

# A brief geological history of Wellington Point

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“Saxa locuuntur” – “rocks are talking”

Our environment stores and shows its history and the processes it was exposed to. This is not only the “recent” history of human influence but the geological history also. A very pleasant environment in which this geological history can be observed is at Wellington Point, on the mainland side of Moreton Bay in the Redlands.

The eastern foreshores of Wellington Point, just north-east of the headland in relation to landforms, is a complex site with a deeply weathered (lateritised) basalt headland, wave-cut base, sand bar to King Island, seagrass meadows, rubble cover over a tidal flat and both a remnant and living fringing coral reef. It contrasts with the adjacent areas just south of the Point, where fringing mangroves and mudflats are the dominant landforms.

The signs of the long-gone and current geological processes that have shaped the landscape at Wellington Point are still observable to a keen eye.

At depth, the area is underlain by rocks more than 300 million years old, similar to those forming the hills at Mount Cotton. Sitting on top of those deep metamorphic rocks is a 500–600 m thick sequence of Mesozoic (time of the dinosaurs) sedimentary rocks, which are like the coal-bearing sediments of Ipswich.

It was in the mid-Tertiary period (roughly 25 million years ago) that the modern landscape started to take shape. The eastern part of the area (approximately the current Moreton Bay area) started to sink along a series of large scale fractures that also allowed the rise of basaltic lavas to the surface. Some of the red soils of Redlands and all the basalt headlands and islands originate from these lavas.

Fresh basaltic lavas, especially if there were lots of gas bubbles in the lava, are prone to weathering and erosion. Warm and wet climatic cycles of the past stripped away most of the basalts or altered them to form hard caps (“ferricrete” or “laterite”) over more weathered, softer material.

The sea-level curve shown below (Figure1) illustrates that in the last 200,000 years or so Moreton Bay was really a “bay” for short periods of time only. In the interim dry and cold periods, the current foreshores were hill slopes, fairly high above the Brisbane River, which flowed across what is now the bay floor, with pale grey clays forming on them.

At the end of the last ice-age (about 8,000 years ago) the sea-level rose up to about 2.5 m above the current level and the climate was slightly warmer than now. With the rising sea-level came the corals.

The water temperature was just right for the corals: there was also plenty of fresh ocean water coming through the wider openings of the bay, and the hard, rocky surface of the weathered basalt provided the essential base for them. Wherever there was a hard base at just the right water depth corals established and created a fringing reef system along the foreshores. Figure 2 is a cross-section through the shoreward edge of this reef system.

The reefs were home to both “stag” and “plate” corals, indicating high water quality with little suspended material. Although these conditions only lasted for about 4,000 years, the reef system developed significantly, both in area and depth.

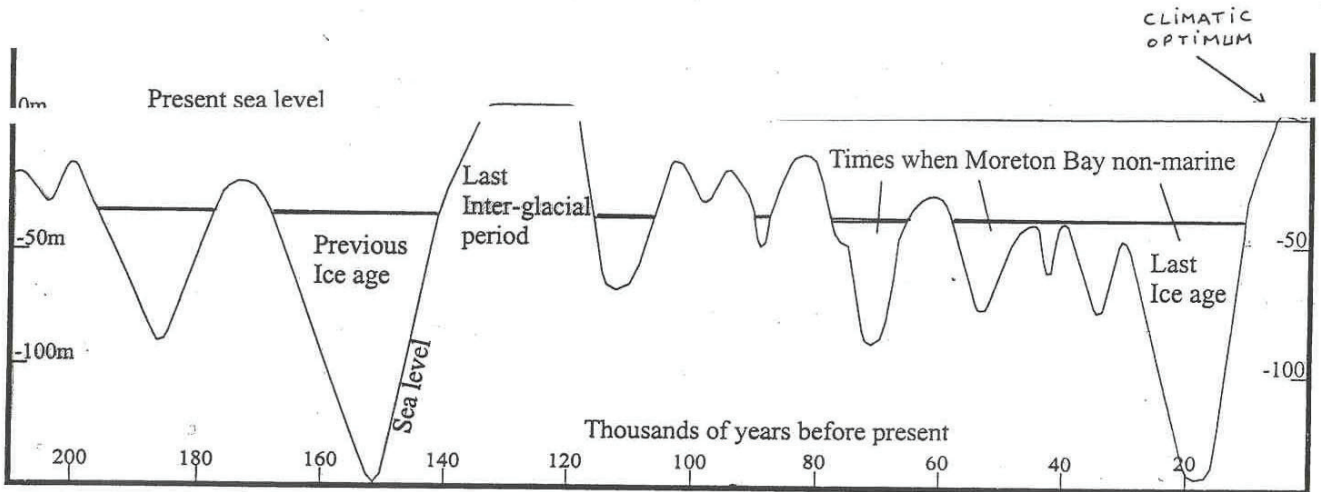
About 4,000 years ago, the sea-levels rapidly dropped back to the current levels and the corals have declined at Wellington Point. However, they have persisted and now are dominated by “brain” corals with only a few “finger” corals present that can form colonies up to about 1.2 m in diameter. “Brain” corals can be observed at low tide near the low-water mark.

