

## 1976/51. Groundwater prospects near Don Heads, Northern Tasmania

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Mr J. Hill requested that the groundwater potential of his 6 ha property ([DQ427423], elevation c 40 m) on the Don Heads Road be investigated. Irrigation water is required to supplement a dam supply for market gardening.

The land slopes gently north to an unnamed spring-fed creek near the Western Railway Line, and forms part of an elevated, undulating basalt plateau which falls abruptly to Bass Strait and the Don River. The steep plateau boundaries are subject to mass movement.

## GEOLOGY

The property and the surrounding area are apparently wholly underlain by Tertiary basalt. The rock does not crop out but scattered fine-grained basaltic cobbles occur in the red soil of the farm. The basalt is deeply and probably irregularly weathered. Coloured clay and basalt floaters were reportedly encountered in dam excavation on the property, and a bore ([DQ 422422], elevation 70 m) drilled in 1975 on a neighbouring property passed through 45 m of clay and basalt floaters before bottoming in solid basalt at 52 m. Water flowing at a rate of about 115 l/min was struck between 45 and 52 m. The thickness of the basalt is not known, but it extends to sea level on Don Heads.

Post-basaltic Tertiary gravel and sand overlies the basalt along the ridge to the north of the property.

## HYDROLOGY

Topographically and geologically, the property is well suited to obtain groundwater, with a relatively large catchment area and a moderate rainfall. Most of the area is drained by springs, which issue above weathering zones in the basalt, and provide most of the water used in the area at present.

It is recommended that a bore be sited near the owner's residence, preferably just west and downslope from the house. It will encounter coloured clay and probably basalt floaters, which must be penetrated and cased off to obtain a useful water supply. The groundwater will be found in the solid basalt, but the depth at which this occurs is not known. It is also not possible to predict the yield of the bore, for this largely depends on the porosity of the basalt, and the depth to which the hole is drilled. Generally, experience has shown that the yield of such a bore in basalt increases with drilling, but obviously the total depth of the hole is a balance between water requirements and economics.

The groundwater should be of excellent quality, suitable for all irrigation uses, and probably domestic and drinking supplies. It should be free of suspended solids, and require no filtering for drip irrigation of vegetables. The neighbouring bore on Mr Pilgrim's property yielded excellent quality water, a partial analysis\* of which showed.

|           |         |                        |          |
|-----------|---------|------------------------|----------|
| Chloride  | 48 mg/l | Total hardness         | 88 mg/l  |
| Calcium   | 19 mg/l | Total dissolved solids | 255 mg/l |
| Magnesium | 13 mg/l |                        |          |
| Sodium    | 57 mg/l | pH                     | 7.0      |

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\*Government Analyst, Department of Health Services.

Collected by Monopumps Pty Ltd, 20/11/75. Analysed 9/12/75. Reg. No. 754707.

If the bore is successful, its efficiency can be maintained by pumping for extended periods at rates below its measured maximum. This ensures steady groundwater flow, and reduces fluctuations in water level which would otherwise promote algal growth, and chemical decomposition of the bore wall.

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