

UR1973.24

Underground water prospects near the Buxton River, Eastern Tasmania.

W.C. Cropper

Mr. P. Johnston requested an investigation of the possibility of obtaining underground water supplies at 'Kullaroo', a property of about 1,620 hectares 16 km north of Little Swanport. Underground water is required for stock purposes on an area of 120 hectares bordering the coast to the east of the Tasman Highway and bounded to the north by the Buxton River and to the south by the Lisdillon Rivulet.

GEOLOGY

Jurassic dolerite underlies most of the area investigated. It crops out on the more elevated parts of the property, and forms sea-cliffs to the east. In the low-lying area near the Lisdillon Lagoon, clayey soil profiles have developed on the dolerite. Sporadic outcrops of Triassic sandstone occur along a prominent bluff which rises above the flood plains of the Buxton River, near the northern boundary of the property.

Recent vegetation-tied sand dunes and beach ridges occupy the low-lying areas adjacent to the Buxton River and Lisdillon Rivulet and overly the dolerite in places. The deposits near the Buxton River extend over an area of about 35-40 hectares, whereas those near the Lisdillon Rivulet are of more limited extent. A small dam in the latter deposits intersected the water table at about one metre.

GEOPHYSICAL WORK

Investigations were confined to the sand deposits immediately to the north of the property boundary on the Buxton River floodplain. Two shallow auger holes drilled in the sand intersected the water table at 1-1.5 m. The area is gently undulating, and the water table surface is probably also variable.

A number of seismic spreads were conducted on the site. Geophone spacings varying from 3-8 m were employed. The following results were obtained:

Layer	Seismic Velocity (m/sec)	Thickness (m)	Interpretation
1	approx. 430	1-2	Dry sand, becoming wetter with increasing depth.
2	1,820	2-3	Saturated sand.
3	2,700	?	Weathered dolerite or possibly sandstone.

The above results suggest that up to 2 m of dry or damp sand is underlain by about an equal thickness of saturated sand. This in turn overlies either dolerite or sandstone.

RECOMMENDATIONS

Prospects for obtaining subsurface water are good. Water quality can be expected to be more than adequate for stock use: water obtained from the auger holes contained 500 ppm of total dissolved solids.

The best way of obtaining subsurface water would be to sink a well (or a small number of wells) in the sand. Sites should be chosen at least

50-75 m to the north of the dolerite/sandstone bluff near the property boundary, to minimise the possibility of encountering pebble deposits during excavations. Wells should be sunk to about 0.5-1 m below the water table, which will be subject to seasonal fluctuations. It will be necessary to line the well, preferably with concrete liners, to prevent collapse. During operation, it is desirable to pump small quantities of water for long periods rather than pump at a fast rate for short periods.

[8 March 1973]