Section





# DEPARTMENT OF MINES
# SOUTH AUSTRALIA

GEOLOGICAL SURVEY

SOILS GEOLOGY SECTION

## REPORT ON SITE INVESTIGATION FOR

## S.A. CO-OPERATIVE BULK HANDLING LTD.

## RAILWAY YARDS - KAROONDA

by

S. Robson
Geologist



20th August, 1963

D.M. 937/63

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# REPORT ON SITE INVESTIGATION FOR S.A. CO-OPERATIVE BULK HANDLING LTD., RAILWAY YARDS - KAROONDA

By S. Robson - Geologist

## INTRODUCTION

This report sets out the results of test boring for silo site investigations at Karoonda, which is in County Buccleuch, Hundred of Marmon Jabuk, and in the N.E. quadrant of the Karoonda 1-Mile Sheet (822 in Zone 6 of the Australian National Grid).

A percussion bore hole was put down to 86 feet. Sealed tube samples were taken at depths of about 5, 10, 15, 20, 25, 30 and 35 feet.

A geological log is given for the test bore in Appendix 1. Locality maps, a geological plan and a geological section showing penetration data are given on the accompanying bore data sheet.

PLAN; 63-686

## STRATA PENETRATED AND FOUNDATION CHARACTERISTICS

The materials intersected in the bore are fill, a sandy clay soil "B" horizon, and sediments (the Parilla Sand).

Fill:- The fill is a sand containing coal and kunkar rubble, and extends to a depth of about 7 feet. The nature of this material cannot be predicted.

Soil:- The mottled sandy clay is the soil "B" horizon produced by downwards eluviation of clay originally present near ground surface in the Parilla Sand. The sandy clay is fairly strong and should occur throughout the site with a similar thickness. The upper 14 feet of the sequence, corresponding to the zone of fill and soil development described

above, has penetration values of the order of 20 - 40 blows/ft.

Parilla Sand:- This unit, of Plio-Pleistocene age, consists essentially of clayey fine-grained sand with sparse to moderately abundant, sub-rounded to rounded quartz grains, especially in the lower layers. Textural variations are gradational. The clay content of the sand gradually decreases with depth varying from a distinctly clayey sand over the interval 14'-67' (approx.) to a very slightly clayey sand at depths below 67'. The coarser clastic grains generally become more abundant with increasing depth.

Colours - mainly light yellowish browns and pale browns - show gradational changes throughout the sequence.

From a depth of 14' to 86' penetration data suggests that the sands are quite strong with penetration values of approx. 50 blows/ft. at 14' increasing to 100 blows/ft. at 40' and 150 blows/ft. at 52 ft.

There is quite good correlation between blows/ft. and "density" as shown in the geological log, and between "density" and water condition. The "density" variation is probably due to differences in the moisture content in the upper layers. Below 70' approx. grain size and packing in the sand varies and corresponding variation in the "density" is noted.

## GROUNDWATER

The foundation bore was dry. In Bore TH (93 Railway Reserve), which was put down to 900 ft., the supply was in excess of 10,000 gallons per day and the water contained 2,200 p.p.million.

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Geologist
SOILS GEOLOGY SECTION

SR:AGK
20/8/63

# APPENDIX 1

## GEOLOGICAL LOG

# PERCUSSION DRILL LOG

Department of Mines,
South Australia.

Bore No.: 1

Project: S.A.C.B.H. SILO SITE  Purpose: Foundations

Location: Karoonda  Hundred: Marmon Jabuk  Section: Railway Yards

Depth: 86'  R.L.  Core Diameter: 6"  Commenced: 4/7/63  Completed: 9/7/63  Bore Serial No. 503/64

