

## Groundwater observations near Scamander.

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Mrs J. Shipp requested an investigation of the groundwater prospects of a 5 ha property [FQ044073] near Scamander.

Present water supplies are obtained from tanks collecting roof run-off. Additional supplies are needed for domestic and garden purposes, and for stock. The property slopes gently eastwards to a frontage along the Tasman Highway, which has been constructed on level ground along the western boundary of Henderson Lagoon. The lagoon contains salt water. The elevated western part of the property is underlain by Tertiary sediments, and Quaternary lagoonal deposits, mainly clayey sands, occupy its lower section.

The owner has dug a number of holes in the lagoonal sands near the Tasman Highway. All holes struck slightly brackish water at less than one metre, and one of them penetrated more than 3 m of grey sand. The groundwater is probably derived from both the Tertiary sediments and Henderson Lagoon.

The holes are favourably sited to obtain groundwater. It is recommended that one of them be excavated by back-hoe to a depth of 3-4 m and subsequently pump-tested to determine whether the sands can sustain yields of the order of 10 l/min, and whether the water quality remains potable or deteriorates. A decrease of quality will probably indicate that the water is partly derived from Henderson Lagoon. However, it may be possible to arrive at a compromise situation by lowering the pumping rate and stabilising the water salinity. The water can also be diluted by adding it to existing surface supplies.

If the groundwater is of acceptable quality and quantity, a permanent well should be constructed. The most economic and efficient method of doing this is simply to place lengths of large diameter concrete piping in the back-hoe excavation. The liners should be about 1200 mm in diameter, 600 mm long, and be constructed from reinforced concrete about 25-30 mm thick. They serve a dual purpose: as structural support to prevent collapse, and to allow entry of water from the bottom of the well and from the joints between neighbouring sections. Five or six such sections will be needed. The liners are placed on top of each other in the excavation, and surplus sand placed around them to ground level.

The completed well should contain at least 1-2 m of water, and should be pump-tested to determine its safe yield. Initially, sand will move into the well, and the water may become turbid. Continued pumping (with the pump inlet about 100-200 mm above the bottom) should stabilise the well however, and the water will become clearer.

Some of the groundwater may be drawn from Henderson Lagoon, and changes in salinity should be monitored. The water should preferably be tested for biological contaminants before it is consumed domestically.

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