DEPARTMENT OF MINES
SOUTH AUSTRALIA

GEOLOGICAL SURVEY
ENGINEERING DIVISION

GROUNDWATER SURVEY
Section 397, Pt. 102 Hundred Clare
- C.J. & D.J. Thompson -

by

A.F. WILLIAMS
GEOLOGIST
HYDROGEOLOGY SECTION

Rept.Bk.No. 73/261
G.S. No. 5263
Hyd. No. 2591
D.M. No. 1066/73

30th October, 1973

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SOUTH AUSTRALIA

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GROUNDWATER SURVEY

Location

General:	About 5 km south of Clare
Region:	4
County:	Stanley
Hundred:	Clare
Section:	397, Pt. 102
Name of Property:	Willow Spring
Owners:	C.J. & D.J. Thompson
Postal Address:	4 Lewis Street, BURRA. S.A. 5417.
Telephone:	Seven Hills 272 (property) Business: Burra 211

Requirements

Water required for: Irrigation of vines, garden use

Quantity:	Not stated
Quality:	Presumably < 2000 mg/l

HYDROGEOLOGICAL REPORT

Physiography and Land Use: The applicant's property lies about 450 m above sea level in moderately undulating country near Clare. The property is bounded on eastern and western sides by northerly trending ridges which have been dissected at intervals by small ephemeral and occasionally perennial streams - tributaries of the Hutt River. Most of the land is cleared of natural scrub and planted with vines. The rest of the property is covered with eucalypts and native and introduced grasses.

Climate:

Nearest rainfall station: Clare

Mean annual rainfall: 621 mm (24.45 inches)

Remarks on rainfall pattern: Rainfall on the property is expected to be similar to that recorded at Clare. 75% of the rain falls between April and October. Bore water is thus required for irrigation in the drier summer months.

Surface Hydrology:

Creek names: Unnamed tributaries of Hutt River.

Characteristics: Most are ephemeral however, one running through the centre of the property is perennial, being fed by a small spring upstream.

Springs: None on the property. One small spring occurs on a creek east of the property.

Surface storage: One small dam exists at the northern end of section 397. It is very shallow and holds water only during winter months.

Geology:

Soil Cover: This is about 90%. It consists of brown to grey loams with abundant rock fragments derived from underlying bedrock. Thickness is less than 1 metre except in valleys where alluvium has concentrated. Quartzite outcrops along ridges on the eastern and western edges of the property.

Rock Units: Auburn Dolomite (Burra Group).

Lithology: The Auburn Dolomite on the applicant's property is composed of a lower siltstone member, generally grey with dark and light cherty lenses and an upper cross-bedded, felspathic, medium grained quartzite member. Quartz veins have been injected throughout. The quartzite is well jointed although the bedding may be massive at times. A site was sought on the down dip side of the quartzite bed.

Direction and Amount of dip: Varying from 65 to 90° to the east - generally greater than 70°.

Structural Features: The rocks are moderately well jointed however, it is expected that clay has infilled most of

the joint spaces in the siltstones and to some extent, the quartzite.

Aquifer Assessment:

Type: Free water table. The best aquifer is the quartzite bed because of jointing and porosity. The siltstones in this area are tight and impervious and only small supplies of water could be obtained from them.

Extent: The quartzite occurs on the eastern boundary of the property.

Potential Recharge: Recharge is expected from lateral and vertical seepage of rain water down to the water table. The good rainfall should ensure adequate recharge to a bore if drilled in the site indicated.

Borehole Site Location:

General: A site was chosen at the northeastern end of property beside a small ephemeral stream. This position should be accessible to a drilling rig.

Reason for Location: This is the only site on the applicant's property where a bore would intersect the water table in fractured quartzite. Elsewhere siltstone and shale would be encountered. Better supplies are expected from the quartzite and water quality should be good - certainly useable on vines. Nearly all bores and wells in the area have salinities less than 1500 mg/l. A sample from a

well 20 metres from the proposed site gave a reading of 370 mg/l, however this may have been due to contamination by rainwater. A site is alongside a small ephemeral stream which would recharge the water table as well as rainfall.

Proposed Depth: About 45 metres

Expected Yield: 1.3 - 2.5 litre/sec (1-2000 g.p.h.)

Expected Quality: 500 - 1500 mg/litre

Probable Log: 0 - 1 m Topsoil

1 -45 m Quartzite

Drilling and Testing Recommendations:

Drilling Hazards: The bore should be rotary drilled since quartzite is expected all the way. Little casing would be required.

Sampling: Any waters cut should be sampled and brought into the Department for testing (free of charge). A geological log would be appreciated.

Pump Test: This service can be provided by the driller and/or pump distributor.

Summary: A site was chosen at the northeastern end of the property where a bore drilled to a depth of about 45 m should intersect moderate to large supplies of good quality groundwater. A rotary drilling plant is suggested since quartzite will be penetrated all the way to the water table.

