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Prospects of underground water near Sorell.

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Mr B. Newitt requested an investigation into the prospects of underground water supplies on his 170 ha property, 'Willis Park', north of Sorell. The land lies to the west of Pawleena Road, and although for the most part gently undulating, it rises to the west and includes low-lying dolerite hills. In the past, the owner has depended on water supplies drawn from Sorell Rivulet which runs through the eastern part of the property, and from a bore sunk in dolerite to the west which yields 22.5 l/min. Prevailing drought conditions have reduced the rivulet to a series of waterholes, and Mr Newitt requires sufficient underground water supplies for irrigation.

GEOLOGY

The northern extremity of the property lies within the Buckland quadrangle mapped by Blake (1958). The present investigation included a geological reconnaissance of the remainder. Most of the eastern section of the farm, including a strip of land on both sides of Sorell Rivulet, consists of flat-lying Recent river gravel and sand. Blake (1958) mapped these as Tertiary deposits but the only sediment considered to be of this age is a light-coloured clay underlying the gravels and cropping out sporadically in the creek bed. A thin basalt layer occurs in the far northern corner of the property, but the remainder of the eastern section is underlain by Permian sandstone.

West of Sorell Rivulet, and occupying higher ground than the flat river deposits, Tertiary basalt forms a cover over most of the property. It occurs in an elongate area, up to 0.5 km wide in places, and more than 3 km in length (N-S). It may have in-filled an old river system. Jurassic dolerite and Triassic sandstone underlie the more elevated western sections of the property.

HYDROLOGY

Of the rock types cropping out on the property, only the Tertiary basalt can be considered capable of supplying irrigation quantities of subsurface water. In places it is highly vesicular, and if this property persists at depth, the prospects of a bore being successful are enhanced. Although Jurassic dolerite and Triassic sandstone may yield small quantities of water (possibly 15-30 l/min), a considerable risk is attached to drilling since unlike basalt, all water supplies are confined to joints and fractures. The success of a bore therefore depends on intersecting such fissures.

The unconsolidated river gravels and sands appear to be too permeable to retain large quantities of underground water. Moreover, reserves are small and may be further limited by the presence of impermeable clays beneath them. A significant fraction of any water in them may also drain into Sorell Rivulet.

RECOMMENDATIONS

A bore placed in the basalt is likely to be successful. A favourable locality is at the western end of the front paddock near the driveway to the owner's house. The thickness of basalt is unknown, and reserves may be limited by the presence of clays beneath it. If clays are encountered during drilling, they should not be penetrated.

REFERENCE

BLAKE, F. 1958. Geological atlas 1 mile series. Zone 7 Sheet 76. Buckland.
Department of Mines, Tasmania.

[1 February 1973]