

TR 10-101

19. POSSIBILITY OF UNDERGROUND WATER AT BRICKMAKERS BAY

by W. L. Matthews

Pickands Mather and Co. International, the company investigating the Savage River iron ore deposits, have requested advice regarding underground water at the proposed pelletizing site at Brickmakers Bay.

Rocks of Upper Precambrian age and consisting of black and banded black and grey siltstones are exposed along the coastline around Brickmakers Bay. They are richly pyritic with the pyrite disseminated throughout the rock and concentrated on bedding planes, in nodules of varying size up to about one inch in diameter, and in quartz veins. The siltstones belong to the Cowrie Siltstone of the Rocky Cape Group. Regionally the sediments strike about due E-W and dip N (50° - 60°) but some minor folding is developed locally. Quartz veining is concentrated in some areas.

Five bores have been drilled for water within a few miles of Brickmakers Bay—all have been successful and penetrated similar siltstones to those exposed at Brickmakers Bay. Rates of flow have been in the range of 100 to 400 gallons per hour but these could possibly be improved by drilling deeper so that a greater section of water-bearing rock is exposed and by developing the bore, e.g., by fracturing. The siltstone itself is probably of low permeability but strong jointing and bedding increase storage capacity and permeability of the rock.

In low lying country near the shoreline, there is always a danger of salt water entering the bore, particularly if pumping rates are high. In most cases this can be minimized by drilling as far from the shoreline as is practical. Each of the five bores mentioned above are within a short distance of the sea and all appear to yield water of reasonable quality apart from a brown colouration in several of them.

The nearest bore to Brickmakers Bay is at Cowrie Point, about 3-5 chains from high water mark and about 20 feet above sea level. This bore has been pumped for several hours during the summer at 300 gallons per hour with little change in water level or quality. The rock types are the same as at Brickmakers Bay and the structure is similar, i.e. they strike about E-W and dip N. In this situation the head of freshwater from the higher inland areas is great enough and the permeability high enough to counteract flow from the sea when the bore is pumped at this rate. The attitude of the beds should help to promote such a condition. It is expected that the same conditions at Brickmakers Bay should produce a similar result. It is possible however that the water will be coloured.