AFW:AM
30.10.73

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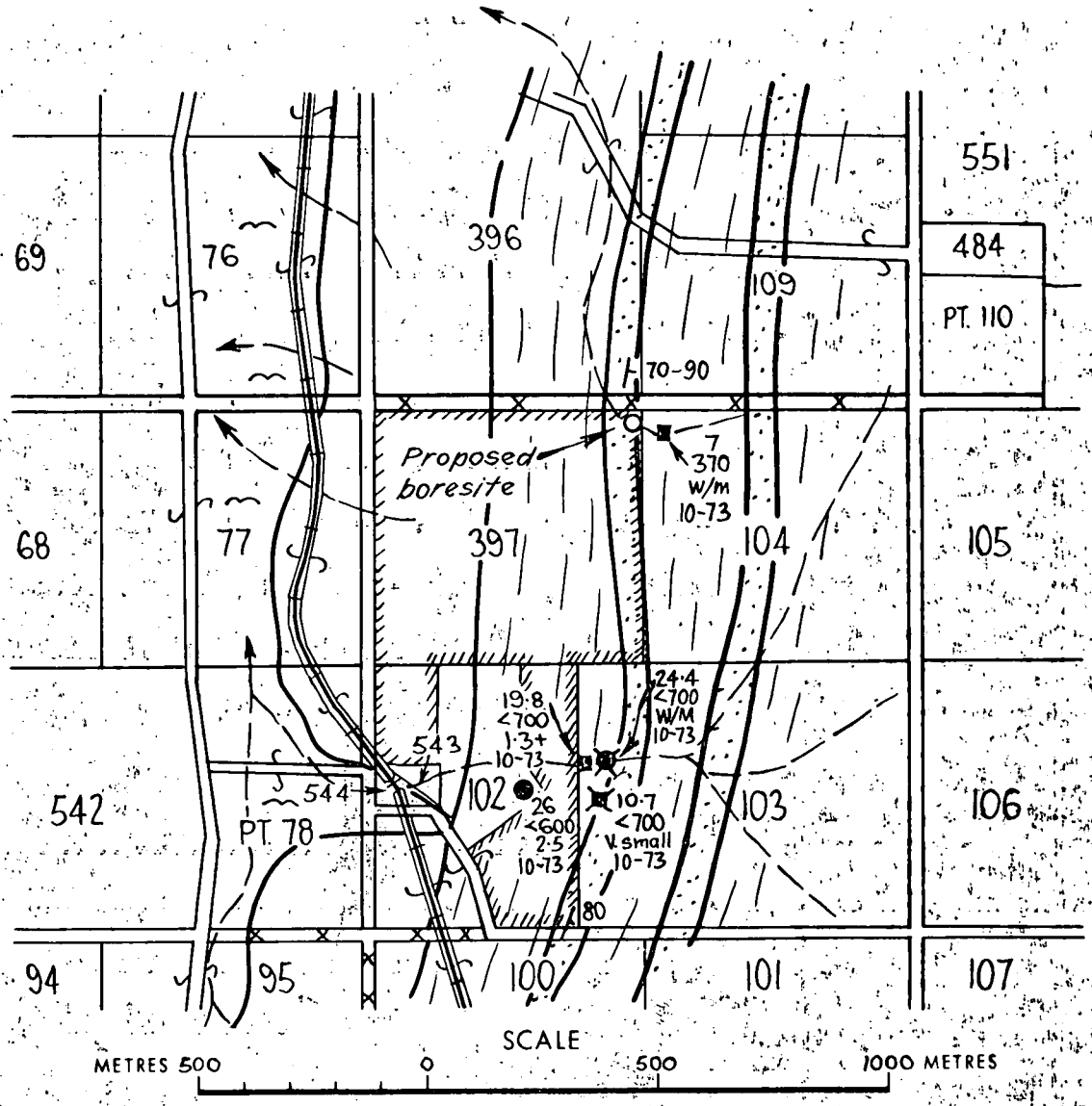
Survey Date: 29.10.73



LEGEND

Alluvium — clays and silts — RECENT

Auburn Dolomite - siltstones with interbedded quartzites — PROTEROZOIC

Existing borehole ● 160 —Depth in metres
2015 —Salinity in milligrams per litre
5000 —Supply in litres per sec.
2-72 —Month, year

Well ■

Spring ✛

Abandoned borehole ■

Proposed boresite ○

Strike and dip of bedding 60

Strike and dip of jointing 50

Strike and dip of foliation 35

Strike and dip of cleavage 45

Geological boundary .....

Fault line .....

Drainage lines .....

Surface storage .....

DEPARTMENT OF MINES - SOUTH AUSTRALIA

HYDROGEOLOGY SECTION	GROUNDWATER SURVEY SEC. 397, PT. SEC. 102 HD. CLARE C.J. & D.J. THOMPSON	Date. 31 Oct. '73
Compiled. A.F. Williams		Drg.No. S10570
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P.F. No. S7359A MH