

43 McLeod Bay

43.1 Description and geomorphology

McLeod Bay is a small west facing coastal section of Whangarei Harbour, located 5km inside the from the harbour mouth. A map showing the site and key features is presented in Figure 43.1, and photos of the site are provided in Figure 43.2. No coastal erosion hazard assessment was undertaken at McLeods Bay so the site was not divided into coastal cells.

McLeod Bay sits at the base of Whangarei Heads, with volcanic slopes of Mt Manai to the east and Mt Aubrey to the south (Figure 43.1). Four small streams flow form these hillslopes into the McLeod Bay, transporting fluvial and landslide material towards the coast. The north end of the site is defined by a small headland formed from historic landslide material that extends into the harbour. The majority of the coastal edge is defined by a low elevation shoreline terrace that was deposited by river and coastal processes during the Holocene. The shoreline terrace width varies alongshore between 50-150 m and is locally influence by streams.

Whangarei Heads Road follows the coast for the length of the site. In places, the road centreline is located within 10 m of the shoreline (Figure 43.2A). Houses are located seaward of the road in small clusters at the north end, centre and south end, with a grass reserve space is located between the road and coast for most of the site. Houses are located landward of the road for the length of the site. Houses located seaward of the road at the north end are positioned on the headland formed by historic landslide deposits and houses at the centre are located on a low-lying delta that has formed from stream deposition. Sections of beach with reserve space and parking are located to the north and south of the delta, with a playground located at the southern beach.

The beach at McLeod Bay are characterised by a mixture of sand, shell and gravel that forms a narrow strip between the vegetated terrace and a tidal flat. The tidal flat is comprised of fine grain sand, is exposed at low tide and extends for 100-200 m before the tidal channel that is constrained by McDonald Bank on the harbour side. The shallow tidal flats prevent wave energy from reaching the shoreline during lower tidal stages. At high tide stages, wind wave energy generated inside the harbour can interact with the shoreline and drive coastal change. The maximum fetch is approximately 12 km to the west-north-west, but the maximum wave size at McLeod Bay is also limited by water depth and duration because of tidal fluctuations.

A large proportion of the shoreline at McLeod Bay has been modified with coastal protection structures. A summary of coastal protection at McLeod Bay is presented in Figure 43.3, and the location of each photo is provided on the map in Figure 43.1. Structures have not been assessed to an engineering standard for this report, but there is a clear range of conditions and design standards along the site. Further description of coastal modification at McLeod Bay is presented in Section 43.2.



Figure 43.1: Map of McLeod Bay showing coastal features and the location of site setting photos (black dots) and shoreline modification photos (red dots)

