

TR 13_125_128

18. UNDERGROUND WATER INVESTIGATION, TOMAHAWK

by W. R. Moore

INTRODUCTION

At the request of the Rivers and Waters Supply Commission the ground water at Tomahawk was investigated to ascertain whether it could be used as a future town supply instead of pumping water 3 miles from Tomahawk River. Three shallow holes were drilled and two resistivity traverses made, the position of which are shown on the geological map of the area (fig. 29).

GEOLOGY

On the E bank of the river near the footbridge at Tomahawk, alternating beds of sandstone and mudstone outcrop. These have been thermally metamorphosed, are cleaved, and contain veins of granite 1-3 inches thick. The sandstone is graded, poorly bedded, and contains some grit bands at the base of the beds. Convolutions in the bedding were found at two localities. These grey-wacke-like sediments appear to belong to the Mathinna Beds. Similar Mathinna rocks with granite veins and silicified breccias form poor outcrops along the foreshore of Tomahawk beach for approximately $\frac{1}{4}$ mile E of the Tomahawk river.

Twenty yards upstream from the Mathinna sediments are large outcrops of biotite granite. The granite contains a large number of inclusions of Mathinna sediments as well as large feldspar phenocrysts frequently more than an inch long. The por-

phyritic granite has an E-W grain formed by the alignment of the feldspar phenocrysts and inclusions. The widely spaced joints in this granite have the same trend. Granite reappears along the foreshore of Tomahawk beach 30 yards E of the Mathinna sediments.

Inland from Tomahawk Beach scattered outcrops of granite occur as far as Tomahawk road $1\frac{1}{2}$ miles to the S. Granite also outcrops near the crest of two low rounded hills S of Tomahawk. The cores of these hills are granite overlain by fixed sand dunes, (fig. 29) which vary from a few inches to a maximum of 21 feet thick (drill hole B, fig. 26). These dunes appear to have moved inland from Tomahawk beach towards the W before becoming stabilised by vegetation. Similarly the dune on the W bank of the Tomahawk River appears to be moving inland towards the W while the dunes on the W shore of Tomahawk Point appear to be moving inland towards the E.

Tomahawk Point and Tomahawk Island are composed of dolerite which is frequently very closely jointed. Radial joints are common on Tomahawk Island.

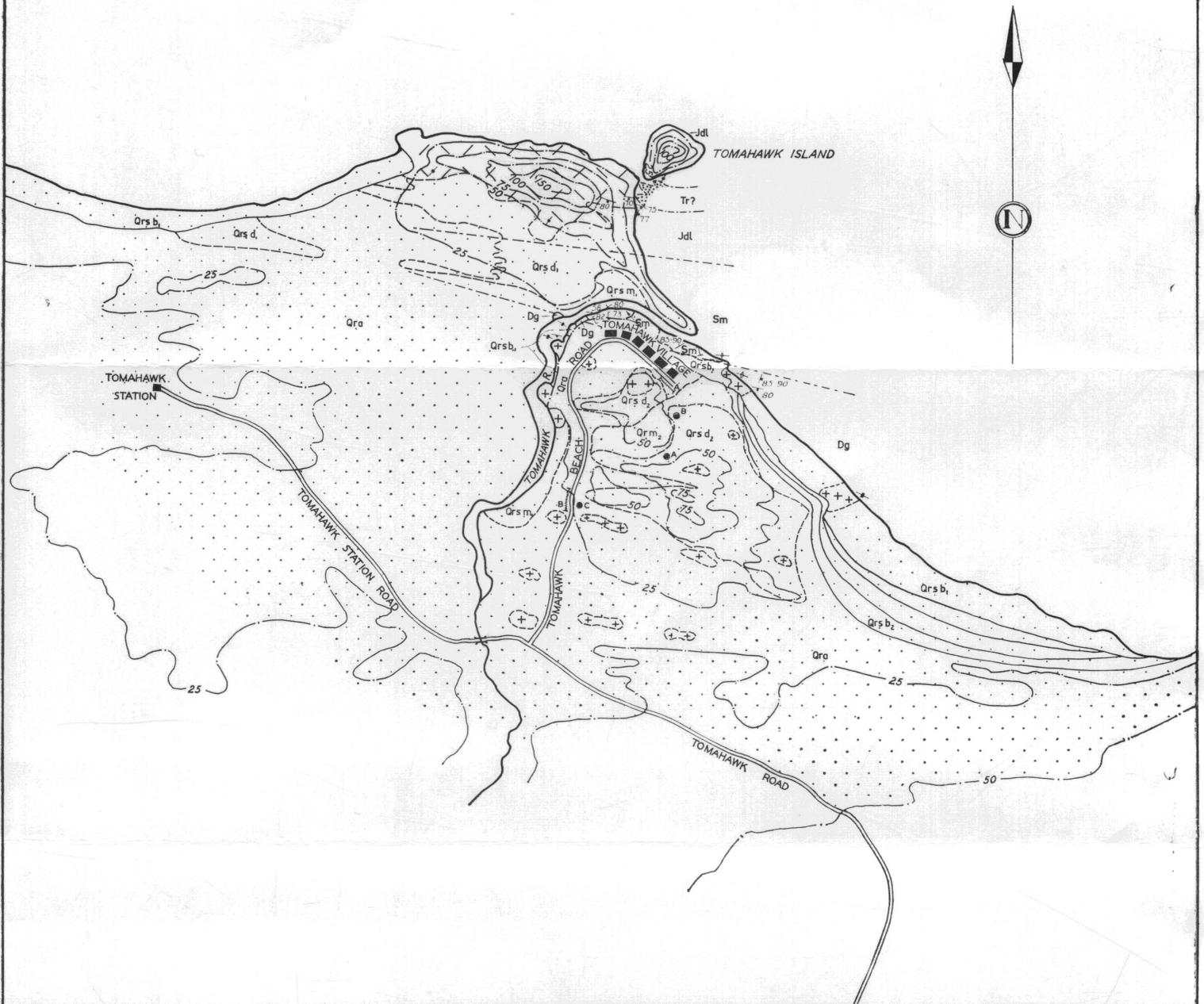
On the rock platform between the E end of Tomahawk Point and Tomahawk Island 650 feet of soft, coarsely cross bedded quartz sandstone are exposed at low tide (D. Jennings, pers. comm.). The sandstone contains mica, is medium to fine grained and well sorted. A thin bed of glauconitic sandstone is also present. Lithologically this sandstone resembles the Triassic Ross sandstone found in the Midlands. The relation of the sandstone to the dolerite is uncertain but it is either a large lens included in the dolerite or underlies the dolerite which now forms Tomahawk Point and Island. The contact between the chilled dolerite and the sediments is thin (6" thick), irregular—but flat lying and where exposed has a low dip of 15 degrees to the N.