Although the living corals do not form a continuous cover over the area, the fossil fringing reef does. The fossil reef provides the basement for the current sedimentation processes that are shaping, among other things, the patchy deposition of sand and mud, which are colonised by seagrass, and the distribution of the living corals.

When you are next walking on the intertidal flats off Wellington Point just let the rocks and corals tell you the long history of the site.

# Moreton Bay

## Sea Level Changes



Modified from Chappel (1983)  
and Jones (1992)

Figure 1.: Glacio-eustatic sea level curve over the past 300,000 years (Chappell, 1983).

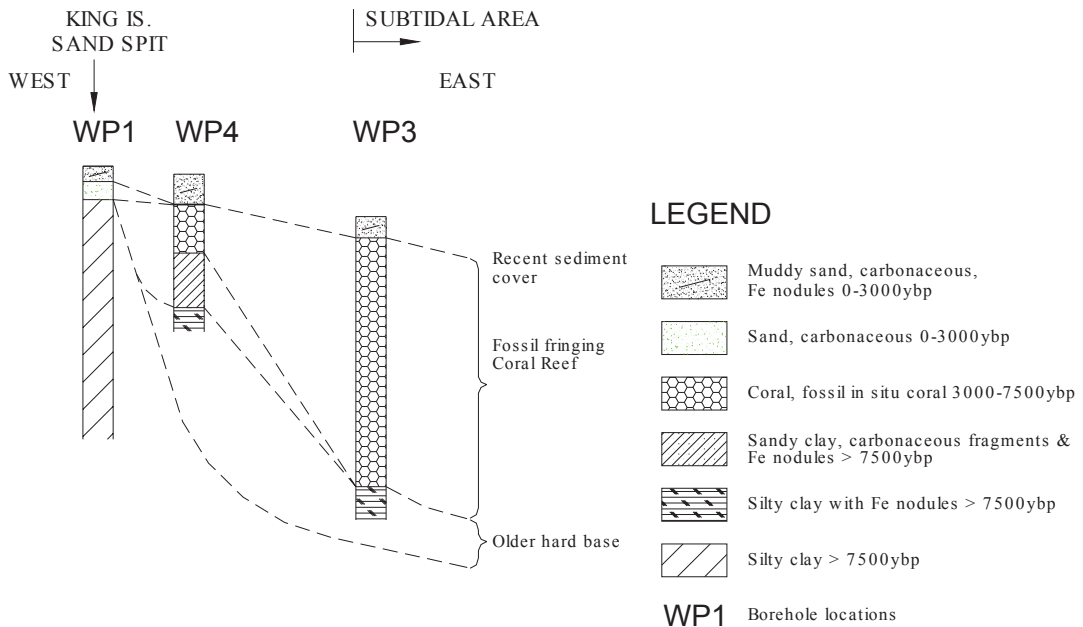


Figure 2. Cross section through the fossil fringing reef