Bore Logged by: S. Robson  Date: 15/7/63  Driller: A.J. Tucker  Docket No.: 937/63  Plant: 17

| Depth From | Depth To | Description | Sample Depth From | Sample Depth To | Penetration Blows | Water Condition | Consistency or Density | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0 | 3' | Dark grey fill with coal rubble | 0 | 1' | 20 | Damp | Loose | |
| | | | 1' | 2' | 20 | Slightly damp | " | |
| | | | 2' | 3' | 35 | " " | " | |
| 3' | 7' | Kunkar and dark grey coal rubble | 3' | 4' | 35 | " " | Loose to Moderately Dense | |
| | | | 4' | 5' | 25 | " " | | |
| | | | 5' | 6'4" | 40 | " " | " " " | Sealed Tube |
| | | | 6'4" | 7' | 27 | " " | " " " | |
| 7' | 10' | Yellowish brown and red-brown and greenish-grey mottled very sandy clay. Scattered flakes of white mica. | 7' | 8' | 41 | " " | Very stiff | ) Pocket Penetrometer 4.5 tons/sq.ft. |
| | | | 8' | 9' | 42 | " " | " " | |
| | | | 9' | 10' | 42 | " " | " " | |
| 10' | 12' | Light reddish-brown and greenish-grey and purple mottled clay. Patches of dark organic staining. Coarse nutty structure with moderate sheen on the faces of structural units. | 10' | 11'4" | 31 | Damp | Stiff | Sealed Tube |
| | | | 11'4" | 12' | 19 | " | " | |
| 12' | 14' | Light yellowish brown and reddish brown and greenish-grey mottled very sandy clay. Scattered white mica flakes | 12' | 13' | 52 | Slightly damp. | Very Stiff | ) Pocket Penetrometer 4.5 tons/sq.ft. |
| | | | 13' | 14' | 102 | | " " | |

| Depth From | Depth To | Description | Sample Depth From | Sample Depth To | Penetration Blows | Water Condition | Consistency or Density | Remarks |
|---|---|---|---|---|---|---|---|---|
| 14' | 18' | Light yellowish-brown and red mottled clayey fine sand. Dark organic staining in upper parts. | 14' | 15' | 54 | Slightly Damp | Very Stiff | |
| | | | 15' | 16'4" | 52 | " " | " " | Sealed Tube |
| | | | 16'4" | 17' | 40 | " " | " " | |
| | | | 17' | 18' | 38 | " " | " " | |
| 18' | 20' | Light yellowish-brown and red mottled clayey fine sand with coal and kunkar rubble. | 18' | 19' | 82 | " " | Stiff | |
| | | | 19' | 20' | 71 | " " | " | |
| 20' | 38' | Light yellowish-brown and pale-brown and off-white mottled slightly clayey fine sand. Few scattered flakes of white mica. | 20' | 21'4" | 41 | " " | " | Sealed Tube |
| | | | 21'4" | 22' | 25 | Damp | Dense | |
| | | | 22' | 23' | 35 | " | " | |
| | | | 23' | 24' | 100 | " | " | |
| | | | 24' | 25' | 200? | " | " | |
| | | | 25' | 26'4" | 45 | " | " | Sealed Tube |
| | | | 26'4" | 27' | 47 | " | " | |
| | | | 27' | 28' | 70 | " | " | |
| | | | 28' | 29' | 59 | " | " | |
| | | | 29' | 30' | 59 | " | " | |
| | | | 30' | 31'4" | 43 | " | Loose to | |
| | | | 31'4" | 32' | 29 | " | Moderately | |
| | | | 32' | 33' | 60 | " | Dense | |
| | | | 33' | 34' | 50 | " | " " " | |
| | | | 34' | 35' | 59 | " | " " " | |
| | | | 35' | 36'4" | 40 | Damp | " " " | Sealed Tube |
| | | | 36'4" | 37' | 45 | " | " " " | |
| | | | 37' | 38' | 81 | " | " " " | |
| 38' | 51' | Light yellowish-brown and pale brown and off-white mottled slightly clayey fine sand. Small patches of red and greenish grey mottling and pale-brown mottling | 38' | 39' | 96 | Damp to slight- | Dense | |
| | | | 39' | 40' | 92 | ly Damp. | " | |
| | | | 40' | 41' | 102 | " " " | " | |
| | | | 41' | 42' | 85 | " " " | " | |