HYDROLOGY

None of the three basement rocks beneath the superficial sand (dolerite, granite or thermally metamorphosed sandstone), appears to be a suitable aquifer. The jointing in these rocks appears tight and is not closely spaced enough to provide adequate water storage. The only aquifer present is in the unconsolidated sand of the two fixed dunes behind Tomahawk and in the active dune on the W bank near the mouth of the Tomahawk River. The latter appears unsuitable for a town supply because of the extra cost of piping the water across the river.

Springs were found at the base of the two fixed dunes particularly along the Tomahawk Beach road in the vicinity of bore hole C. There are extensive marshes between these dunes indicating the proximity of the water table to the surface.

The three bore holes all encountered water close to the surface. In drill holes B and C (35 and 25 feet above sea level respectively) the water table was 5 feet from the surface. At hole A which is 50 feet above sea level, on the flank of the dune with granite exposed in its crest, the water table was 15 feet below the surface. After one inch of rain was reported to have fallen at Tomahawk Beach the water table in this hole had risen to 11 feet—whereas in hole C the water table remained stable at 5 feet.



LEGEND

QUATERNARY

- Qra Alluvial silts clays and sands
- Qrsm₁ Mud flats
- Qrsm₂ Elevated mud flats
- Qrsd₁ Sand dunes moving... windblown sands
- Qrsd₂ Stabilized... windblown sands
- Qrsb₁ Beach sands
- Qrsb₂ Beach sands—with strand lines

TRIASSIC

- [Dotted pattern] Fine grained sandstone with coarse cross bedding

SILURIAN

- Sm Highly cleaved metamorphosed sandstone with granite veins—Mathinna formation

JURASSIC

- Jdl Dolerite

DEVONIAN

- + Dg + Porphyritic granite—with sedimentary rock inclusions

BEDDING

- [Symbol] Strike and dip
- [Symbol] Vertical

CLEAVAGE

- [Symbol] With dip
- [Symbol] Vertical

FOLIATION

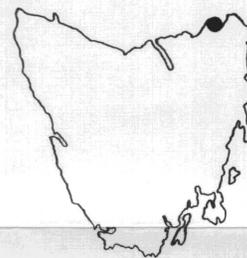
- [Symbol] With dip
- [Symbol] Vertical

GEOLOGICAL BOUNDARIES

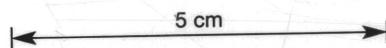
- [Symbol] Approximate
- [Symbol] Inferred

