



Central Coast NSW02.02.02

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 Norah Head to Third Point.

Justification of sensitivity

Sensitivity rating is a 4 overall. Some local areas, such as Avoca Beach and Wamberal, earn a higher rating of 5 because of very limited sand supply.

Other comments

Cliff erosion of the soft shales of the Narrabeen sandstone group occurs south of Norah Head and constitutes a constant threat to property.

Tuggerah Beach comprises a barrier that separates Tuggerah Lake from the sea; it is 300 m wide in the south, and widens to 1.5 km to the north where there are both Pleistocene and Holocene dunes, some of which has been mined and rehabilitated. The barrier is relatively low in relief towards the southern end, with properties exposed to storm erosion at The North Entrance.



South of The Entrance, the coast is rocky with several small pocket beaches. Coastal lakes such as Wamberal and Terrigal function as ICOLLs with foredune ridges subjected to periodic storm wave erosion. Wamberal Beach experienced severe erosion in 1978 when three houses fell into the sea, attributed to rip cell undermining of the erosion scarp. This has been the site of numerous past and on-going investigations (for instance PWD, 1985, 1990 and work for council as part of its CZMP).

Avoca Beach is currently in a state of dynamic equilibrium, with a relatively “closed” sediment budget, and can be regarded as susceptible to recession as sea level rises (Mariani et al., 2013). Their report concluded that there was likely no sand supply to the compartment sediment budget; potential sediment losses are through (i) lagoon sequestration, (ii) dune overwash, (iii) mega rips, and (iv) shell degradation (see Figure 1). Each of the adjacent beaches is likely to be subject to the same processes. This recent study demonstrated the usefulness of detailed offshore sediment studies, depicting the role of headlands and extensive offshore rock reefs, in isolating the Avoca tertiary compartment from adjacent compartments (see Figure 2).

Confidence in sources

Medium confidence: Wamberal and Avoca have been subjected to more detailed investigation.

Additional information (links and references)

Mariani, A., Flocard, F., Carley, J.T., Drummond, C., Guerry, N., Gordon, A.D., Cox, R.J., Turner, I.L., 2013. East Coast Study Project - National Geomorphic Framework for the Management and Prediction of Coastal Erosion, Water Research Laboratory, WRL Research Report. School of Civil and Environmental Engineering, UNSW Australia, Manly Vale, NSW.

Public Works Department, NSW (1985) Wamberal Beach and Avoca Beach Coastal Engineering Advice, *Public Works Department- Civil Engineering Division*, Report No PWD 85040.

Public Works Department, NSW (1989) Topographic Setting and Offshore Sediment Distribution Terrigal/Wamberal Beach, Survey taken 1984-1989.

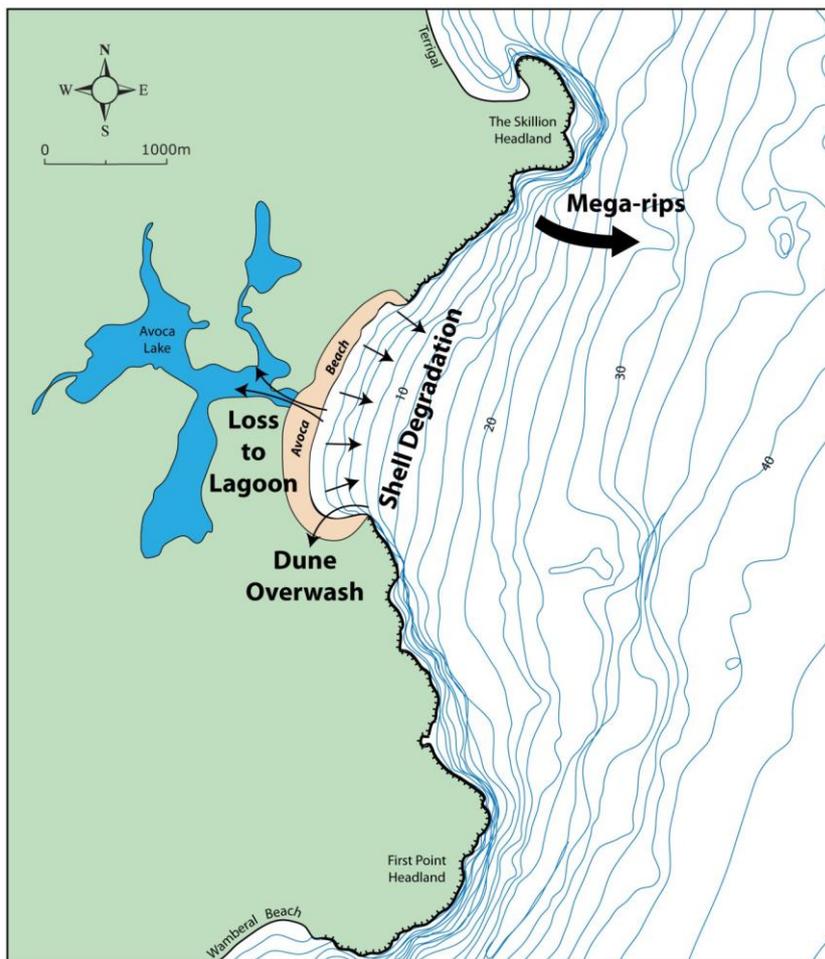


Figure 1. Avoca Beach sediment pathways from Mariani et al. (2013).