Bore No. 1 - Karoonda

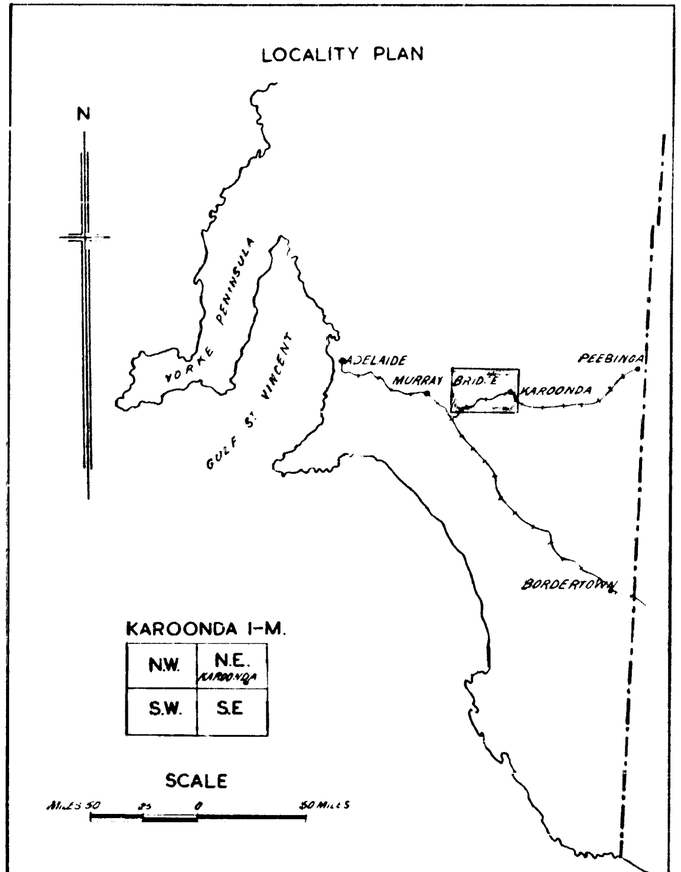


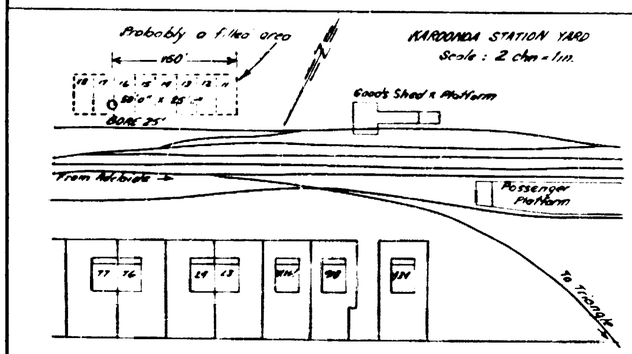
| Depth From | Depth To | Description | Sample Depth From | Sample Depth To | Penetration Blows | Water Condition | Consistency or Density | Remarks |
|---|---|---|---|---|---|---|---|---|
| 38' (contd.) | 51' | increasing with depth. Quite abundant flakes of white mica. | 42' | 43' | 94 | Damp to slightly damp. | Dense | |
| | | | 43' | 44' | 85 | " " " | " | |
| | | | 44' | 45' | 92 | " " " | " | |
| | | | 45' | 46' | 98 | " " " | " | |
| | | | 46' | 47' | 96 | " " " | " | |
| | | | 47' | 48' | 79 | " " " | " | |
| | | | 48' | 49' | 49 | " " " | " | |
| | | | 49' | 50' | 45 | " " " | " | |
| | | | 50' | 51' | 51 | " " " | " | |
| 51' | 53' | Pale yellow and slightly red mottled very slightly clayey fine sand. Scattered white silt particles and white mica flakes. | 51' | 52' | 105 | Slightly Damp. | Very Dense | |
| | | | 52' | 53' | 150 | " " | " " | |
| 53' | 58' | Light reddish-brown and yellowish-brown slightly clayey fine sand. Scattered white silt particles and flakes of white mica. | 53' | 54' | 137 | Damp | Dense | |
| | | | 54' | 55' | 112 | " | " | |
| | | | 55' | 56' | 120 | " | " | |
| | | | 56' | 57' | 128 | " | " | |
| | | | 57' | 58' | 132 | " | | |
| 58' | 67' | Light yellowish-brown and pale-brown mottled slightly clayey fine sand. Abundant flakes of white mica. | 58' | 59' | 150 | Slightly Damp | | |
| | | | 59' | 60' | 108 | " " | | |
| | | | 60' | 61' | 130 | " " | Moderately Dense | |
| | | | 61' | 62' | 102 | " " | Dense | |
| | | | 62' | 63' | 90 | Damp | " | |
| | | | 63' | 64' | 82 | Moist | Moderately Dense | |
| | | | 64' | 65' | 102 | " | | |
| | | | 65' | 66' | 97 | " | | |
| | | | 66' | 67' | 100 | " | | |