JOINTS

- [Symbol] With dip
- [Symbol] Vertical
- [Symbol] Road bridge
- [Symbol] Contours
- [Symbol] Drill hole
- [Symbol] Resistivity traverse



LOCALITY MAP



DEPARTMENT OF MINES — TASMANIA	
UNDERGROUND WATER TOMAHAWK VILLAGE	
DATE <i>JUNE 1968</i>	SCALE OF CHAINS 0 20 40 60
GEOLOGIST <i>W.R. MOORE</i>	MAP SHEET & N° <i>BOOBYALLA 24</i>
DRAUGHTSMAN <i>H. MACKINNON</i>	FILE N° 3170
REVISIONS	

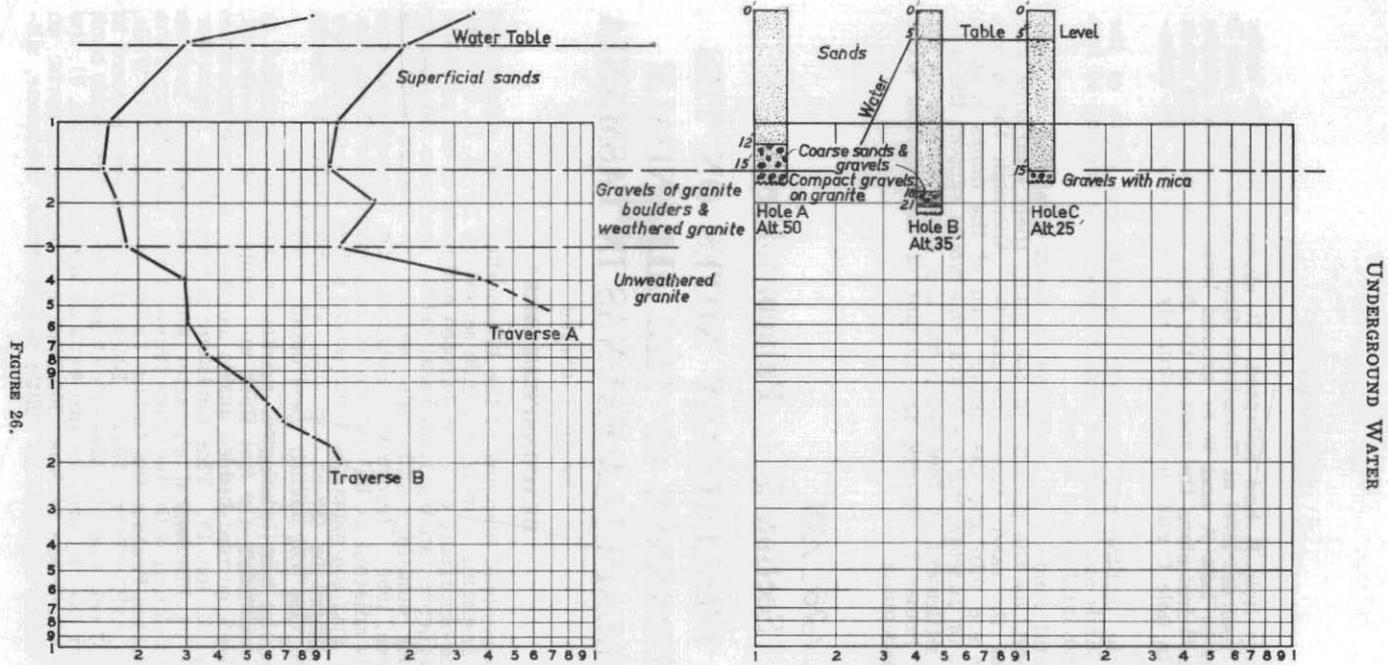


FIG 2 RESISTIVITY PROFILE & DRILL CORES — TOMAHAWK VILLAGE

3172-24

5 cm

Unfortunately hole B had collapsed. It appears that the water table rises from sea level at Tomahawk Beach to 30 feet in hole B and 35 feet in hole A and is at ground level where the granite outcrops at 70 feet along the crest of the dune and then falls again to 20 feet in hole C and to approximately sea level at the Tomahawk River.

From the drilling and resistivity traverses the depth of the superficial sands and weathered granite appears to average 15 feet with a maximum depth of 30 feet.

The total amount of underground water available in these dunes depends on the porosity of the sands, their total area and thickness of the sands above the granite. Although the superficial sands are thin and the surface area of the dunes is small, the amount of underground water available would support the present small settlement at Tomahawk, but if a large increase in the number of homes is planned the amount of underground water could be inadequate.