

DEPARTMENT OF MINES

SOUTH AUSTRALIA

SOIL TEST FOR FOUNDATIONS OF WATER STORAGE TANKS

NEW TOWN NEAR SALISBURY

Report by

A. R. Crawford
Geologist
ENGINEERING GEOLOGY & MINERAL RESOURCES SECTION
GEOLOGICAL SURVEY BRANCH

1. Introduction
2. Location
3. The Tanks
4. Site 1
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Appendix - Logs of Trial Holes

Plan Reference
Number

Title

Scale

55-294

Proposed Storage Tank Sites
for New town near Salisbury

1 inch to
2 chains

Report Reference

G.S. 363

H.O. Report Book Ref. 41/72

Date

September, 1955.

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SOIL TEST FOR FOUNDATIONS OF WATER STORAGE TANKS,

NEW TOWN NEAR SALISBURY

1. INTRODUCTION

On 16th August, 1955, the Director of Mines was requested by the Engineer-in-Chief to arrange a geological inspection of trial holes on Section 3089, Hd. Munno Para. These holes were excavated on the sites of four water storage tanks for the new town near Salisbury. The holes were inspected by the writer and Assistant Geologist, D.S. Buist, on 25th August.

2. LOCATION

The sites lie on moderately steep ground, sloping west, on the eastern edge of the new town area. Site 1, on which three tanks are to be built, lies about 12 chains NE of the western corner of Section 3089. On this site 10 trial holes have been dug. Site 2 lies in the southern corner of the Section, 20 chains SSE of Site 1. This site has 4 holes. (See plan 55-294)

3. THE TANKS

For Site 1 three 2 m. gallon tanks are proposed and for Site 2 one 250,000 gallon tank. The three tanks will supply most of the new town and the smaller tank a small part at a higher level. Although the design of the tanks has not been settled, they are likely to be of concrete. The larger tanks will be approximately 130 feet in diameter and the small tank approximately 85 feet. In each case the weight on the foundations will be considerably less than 1 ton/sq. ft.

4. SITE 1.

On Site 1 the three tanks are to be built close to one another in a line NNW-SSE. The ground here slopes from approximately 475 ft. R.L. (eastern edge of tanks) to 452 ft. (western edge) and south of the southernmost tank site there is a steeper fall to a creek.

The ten holes dug on this Site show a fairly consistent succession of red-brown clay (1-4 feet) on what has been logged by E. & W.S. as "marl" but which varies from a travertine rubble to a limy brown clay (2-4 feet) lying on a variable thickness of brown clay (nil to 7 feet) which rests on massive irregularly jointed quartzite. Where the brown clay is thin or absent the "marl" either rests directly on quartzite or there is a gradual transition with a zone of broken rock in limy clay. Details of the logs (which are essentially similar to those of E. & W.S.) are given in an appendix.

Comparison of the logs with the plan shows that on the western, downslope side the bedrock is deeply buried under clayey material (Hole No. 2, at 13'9"; No. 3, at 13'3"; No. 8, at 7'). The middle series show rock nearer the surface (No. 3, 3'5"; No. 6, 6'6"; No. 9, 6'3") though hole No. 1 is exceptional as it has a blue clay under the brown clay and was still in that at 16 ft. The upper, eastern series is variable. Hole No. 4 has solid quartzite at 12 feet but much broken rock in large fragments from 4 feet. Nos. 5 and 10 have hard rock very near the surface (No. 5, 2'3"; No. 10, 4').

With such a low weight/area ratio the ground provides a suitable foundation for the tanks but some deepening of the footings to reach bedrock on the downslope side would seem desirable, at least for No. 1 tank. Alternatively by siting the three tanks 50 feet to the east no deepening or reinforcing of footings would be necessary.

5. SITE 2.

Site 2 is on a much gentler slope, with R.Ls. from 572' (east) to 562' (west). The stratification is similar to that on Site 1: red-brown clay (1'-1'8") on "marl" (2'-3') on quartzite. As the quartzite occurs at 4 to 6 feet and is covered most deeply on the eastern (higher) side, the foundations are suitable for erection without re-inforcement or deepening of footings.

6. CONCLUSION

Two sites for water storage tanks in Section 3089, Hd. Munno Para show good foundation conditions. On the northern site some deepening of footings on the downslope side is desirable, unless the whole group of three tanks is built 50' further east.

AR Crawford

(A.R. CRAWFORD)
GEOLOGIST

ENGINEERING GEOLOGY & MINERAL RESOURCES
SECTION

ARC:AGK
27/9/55.

APPENDIX

D.M. 1524/55
EWS 2661/50

LOG OF TEST PITS FOR WATER STORAGE TANKS

SECTION 3089, HD. MUNNO

PARA

SITE 1.

Trial Hole No. 1, R.L. 458-70

	From		To	
	Ft.	In.	Ft.	In.
Red-brown clay	0	0	1	9
Travertine Rubble & clay	1	9	4	0
Brown clay	4	0	11	3
Blue clay	11	3	-	- (depth 16'0")

Trial Hole No. 2, R.L. 452-90

Red-brown clay	0	0	3	6
Travertine rubble and clay	3	6	6	0
Brown clay	6	0	10	6
Brown clay with quartzite fragments	10	6	13	9
Quartzite	13	9(depth)	-	-

Trial Hole No. 3, R.L. 462-08

Red-brown clay	0	0	1	9
Travertine rubble and clay	1	9	3	5
Quartzite	3	5	-	- (depth 5'6")

Trial Hole No. 4, R.L. 469-18

Red-brown clay	0	0	4	0
Limy light brown clay with quartzite boulders to 2'	4	0	12	0
Quartzite	12	0(depth)	-	-

Trial Hole No. 5, R.L. 471-64

Red-brown clay	0	0	2	0
Quartzite	2	0	-	-(depth 2'3")

SITE 1 (Contd.)

