RB 73/197

DEPARTMENT OF MINES
SOUTH AUSTRALIA

GEOLOGICAL SURVEY
ENGINEERING DIVISION

GROUNDWATER SURVEY

Pt.Section 759, Hundred of Noarlunga

- Mr. T.E. Bishop -

by

M.A. COBB
GEOLOGIST
HYDROGEOLOGY SECTION

Rept.Bk.No.73/197
G.S. No. 5202
Hyd. No. 2573
DM. No. 893/73

23rd August, 1973

DEPARTMENT OF MINES
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GROUNDWATER SURVEY

Location

General: William Road, Aldgate Valley (1.6 km south of Aldgate).

Region: 4

County: Adelaide

Hundred: Noarlunga

Pt.Section: 759

Applicant: Mr. T.E. Bishop

Postal Address: 162 Raglan Avenue, SOUTH PLYMPTON, 5038

Telephone: 93 4565

Requirements

Water required for: Drinking, general domestic.

Quantity: Sufficient for a household of 4 persons, say 500 gallons per day (0.1 litres per second).

Quality: Less than 1 000 milligrams per litre (mg/l).

Other factors: A site close to the house is preferred.

HYDROGEOLOGICAL REPORT

Physiography and Land Use

The property of 0.2 hectares lies in the Central Mount Lofty Ranges about 425 km above mean sea level. It occupies the top of a ridge and slopes to the north west, relief being of the order of 8 m.

It is assumed that a house will be built on the block and gardens established.

Climate

Nearest rainfall Station: Stirling West.

Mean annual rainfall: 46.85 inches (1 190 mm).

Remarks on rainfall pattern: The mean monthly rainfall for the past 80 years to 1964 has been in points (100 points = 1 inch).

Month	Jan.	Feb.	March	April	May	June	
Points	153	144	171	376	564	722	
Month	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Points	635	614	487	388	240	191	4685

Surface Hydrology

Characteristics: Slope runoff drains north-westerly towards a north-easterly trending gully.

Surface storage: None at present.

Geology

Soil Cover: Soil cover is moderately well developed and is a sandy silt, reflecting the underlying rock types. Sandstone float is common.

Rock Units: Aldgate Sandstone.

Lithology: The rock type underlying the property is essentially a cream-brown micaceous sandstone/quartzite consisting of interlayered fine grained (silty) and coarser grained members. Weathering of the finer layers is well developed with iron staining common.

Direction and Amount of dip: Variable but generally greater than 45° to the east or east-south-east.

Structural Features: Fracturing of the rock type was poorly to moderately well developed but these fractures were commonly infilled by weathering products from the finer layers.

Aquifer Assessment

Type: Free water table. Groundwater is stored in fractures within the rock types. Primary porosity is minimal.

Potential Recharge: The rainfall incident on the property is high but the topographic position combined with what appears to be a rather limited open fracture system suggests that recharge will be only moderate at best.

Borehole Site Location

General: No site can be recommended for drinking water. However, a bore sunk on the property to the specifications shown below should obtain water just suitable for general domestic use.

Reason for location: The siting of a bore is left to the applicant's discretion since the hydrogeological conditions will vary li
little over the property. However,

two points should be born in mind.

1. To prevent contamination of water obtained from a bore the bore must be placed uphill as far from any septic disposal system as is possible (minimum 25-30 m) and must be cased to say 20 m preferably pressure cemented.

2. The cost of sinking a bore, equipped with a pump etc. and routine maintenance, should be compared with the cost of installing an underground storage tank. Roof runoff in this area should provide 1 200 litres per square metre (200 galls/sq. yard) per year on average.

Proposed Depth: 80-90 metres (250-300 feet).

Expected Yield: Up to 1.3 litres per second (1 000 gallons per hour).

Expected Quality: May be up to 4 000 mg/l (same numerical value as parts per million).

Probable Log: Weathered sandstone over fresh sandstone quartzite.

Drilling and Testing Recommendations

Drilling Hazards: A rotary or rotary percussion drilling rig should be used. About 20 m of casing should be allowed for and preferably pressure cemented.

Sampling: Rock samples should be collected every 2 m and water samples at all waters cut and at regular intervals.

This Department will analyse free of charge 26 fl. oz. or 1 litre samples for approximate total dissolved salts. The importance of an adequate sampling programme cannot be overstressed.

Pump Test: This can be supplied by the driller or pump supplier. A test of 4 hours duration should be considered a minimum with water level measurements being made at regular intervals along with the collection and testing of water samples.

