DEPARTMENT OF MINES
SOUTH AUSTRALIA

RIB 69/131

REPORT ON CLAY AND SILICA DEPOSIT

Section 7, Hd. Belvidere, County Light

- S.E. Smith -

by

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SENIOR GEOLOGIST
NON-METALLIC SECTION

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Rept.Bk.No. 69/131
G.S. No. 4386
D.M. No. 1837/68

16th December, 1969

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ABSTRACT

Samples of friable white sandstone from two auger drill holes have been analysed and shown to be suitable for glass manufacture after removal of approximately 20% kaolin.

White clay underlying the sandstone is worth further exploration.

INTRODUCTION

During an inspection of a small white clay deposit for Mr. Smith, attention was drawn to the presence of friable sandstone which might find use in glass making. (Hiern, 1969).

Mr. Smith subsequently had two auger holes drilled and submitted representative samples for examination. Results of laboratory testing of these are presented herein.

Mineral rights on Section 7 are privately owned.

GEOLOGICAL SETTING

The deposit lies on the Kapunda 1:63,360 map sheet (Dickinson and Coats 1957) and occurs in a sandstone bed forming part of a folded sequence of Adelaide System rocks. Locally the sandstone bed is over 100ft. wide and dips at a low angle to the east. It occupies the east limb of a plunging anticlinal fold as shown on the accompanying plan 69-105.

High quality white clay occurs in a narrow irregular zone striking transversely across the sandstone bed. The clay deposit is described in the previous report (Hiern op.cit.).

ECONOMIC GEOLOGY

The sandstone has been worked to a depth of a few feet for

roadmetal. Exposures in the pit show the upper few feet of sandstone to be partially indurated and moderately ironstained but below this in the floor of the pit the sandstone is friable and unstained.

White clay is present in the matrix of the sandstone and also as a filling up to ⅛" thick in joints. Screening of samples from the drill holes and a bulk sample from the floor of the pit showed approximately 20% of material passing a 300 mesh (B.S.) screen.

DRILLING AND LABORATORY TESTING

The two holes were drilled with a power auger at sites shown approximately on the accompanying sketch section (S7573) Logs are attached in Appendix 1.

Both holes penetrated friable sandstone and passed into an underlying bed of white and pinkish claystone.

Samples representing each 5ft. advance were brought to the the Department and the samples in sandstone were bulked into two samples and submitted for analysis (See Appendix 2).

The underlying claystone samples were not tested but the clay, particularly in the Section 30-32ft., in Bore 2, is of good quality and worth further investigation.

GRADE AND RESERVES

Detailed results of the laboratory tests are given in Appendix 2.

Chemical analysis of the +300 mesh fraction, which comprised 83% and 77% of the original samples, showed 98.6% and 98.8% silica and 0.03% and 0.02% iron impurity.

The washed material is regarded as suitable for glass making purposes.

No detailed topographic survey has been made of the deposit but a preliminary estimate of reserves based on the depth of friable sandstone encountered in the drill holes, suggests reserves to be in the

order of 40,000 cubic yards in the immediate area of the sandstone pit.

Extensions along strike are likely to exist.

SUMMARY AND CONCLUSIONS

Laboratory testing of samples obtained from drilling showed the +300 mesh fraction of the friable sandstone to be suitable for glass making.

Weathered shale underlying the sandstone is of good quality and worth further investigation. This could be achieved by trenching on the western contact of the sandstone bed.

MNH:B:JKD
16.12.1969

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REFERENCES

DICKINSON, S.B., & COATS, R.P., 1957. Geological Atlas of S.Aust. Sheet Kapunda 1:63,360 series.

HIERN, M.N., 1969. White Clay Deposit. Section 7, Hd. Belvidere, unpublished report, Rept.Bk.No. 68/98, 20th June, 1969.

APPENDIX 1

LOGS OF POWER AUGER HOLES DRILLED BY PRIVATE CONTRACTOR

Bore 1

Depth (in ft.)	Description
0 - 45ft.	White very fine grained silica.
45 - 50ft.	Pale pinkish brown claystone with fine silica.
	END OF HOLE
Sample 0-45ft.	A588/69 C.E. 3631
	BORE 2
0 - 30ft.	White very fine grained silica.
30 - 32ft.	White claystone.
32 - 35ft.	Pale pinkish brown and white claystone.
35 - 50ft.	Pale grey claystone - silty in part.
	END OF HOLE
Sample 0-30ft.	A589/69 C.E. 3632

APPENDIX 2

LABORATORY TESTING OF SAMPLES BY AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES

Samples	A 588/68	C.E. 3631	Bore 1 0-45'
	A 589/69	C.E. 3632	Bore 2 0-30'

Investigation and report by T.M. Lennox. Officer in charge, Materials Technology Section, B.R. Ashworth.