Trial Hole No. 6, R.L. 462-85

	From		To	
	Ft.	In.	Ft.	In.
Red-brown clay	0	0	1	6
Travertine rubble	1	6	3	6
Light brown clay with quartzite fragments to 12"	3	6	6	6
Quartzite	6	6	-	- (depth 9'3")

Trial Hole No. 7, R.L. 452-97

Red-brown clay	0	0	2	9
Limy light brown clay	2	9	4	9
Brown clay	4	9	7	0
Grey blue shale with quartzite fragments	7	0	13	3
Quartzite	13	3(depth)	-	-

Trial Hole No. 8, R.L. 453-09

Red-brown clay	0	0	1	9
Limy light brown clay	1	9	3	8
Ditto with quartzite fragments to 6"	3	8	5	8
Quartzose sandstone	5	8	7	0
Quartzite	7	0	-	- (depth 7'9")

Trial Hole No. 9, R.L. 463-24

Red-brown clay	0	0	1	3
Travertine rubble	1	3	3	6
Ditto with quartzite fragments	3	6	6	3
Quartzite	6	3	-	- (depth 7'0")

Trial Hole No. 10, R.L. 473-49

Red-brown clay	0	0	1	3
Limy light brown clay	1	3	4	0
Quartzite	4	0	-	- (depth 8'4")

SITE 2

Trial Hole No. 1, R.L. 566-80

	From		To	
	Ft.	In.	Ft.	In.
Red-brown clay	0	0	1	6
Light brown limy clay	1	6	3	6
Ditto with many quartzite fragments	3	6	5	0
Quartzite	5	0	-	- (depth 5'3")

Trial Hole No. 2, R.L. 562-23

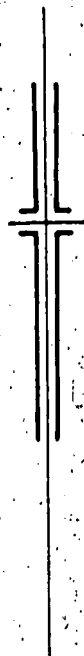
Red-brown clay	0	0	1	0
Light brown limy clay	1	0	4	0
Quartzite	4	0	-	- (depth 5'5")

Trial Hole No. 3, R.L. 567-26

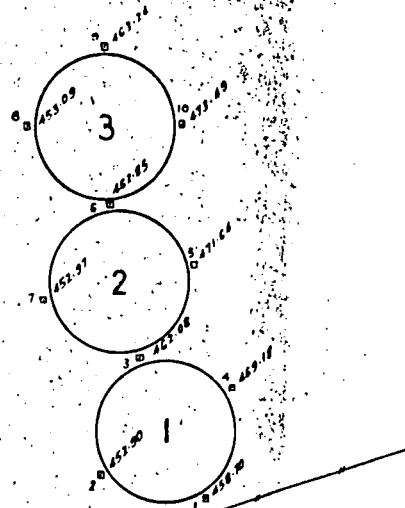
Red-brown clay	0	0	1	8
Light brown limy clay	1	8	4	6
Quartzose sandstone with limy clay	4	6	7	9
Quartzite	7	9 (depth)	-	-

Trial Hole No. 4, R.L. 571-81

Red-brown clay	0	0	1	4
Light brown limy clay	1	4	4	0
Brown clay	4	0	6	4
Quartzite	6	4 (depth)	-	-



Site 1

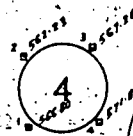


3089

HUNDRED OF MUNNO PARA

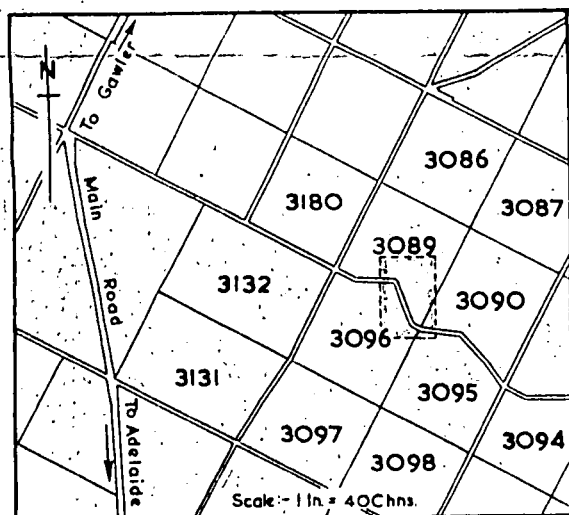
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Site 2



3090

LOCALITY PLAN



3095

Copied from plan supplied by E&W.S. Dept.

To accompany report by A.R. Crawford, Geologist.

S.A. DEPARTMENT OF MINES

PROPOSED STORAGE TANK SITES
FOR NEW TOWN NEAR SALISBURY

Approved	Revised	Scale	Sheet
		1 in = 2 Chns	
		R.G.C.	55-294 Ha2
			1-9-55