

Queensland's coastal sand dunes

Coastal sand masses of central Queensland

The central Queensland region is situated between Burrum Shire to the south and Proserpine Shire to the north. The distribution and description of coastal sand masses in this region will be considered in terms of specific areas, subject to availability of published information on coastal geology and geomorphology. The first area to be considered is Shoalwater Bay.

The Shoalwater Bay area in east central Queensland lies about 50km north of Rockhampton. Information on the type and extent of coastal sand masses in this area has been extracted from a report prepared by the CSIRO Division of Land Research.

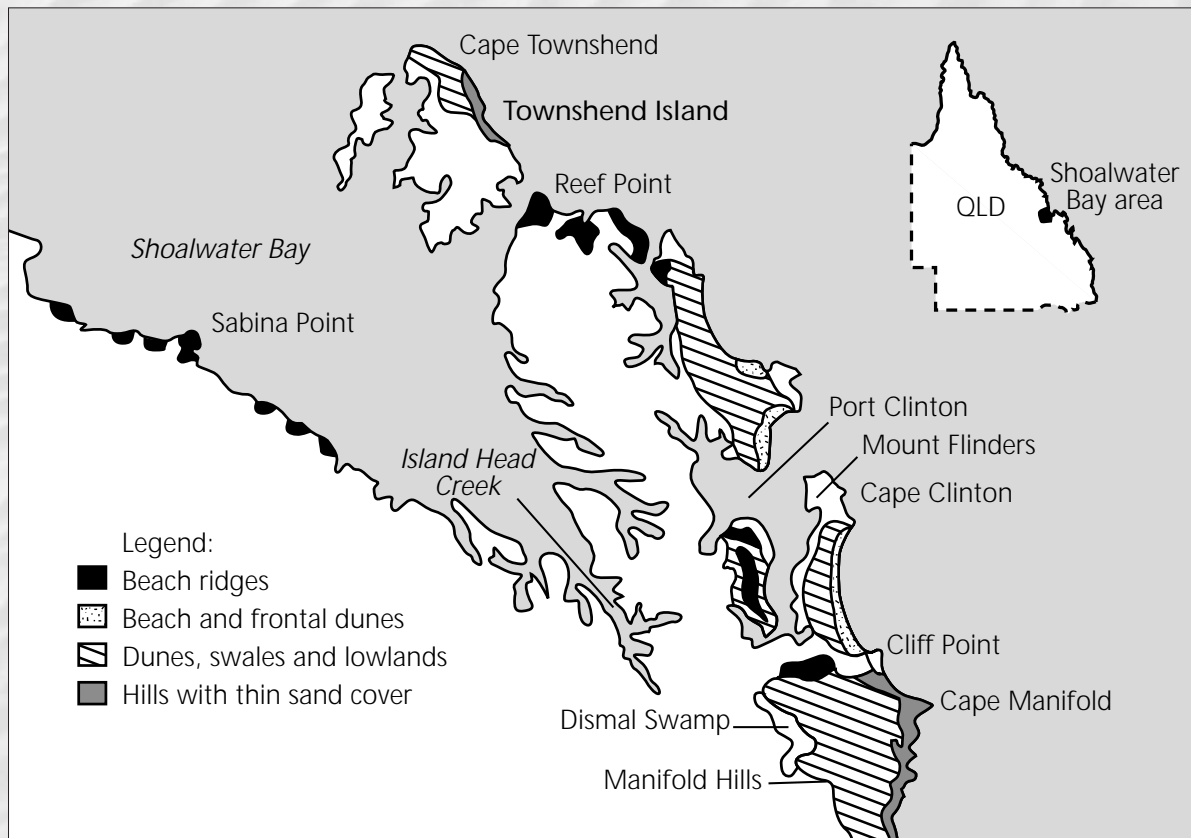


Figure 1. Coastal sand masses of the Shoalwater Bay area (adapted from Gunn et al., 1972).