Summary

The property in question is underlain by micaceous sandstone/quartzites which show a limited open fracture system.

A bore sunk to the parameters indicated above should supply sufficient water for domestic uses but possibly of a salinity normally considered high for this purpose.

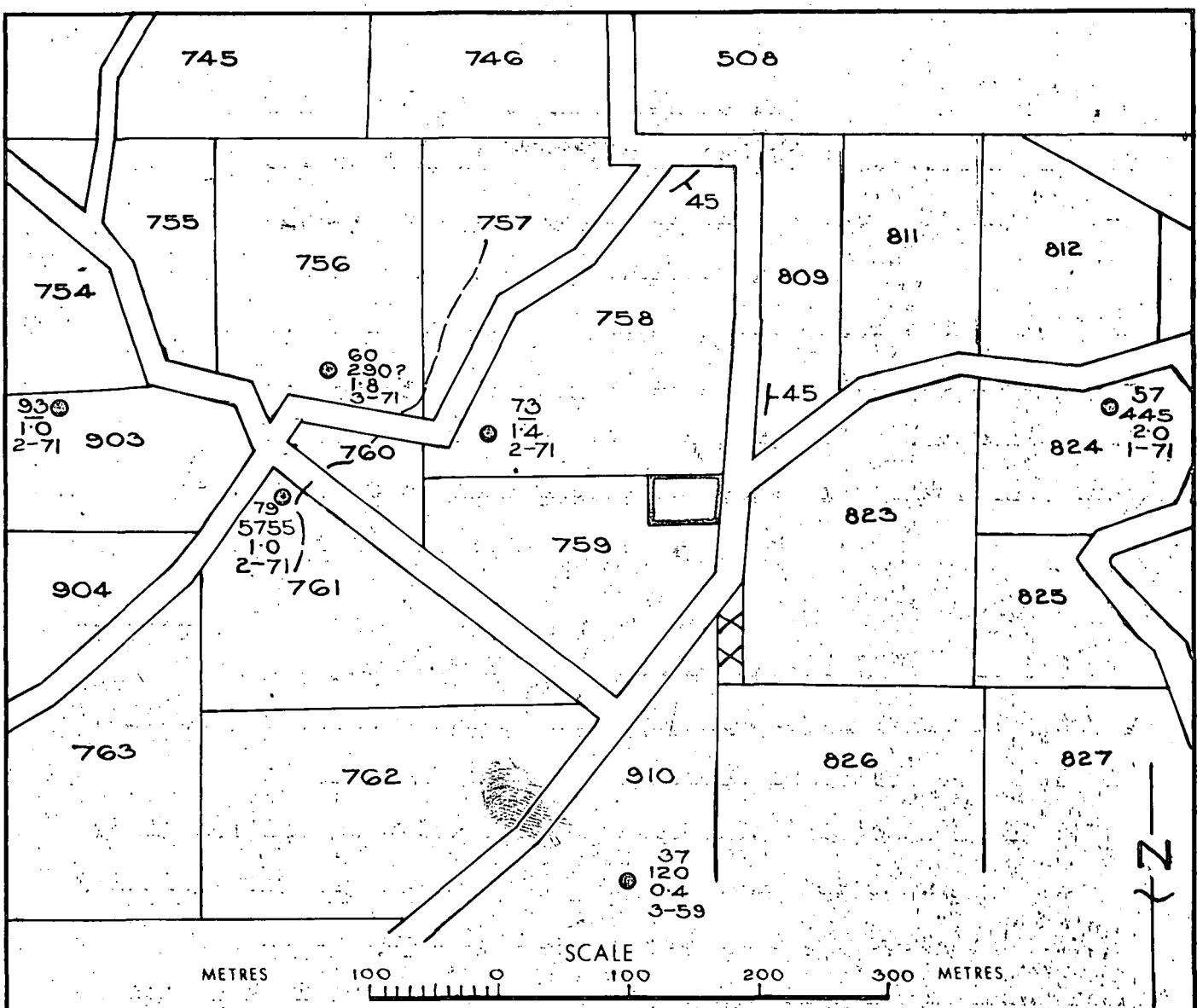
It is strongly recommended that the cost of a bore be compared with the cost of construction of a large underground storage tank since the rainfall incident on the area is capable of supplying of the order of 1 200 litres/sq. metre (200 gallons/sq. yard) of roof area per annum.

MAC

GEOLOGIST: M.A. COBB

MAC:FdeA
23.8.73

SURVEY DATE: 9.8.73



LEGEND

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

Torrensian Aldgate Sandstone

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

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