

Groundwater investigation, Tasmanian Game Farm, Turners Marsh.

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A groundwater investigation was undertaken at the Tasmanian Game Farm near Turners Marsh Siding, at the request of the Manager.

GEOLOGY

A flat area near the homestead [EQ099300] was investigated. This flat is a narrow headwater catchment area for a northern tributary of Lady Nelson Creek. Hills of dolerite surround the valley and this rock crops out on the access road of the farm. Material from the shot holes consisted of grey clay with ironstone bands and pebbles.

GEOPHYSICAL WORK

A 100 m seismic spread was run in an approximately N-S direction with geophone spacings of 8 m. The graph of the seismic velocities showed stepped incremental increases with the velocities ranging from 610 to 6100 m/s. Four seismic velocity layers were apparent (V_0 610-915 m/s, V_1 1525-1830 m/s, V_2 2296-3050 m/s, V_3 5400-6100 m/s). The depth to the V_0/V_1 , V_1/V_2 and V_2/V_3 interfaces was calculated to be 2.4-3 m, 6-8 m and 11-14 m respectively. The V_0 layer is the surface clay, followed by weathered layers of the dolerite. The average depth to the unweathered dolerite is 12 m.

The resistivity curve is the same shape as that given as typical for dolerite in the Cygnet area (Leaman, 1967). An interpretation of this curve confirms the seismic results: depth of clay 3 m, water in fractured rock to 5 m and unweathered dolerite to 15 m.

GROUNDWATER

No systematic investigation has been undertaken of the groundwater properties of dolerite anywhere in Tasmania because of the difficulty of drilling this rock. Consequently very little is known about its likely yield and water quality. Two holes drilled in dolerite by Mono Pumps in the Midlands area have been reported to have given yields of about 225 l/min (pers. comm. W.L. Matthews), and many diamond drill holes drilled in engineering project investigations in dolerite are known to make water.

Rock with seismic velocities of 5400-6100 m/s is unlikely to have open joints in which groundwater could collect. The thickness of the overlying weathered dolerite is only about 10 m, and even if this rock were highly fractured it would be unlikely to yield more than about 7 or 8 l/min.

RECOMMENDATIONS

A water bore is not recommended at this site. A hole dug by back-hoe to the base of the clay would probably provide a greater yield of water.

REFERENCE

LEAMAN, D.E. 1967. Groundwater Resources of the Cygnet district. *Undergr. Wat. Supply Pap. Tasm.* 6.

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