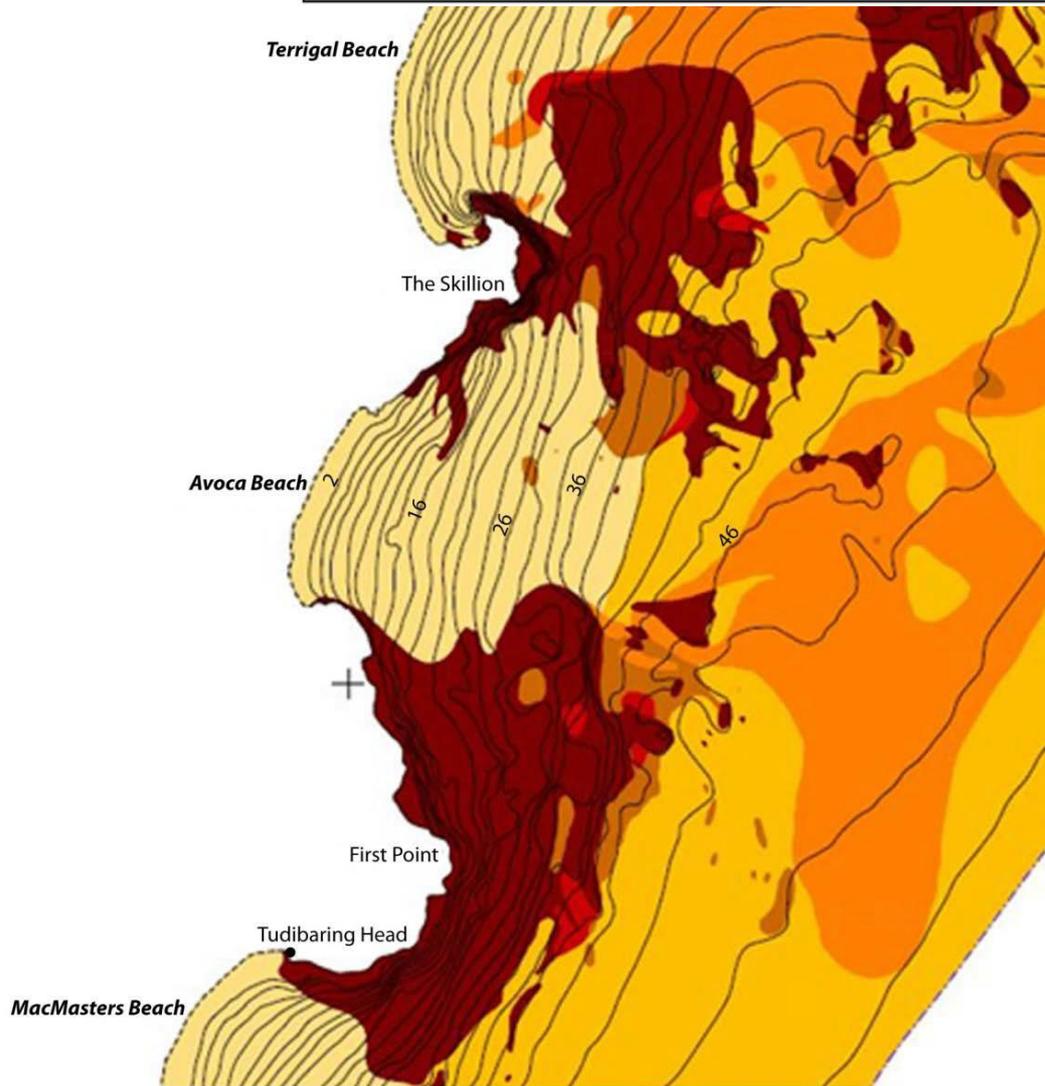
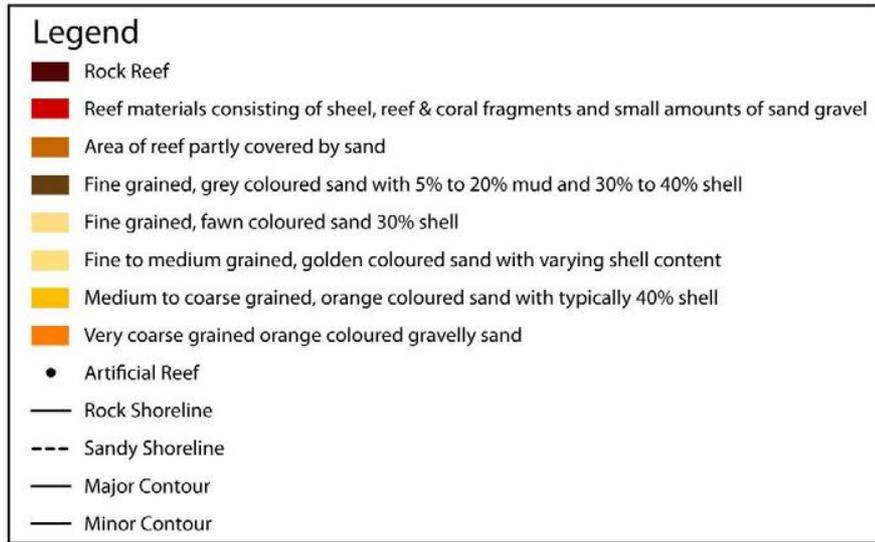


Figure 2. Avoca Beach offshore sediment and rock reef distribution (from Mariani et al., 2013).