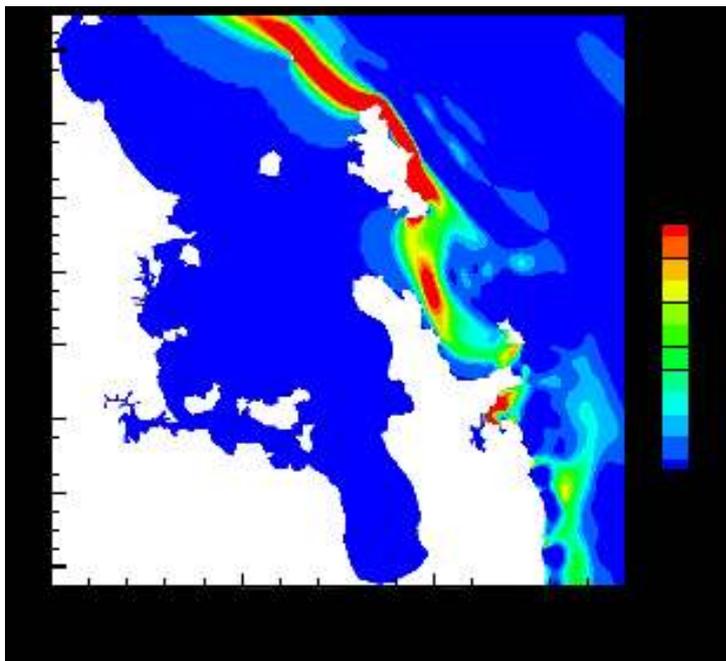


6 Physical Geography

Great Barrier Island (Aotea) consists of 23 islands and rock stacks. The terrain varies from sea level flats and wetlands to the exposed rocky outcrops tops giving rise to a variety of ecosystems. The island is about 32 km long and from 2km to 12km in width East to West.

The Island acts as its name suggests: as a barrier for Auckland and the inner islands of the Hauraki Gulf from the stormy weather originating from the east and north east. The island's ability to form a protective barrier for New Zealand's largest city is also clearly illustrated in the Tsunami modelling diagram in Fig 6.1ⁱ.

Fig 6.1: NIWA model of Tsunami risk. *Modelling of a tsunami generated by a subduction earthquake along the Tonga–Kermadec Trench–Hikurangi Trough system shows the wave arriving at Great Barrier Island 65 minutes after the event. Note the wave entering the Hauraki Gulf.*



Prior to rises in sea level, Great Barrier Island originally formed a continuation of the Coromandel Ranges. It has the same rugged landscape and strong north-south axial range. In the centre of the island are spectacular pinnacles and bluffs peaking at the highest point, Hirakimata (Mt Hobson) at 621m.

These ranges run straight down to the sea on the western side which is characterised by a number of indented harbours and bays. Port FitzRoy is the most sheltered harbour showing clearly its origin as a drowned river systemⁱⁱ.

The eastern side is gentler and features coastal flats, long white sandy beaches with extensive dune systems forming wetlands due to tidal creeks backing up behind them. Some of these are now drained for pasture.

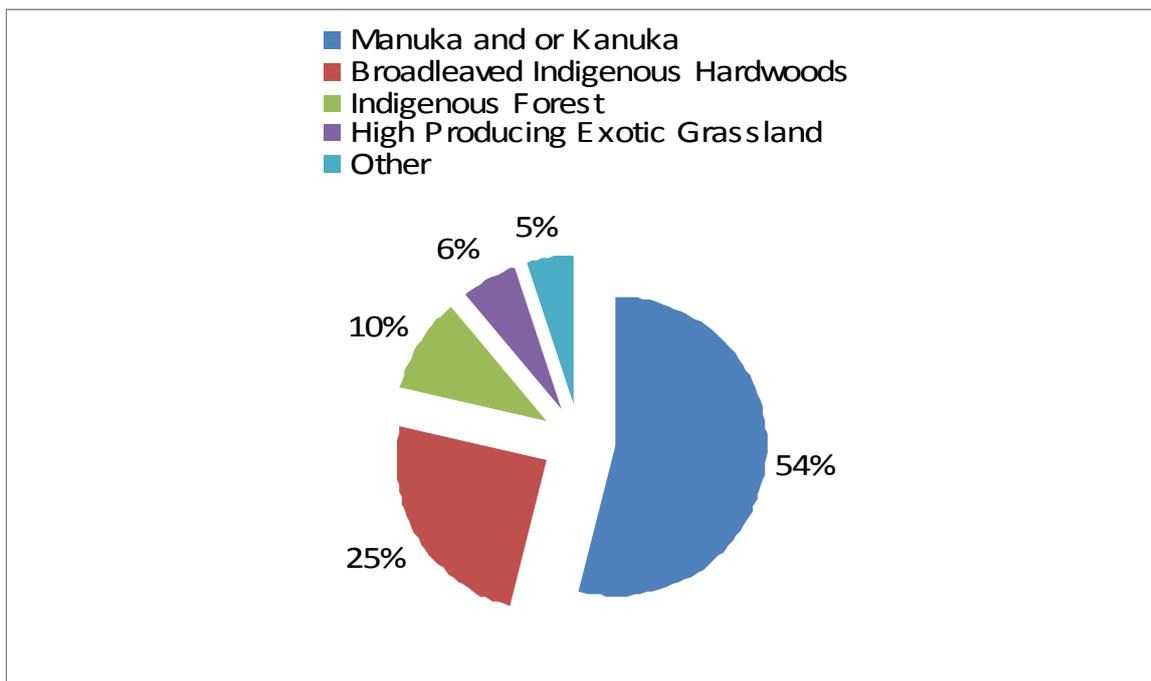
Predominantly volcanic in origin, ancient sedimentary rocks underlie the entire island. Fossil evidence shows the sedimentary sandstone and mudstone are about 150 million years old with the conglomerate granite coming from West Antarctica (or Eastern Australia) prior to separation of New Zealand from Gondwanaland.

As the Australian and Pacific tectonic plates continue to move, the eastern of the two chains formed in Northland extends from Whangaroa through Whangarei and Great Barrier Island to the Coromandel Peninsular. Hot springs are found at Kaitoke and at other points on the islandⁱⁱⁱ.

Slopes of more than 10 degrees and frequently more than 26 degrees occur over 84% of the island^{iv}. The rolling, undulating and near-flat land farms and wetlands make up the remaining 16%.

Although extensively cleared in the past for farming and settlement, the predominant aspect today is of regenerating ‘scrub’: kanuka and manuka forest. Fig 6.2 and Fig 6.3 shows the percent of the different types of land cover^v.

Fig 6.2: Land cover categories & percentages



Although economically this land appears unproductive, environmentally this can only be good: habitat is slowly being restored. Beneath the kanuka and manuka canopies, broadleaf and podocarp forest trees are growing steadily and, in areas where this has been undisturbed for nearly 40 years, small totara, rimu and kahikatea are starting to compete for canopy space.

Possibilities in the future for this forest cover to contribute economically to the island’s well-being largely lie in ecotourism, although the carbon credit economy could become significant also.

