



Esperance Bay WA02.01.06

Regional Setting

This coast compartment extends from Cape Le Grand to Observatory Point.

The dominant regional processes are the Mediterranean to humid cool-temperate climate; southern annular mode (driving dominant south-westerly swells and storms); micro-tidal; high energy south-westerly swells; westerly seas; carbonate sediments; and interrupted swell-driven longshore transport.

This coastline is susceptible to regional hazards, including mid-latitude cyclones (depressions), storm surges and shelf waves.

Justification of sensitivity

Sensitivity rating is a 4 due to shoreline retreat in the west and loss of sediment into mobile dunes in the east.

Other comments

Granite outcrops occur as islands and as headlands controlling zeta-form bays. The shoreline and backshore comprise three distinct tertiary compartments: (1) West of Dempster Head are broad smooth curving sandy beaches formed between or in association with resistant headlands of granite or limestone (38%); (2) between Dempster Head and Wylie Head are broad smooth gently sloping coarse grained sandy beaches with some active dunes and unstable blowout areas (28%). Bandy Creek discharges into this bay; and (3), east of Wylie Head are exposed high energy shorelines with eroded igneous or metamorphic rocks associated with overlying beachrock or eolian limestone (27%)

The beaches west of Dempster Head are compartmentalised and are known to be subject to erosion. In many instances shoreline retreat has left beachrock platforms exposed in the inshore areas. Esperance Bay between Dempster Head and Wylie Head has a reducing sediment supply with shoreline retreat occurring west of Bandy Creek. There is some loss of sediment from this bay into a sediment cell sink



indicated by mobile dunes between Bandy Creek and Wylie Head. East of Wylie Head, the bay is directly exposed to SW swell and storms with limited protection provided by Recherche Archipelago. Loss of sediment from the long beach into numerous blowout dunes would contribute to variability of the shoreline.

Confidence in sources

High confidence: Esperance Bay between Dempster Head and Wylie Head has been the focus of numerous detailed studies, including examination of sediment dynamics. Beaches west of Dempster Head and east of Wylie Head are less understood and coastal change has been inferred from the landforms.

Additional information (links and references)

Department of Transport (Transport) 1994, Esperance Beach Stabilisation Report on Coastal Erosion and Shore Protection Works Beach Investigations - Report on Coastal Erosion and Possible Shore Protection Works, CIES Report DMH P 19/93, May 1994.

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