

# MIRANDA HOT SPRINGS

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The Miranda Hot Springs are located near the western head of the Firth of Thames, and at the western margin of the Hauraki Depression. They lie on a flat area about one meter above sea level and approximately 700 m inland from the sea edge and some 3 km in a generally southerly direction from the site of the old Miranda township, in an area originally known as Pukorokoro. Miranda was named after a naval gunboat of that name which was dispatched during the Maori wars in 1863 to subdue a Maori Pa (village) located some 300 m to the south of the springs. The springs were apparently used in pre-European times; but, photographs of the region only go back to about 1910. They were also referred to as "Hauraki Hot Springs."

The hot mineral waters are moderately mineralized, alkaline, saline waters with a notably high concentration of borax. It has a pH of 8.9, 146 ppm chlorides, 18ppm silica and 43 ppm borax with a total solids content of 430 ppm.

## GEOLOGY

The natural discharge features consist solely of a number of small warm and hot springs, localized in an area of 240 m x 90 m. The temperature of the springs range from 33°C to 57°C. No hydrothermally altered rocks have been found in the area, nor is there any silica or sinter deposition. The geology of the area, Sudarman (1981) consists of a basement of Mesozoic greywacke overlain by the impervious Waitamata group of sedimentary rocks. Andesite volcanics (i.e., Kiwitahi volcanics) outcrop to the north and west of the area. A thick mass of pumice (or ignimbrite) is exposed on low scarps (15-20 m) about 150 m west of the springs. Hochstein and Nixon (1979) concluded that the Hauraki Depression is an active rift feature giving rise to horst and graben structures controlled by three parallel faults. These faults are believed to control the appearance of hot springs at the margins and center of the depression. The genesis of the springs is due to deepseated circulation of groundwaters. The open fractured Mesozoic greywackes along the fault zone facilitate the circulation of groundwater to the surface.

## THE POOLS

Early in this century, there were about 100 springs over a 40 ha area, of which 30 originally supplied the pool. The original name for this area is Pukorokoro and the springs were used by the Ngati Paoa people. Because of the lack of road access, this group of springs remained undeveloped much longer than others in the area well into this century. One of the first European owners was J. Pond, who carried out many

of the early analyses of spring water throughout the country (Rockel, 1986). Unfortunately, the government refuses to purchase the springs in 1903 and 1913. A 1910 photograph showed the largest natural pool set in a peat swamp. The swamps were drained in the 1940s and the present pool built in 1959-60.

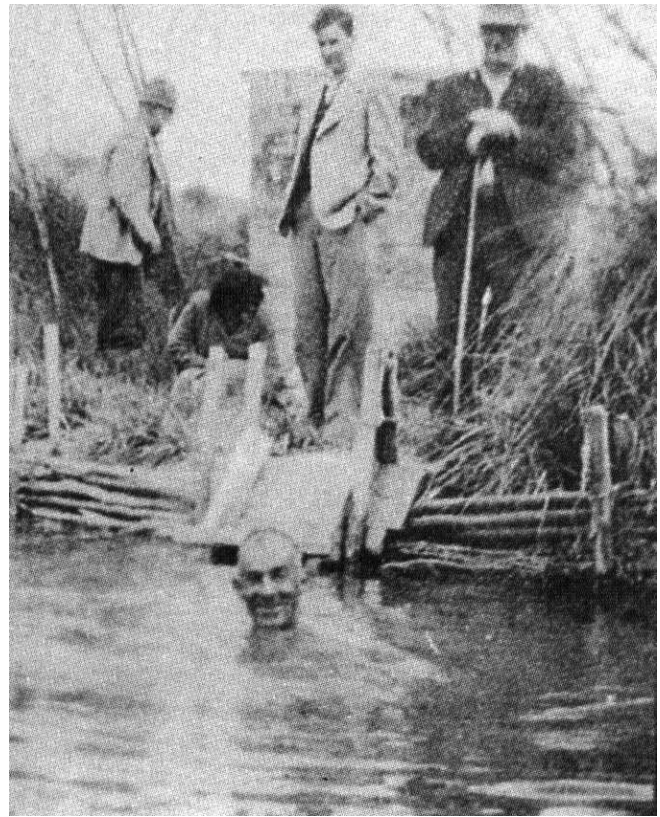


Figure 1. "Hauraki Hot Springs" - 1939

The pool complex consists of the main 1.14 million litre pool, which is 47 m long, and 17 m wide and 1.3 m deep; a public sauna pool together with a children's pool and 4 private spa tubs. The large pool has steps around both sides and is constructed of concrete. The flow rate into the pools is 30,000 litres per hour. The pools were used with minimal development until the late-1950s when the concrete walls and the tiered steps were put around the large excavation encompassing the larger hot springs. On October 4, 1973, the bottom of the pool was sealed with concrete. This was done, which without water pressure build up, allowed the a

collection and distribution of the percolating waters within a 3000 mm layer of coarse scoria to 380 mm concrete pipes. The whole arrangement was then covered with a polyethylene sheet followed by an average of about 200 mm of solid concrete. No reinforcing steel was used for fear of corrosive staining of the floor of the pool. A bore of 150 mm was drilled to about 76 m at about that time, and a stainless steel submersible pump was located about 30 m from the surface, which has boosted the supply to the pools. The main pool is maintained at 35-37°C with the sauna at 40-41°C. It is the largest geothermal bath in the country.



**Figure 2. Main pool.**



**Figure 3. Public sauna pool.**



**Figure 4. The authors enjoying a swim.**



**Figure 5. Maori children enjoying the pool.**

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Material for the above article was abstracted mainly from a leaflet produced by the owners of the pool complex.

#### **REFERENCES**

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