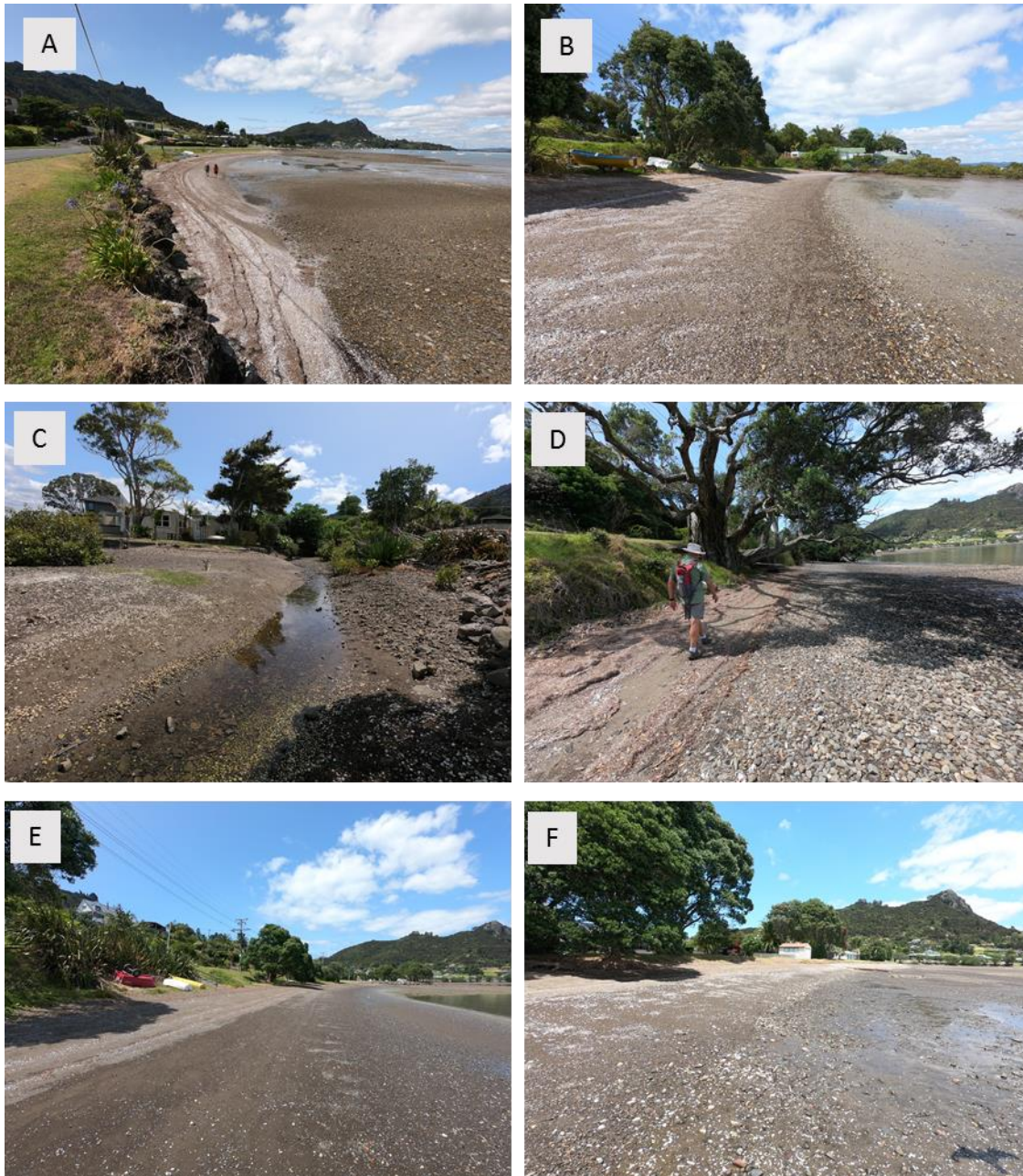


Figure 43.2: Site photos highlighting natural coastal features

43.2 Local considerations

A number of coastal protection works are located along the site. Examples of coastal protection structures at McLeod Bay are presented in Figure 43.3. These include rock armour at the terrace toe, channel stabilisation and various rock revetments. Other forms of coastal modification include property boundary seawalls and boat ramps, culverts and storm water outflow pipes.

At the northern beach location, rock armour is located 1-2 m seaward of the terrace toe (Mod-C). This likely indicates a period of erosion since placement of the toe armour. At this location, erosion has completely exposed a manhole (Mod-D). To the south, rock revetments have been built to protect a playground (Mod-I) and a pump station (Mod-M). Some shoreline armour has been placed to protect the road and reserve from erosion (e.g. Mod-E), but this is discontinuous and irregular alongshore, with some sections remaining natural (e.g. Figure 43.2D).





Figure 43.3: Examples of coastal protection structures and coastal modification along McLeod Bay

43.3 Summary

No coastal erosion hazard assessment was undertaken at McLeod Bay. The proximity of Whangarei Heads Road to the coast, and various existing coastal protection structures of different condition require more localised management. It is recommended that a protection history and condition assessment is undertaken at this site, so that Council can comfortably rely on the performance of the structures or upgrade the structures if required, which would justify the decision not assessing coastal erosion hazards for this site.