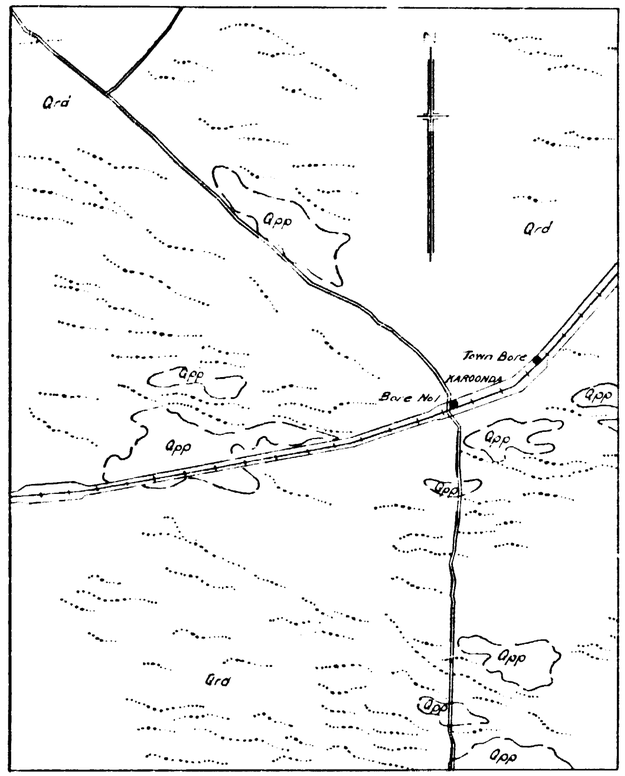
Bore No. 1 - Karoonda



| Depth From | Depth To | Description | Sample Depth From | Sample Depth To | Penetration Blows | Water Condition | Consistency or Density | Remarks |
|---|---|---|---|---|---|---|---|---|
| 67' | 72' | Pale-brown and light yellowish brown fine sand with patches of light reddish-brown mottling. Scattered white silt particles. Abundant flakes of white mica. | 67' | 68' | 80 | Moist | | |
| | | | 68' | 69' | 80 | Damp | Loose | |
| | | | 69' | 70' | 80 | " | Moderately Dense | |
| | | | 70' | 71' | 80 | " | | |
| | | | 71' | 72' | 40 | Slightly Damp. | Loose | |
| 72' | 76' | Pale-brown and light yellowish-brown fine to medium-grained sand. | 72' | 73' | 50 | " | " | |
| | | | 73' | 74' | 100 | " | " | |
| | | | 74' | 75' | 100 | " | " | |
| | | | 75' | 76' | 70 | " | " | |
| 76' | 78' | Pale-brown medium to coarse sand. Some flakes of white mica and scattered white silt particles. | 76' | 77' | 98 | Damp. | Loose. | |
| | | | 77' | 78' | 98 | " | " | |
| 78' | 86' | Pale-brown and yellowish-brown mottled fine sand with medium to coarse quartz grains. Abundant flakes of white mica. | 78' | 79' | 52 | " | " | |
| | | | 79' | 80' | 74 | " | " | |
| | | | 80' | 81' | 87 | " | " | |
| | | | 81' | 82' | 92 | " | " | |
| | | | 82' | 83' | 85 | | | |
| | | | 83' | 84' | 110 | Slightly Damp. | " | |
| | | | 84' | 85' | 110 | " | " | |
| | | | 85' | 86' | 110 | " | " | |
| | | | END. | | | | | |