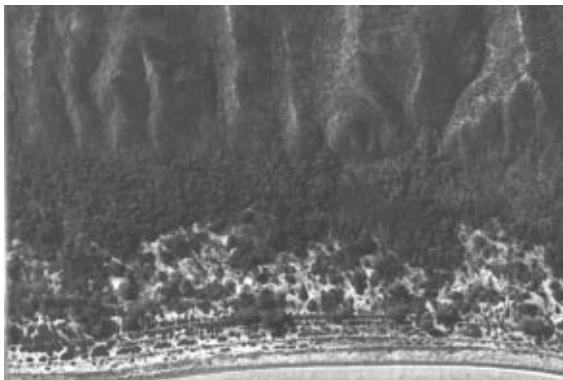
Figure 1 shows the main coastal sand masses of the Shoalwater Bay area. Old beach ridges consisting of sand deposited by wave (or swash) action cover about 29sq.km and dunes, swales and sandy lowlands consisting of windblown sand cover about 158sq.km. Fringing parts of the Pacific coast are a series of hills with thin sand cover; these are about 16sq.km in area. The Pacific coast is dominated by large parabolic dunes and shallow estuarine inlets such as the Port Clinton complex. As well as permanent tidal channels, the estuaries include sandflats, beach ridges and mangrove swamps.

Beach ridges

Sand beach ridges and modern beaches comprise only a small proportion of the coastal deposits. Both are almost exclusively composed of well-sorted quartz sand. The beach ridges and swales have formed parallel to the coast. They are 30-300m wide, up to several kilometres long and usually less than 1m high. The beach ridges are relics of former beaches modified by wind action and now vegetated. They consist of uniform pale brown fine sands with little or no soil development. The beach ridges were probably built during the last interglacial period (about 125 000 years ago) when sea level was slightly above its present position. Those in the southern part of Port Clinton probably developed before the eastern side of Port Clinton was almost blocked by the recent dunes that now link Mt Flinders to the mainland.

Foredunes

Wind-deposited sand occupies most of the area along the eastern margin. Foredues have evolved behind the modern beaches which provide the necessary



Parallel foredunes backed by low dunes grading into high parabolic dunes on the Port Clinton coastline.

sand source. They consist of pale brown fine quartz sands with little if any soil development. The foredunes are exposed to the prevailing south-east winds and are subject to blowout development.

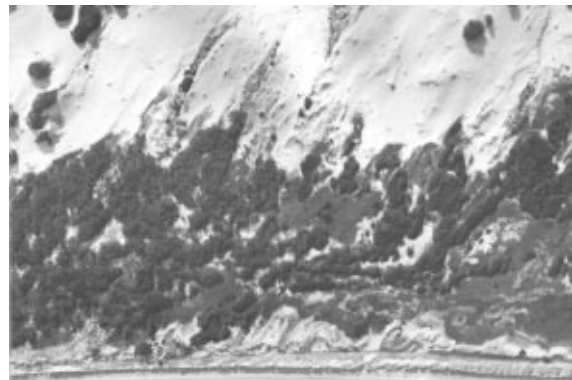
Parabolic dunes

Landward of the foredunes the wind-deposited sand is heaped into parabolic dunes aligned SE-NW under the influence of south-east winds. These dunes are up to 100m high and 10km long and are covered by vegetation.

The soils on high parabolic dunes, mostly under eucalypt scrub/woodland or heath, are uniform fine quartz sands with black to dark grey surface horizons 60-70cm thick underlain by white subsurface horizons to depths greater than 1.5m. At the landward edge of the parabolic dune system, sand has reached altitudes of 200m above sea level.

These massive sand deposits have blocked the natural seaward drainage to the coast and have formed extensive swamps, of which the largest is Dismal Swamp. The parabolic dunes were probably formed when accumulations of ice over the northern continents about 18 000 to 25 000 years ago lowered the sea level by 100-200m. Most of the continental shelf was dry land, from which strong onshore winds picked up the sand required to build the massive dunes. The greater part of the dunes seem relatively young and may date from the end of the Ice Age when the sea level was rising.

Reference: Gunn, R.H. et al. (1972)
Shoalwater Bay area. CSIRO Division of
Land Research, Canberra.
Tech. memo. 72/10 Sept. 1972



Low dune mobile sandsheet complex landward of vegetated foredunes on the Port Clinton coastline.