ANALYSIS OF SILICA

Results

The materials received were dried at 105°C. A representative sample was then blunged with water and screened through a 300 mesh BS sieve. The oversize material was dried and weighed, the clay fraction (-300 mesh) was calculated, and the following results obtained:

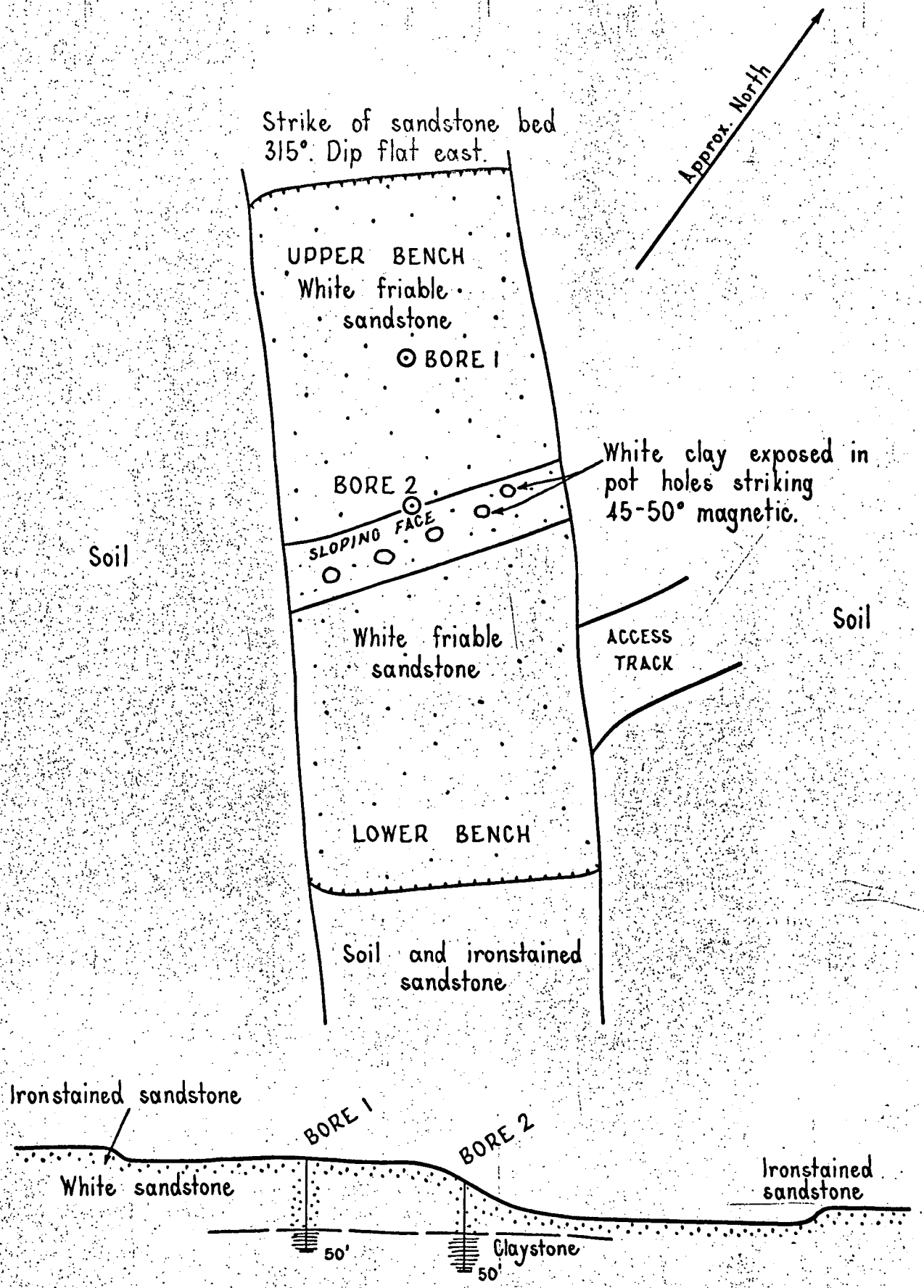
Sample	Clay fraction (-300 mesh)
1. A 588/69	17.2%
2. A 589/69	22.8%

Samples of the plus 300 mesh material were examined by the Analytical Section and the SiO_2, Fe_2O_3 and Al_2O_3 contents determined.

