

RB 58/119

DEPARTMENT OF MINES
SOUTH AUSTRALIA

REPORT ON
RECONNAISSANCE SAMPLING
SILICEOUS MATERIALS - KILN POINT AREA
(ADELAIDE CEMENT COMPANY LIMITED)

by

J. N. Cramsie
Geologist

NON METALLICS SECTION
GEOLOGICAL SURVEY

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<u>Plan No.</u>	<u>Title</u>	<u>Scale</u>
S 3661	Co. Fergusson - Location of Shale Samples (Adelaide Cement Co. Ltd.)	4 miles - 1 in.

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REPORT ON
RECONNAISSANCE SAMPLING -
SILICEOUS MATERIALS - KLEIN POINT AREA
(Adelaide Cement Company Limited)

1. INTRODUCTION

At the request of the Adelaide Cement Company Limited, prospecting for argillaceous sediment suitable as a raw material for cement manufacture was carried out from 18th to 21st February in the vicinity of the company's limestone quarry at Klein Point, Yorke Peninsula.

The raw material should fulfil the following requirements:

1. Chemical composition - a silica to alumina ratio of approximately 4.5, and a silica to alumina plus iron ratio of approximately 2.5. Magnesia should be less than 4 per cent and alkali content should be low.
2. Suitable physical properties.
3. The deposit should be reasonably uniform, with reserves of the order of 5 million tons within 10 miles of Klein Point.

Previous investigations suggested the Permian glacial sediments as the most likely source of suitable material.

Reference

Ladbroke, N.H., (1961) Minlaton and Stansbury Stratigraphic Boreas, Subsurface Stratigraphy and Micropalaontology.
Palaeontology Report 7/61 - South Aust. Dept. of Mines.

2. GEOLOGY

The area considered is bounded by the main roads between Port Vincent, Minlaton, Yorketown and Edithburgh. (See locality plan No. S 1661). This land is utilised mainly for grazing, and is of low relief, with a covering layer of kunkar and salt flats.

Soft bryozoa sandy limestones of the Port Willunga Beds outcrop along the coastline between Port Vincent and Edithburgh, and are quarried by the cement company at Klein Point. Permian boulder till, consisting mainly of sandstones and siltstones, have been mapped in the southwestern section of the area considered, but are usually concealed by kunkar, and other Recent sediments.

Drillhole data from the Hundreds of Ramsay and Dalrymple were examined, and indicated only a small proportion of clay or clayshale in the Permian section. Ludbrook (1961) detailed the Permian sequence exposed by the Minlaton and Stanbury stratigraphic bores. A thickness of 31 feet of green claystone was reported in an incomplete Permian section of 570 feet from the Minlaton Bore. In the Stanbury Bore, no predominantly argillaceous beds were encountered in a 780 feet Permian section. The dominant lithology encountered was a poorly sorted silty sandstone.

Permian sediments were found to outcrop around some of the salt flats and lakes which are a feature of this area. These outcrops were dominantly of a sandy or leamy nature.

3. LOCATION OF SAMPLES

Outcrops on the edge of several of the larger salt flats were examined. The exposed sediments were generally sandy or calcareous. Four samples were taken from more shaly beds and submitted to the Adelaide Cement Company Limited for examination and analysis. These samples are located on the accompanying plan No. S 3661.

Samples 1 and 2 - Section 80, Hundred of Ramsay
(15 road miles from Klein Point Quarry).

Two sugar samples were obtained from a bed of green clay. Sample 1 represents the upper, more weathered section of the bed (from 6 inches to 2 feet), while Sample 2 represents the clay from 2 to 4 feet - all depths measured from the top of the bed.

The bed exceeds four feet in thickness and appears to persist laterally, with discontinuous outcrop for about 100 yards.

Sample 3 - Section 37, Hundred of Dalrymple
(6 road miles from Quarry)

An auger borehole sample was taken from a bed of brown loam about six feet thick which outcrops on the southern side of the salt flat in this section.

Sample 4 - Section 178, Hundred of Dalrymple
(7 road miles from Quarry)

Brownish-gray calcareous clayey loam (field description) was sampled on the south side of the salt flat in this section. Subsequent analysis showed this material to be rich in gypsum.

4. ANALYSES OF SAMPLES

Analyses of samples submitted to the Adelaide Cement Company were as follows.

