extreme storm events with rising sea level.

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

Ferland, M.A., 1993. Sedimentology and morphology of shelf sand bodies in southeastern Australia. Catchments and Coasts in Eastern Australia. Department of Geography Research Monograph, University of Sydney 5, 129-141.

Field, M., Roy, P.S., 1985. Offshore transport and sand-body formation: evidence from a steep, high-energy, shoreface, southeastern Australia. Journal of Sedimentary Petrology 54, 1292-130.

Gordon, A.D., 1989. Sydney's Sea Defences. Proceedings of the Australasian Conference on Coastal and Ocean Engineering, Adelaide, pp 149-154.

Gordon, A.D., 1990. Beach Fluctuations and Shoreline Change - N.S.W., Australian Civil Engineering Transactions, Institution of Engineers, Australian Vol., CE32 No. 1. 1990: pp 7-13.

Gordon, A.D., 2009. The potential for the offshore sand sources to offset climate change impacts on Sydney's beaches, Coast and Ports Conference, Wellington.

Roy, P.S., 1984. The geology of marine sediments on the South Sydney Shelf. Geological Survey of NSW Report No 1984/158.

Beach Sand Nourishment Scoping Study (2010)

[http://www.sydneycoastalcouncils.com.au/Project/Sand\\_Nourishment\\_Scoping\\_Study](http://www.sydneycoastalcouncils.com.au/Project/Sand_Nourishment_Scoping_Study)

Mapping and Responding to Coastal Inundation (2012)

[http://www.sydneycoastalcouncils.com.au/Project/Mapping\\_and\\_Responding\\_to\\_Coastal\\_Inundation](http://www.sydneycoastalcouncils.com.au/Project/Mapping_and_Responding_to_Coastal_Inundation)