Longitudinal Dunes
Parilla Sand

Qrd — Dune sands

Qpp — Light brown & pale yellow clayey fine sand

Geological Boundary

Dune trends

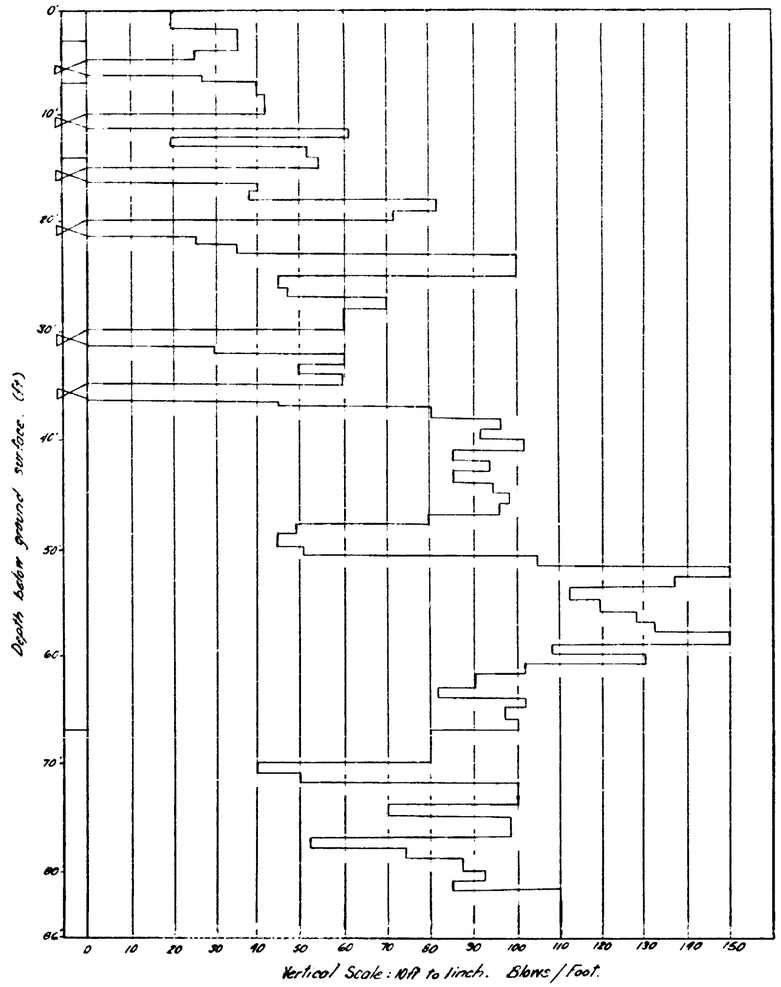
S.A. DEPT. OF MINES

# KAROONDA SILO SITE

## BORE DATA SHEET

To accompany a report by S. Robson.

## BORE NO.1




Recent
- Coal Fill
- Kunkar
- Clay Soil 'B' horizon

Pleistocene
- Clayey fine sand
- fine, medium & coarse grained sand } Parilla sand

Sealed tube

Penetration : Blows/feet.

63-686

DATE : 22-8-63. Jc 5/6