	Sample 1	Sample 2	Sample 3	Sample 4
SiO_2	66.1	67.8	57.0	13.9
Al_2O_3	14.4	14.0	7.8	3.5
Fe_2O_3	5.5	4.5	2.8	1.3
CaO	2.1	0.8	10.7	30.1
MgO	1.5	0.8	0.8	2.9
SO_3	0	0	5.0	27.8
Loss	4.4	4.9	11.7	13.0
Na_2O	1.4	1.7	1.3	2.5
K_2O	4.2	4.3	1.9	0.8
$\text{SiO}_2/\text{Al}_2\text{O}_3$	4.6	4.8	7.3	4.5
$\text{SiO}_2/\text{Al}_2\text{O}_3 + \text{Fe}_2\text{O}_3$	3.3	3.7	5.4	3.3

5. CONCLUSIONS

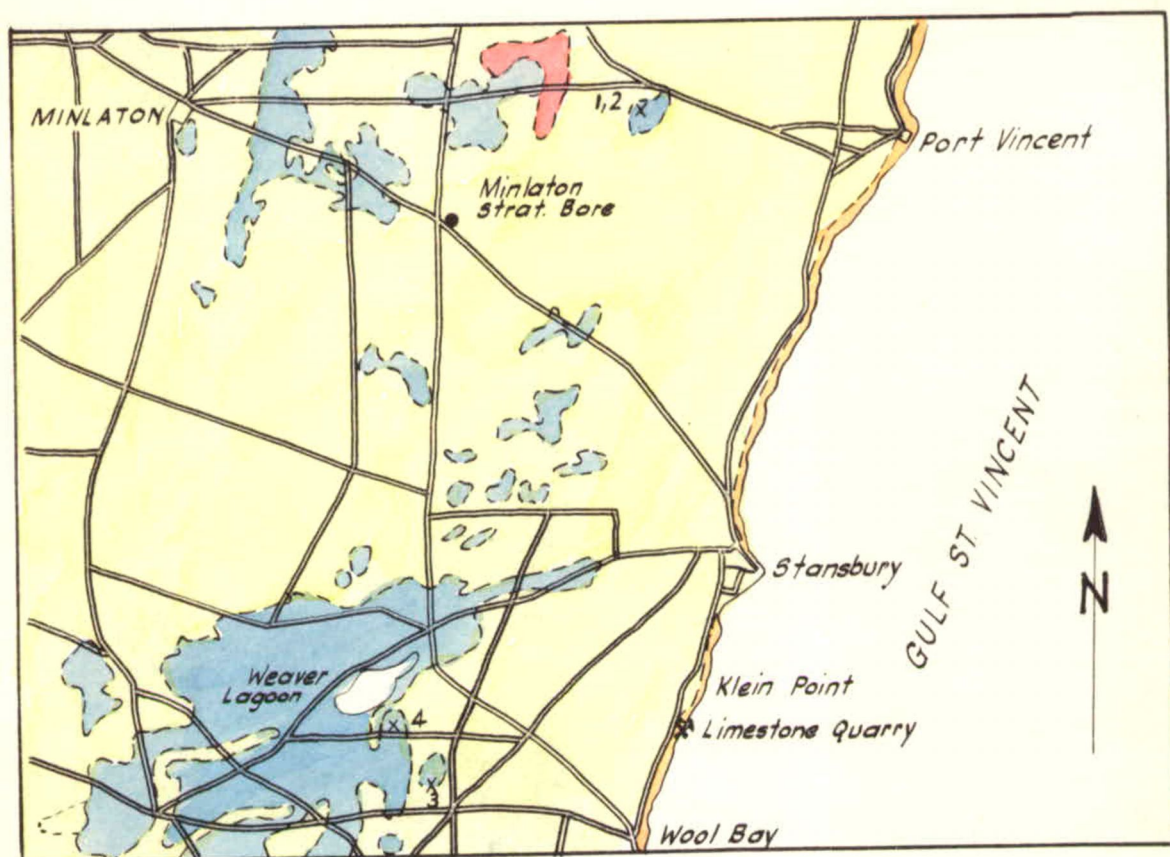
From available information it appears unlikely that shaly material suitable for cement manufacture will be found in the vicinity of Klein Point. Drilling information indicates that most shaly material in this area contains a considerable proportion of silt and/or sand. Shaly material adjacent to the Minlaton - Port Vincent road approaches the composition required, but appears to constitute only a small proportion (approximately 2 per cent) of the Permian sequence. The extent of this bed could not be determined because of poor outcrop.

J. N. Crambie

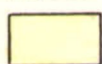
J. N. Crambie
Geologist

NON METALLICS SECTION

JNC:AGK
15/5/64



RECENT



Undifferentiated. Kunkar and kunkarised sand

TERTIARY



Port Willunga Beds. Soft bryozoal sandy limestone

PERMIAN



Boulder till with erratics. Sandy claystones and siltstones

CAMBRIAN



Ramsay Limestone

x *Sample Location*

To accompany report by J.N. Cramsie.

S.A. DEPARTMENT OF MINES

Approved	Passed	Drn.	CO. FERGUSSON LOCATION OF SHALE SAMPLES ADELAIDE CEMENT Co. LTD.	D.M.	Scale. 4 mls. to inch
		Tcd.		Req.	S3661
		Ckd.			Gh
Director		Exd.			Date 24-4-64