Sample	SiO_2	Fe_2O_3	Al_2O_3
1. A 588/69	98.6	0.03	1.05
2. A 589/69	98.8	0.02	0.73

The silica fraction from these materials is of high quality and would be suitable for glass making purposes.

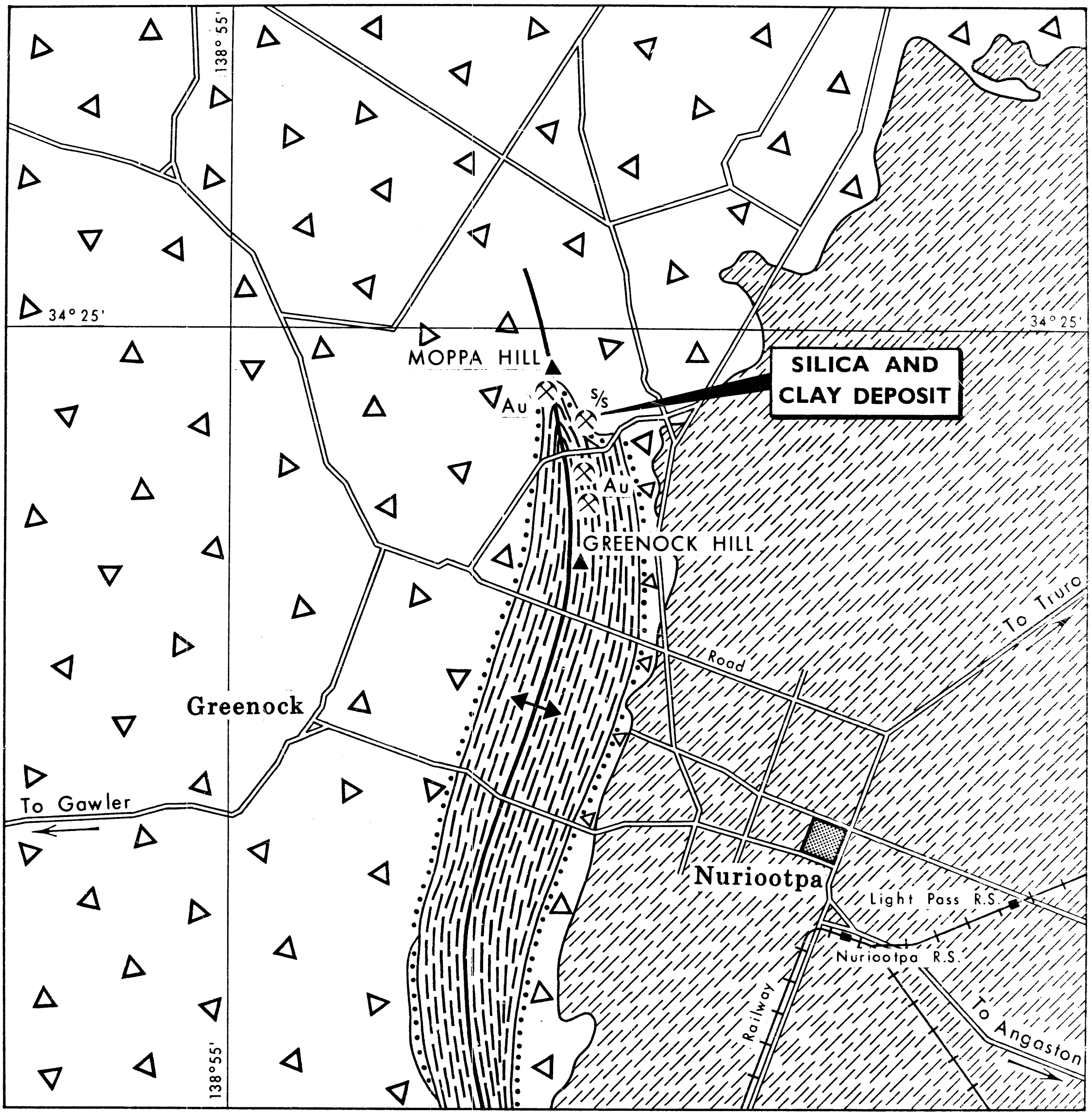
Further work on the silica content of the -300 mesh fraction would determine the silica fines or an X-ray diffraction technique could be utilised to obtained accurate quantitative data of the silica (quartz) content of the totd sample.



LONGITUDINAL SECTION LOOKING EAST

DEPARTMENT OF MINES — SOUTH AUSTRALIA

NON-METALLIC MINERALS SECTION GEOLOGIST	Drn. M.N.H. Tcd. R.H. Ckd. L.V.W. Eud.	CLAY & SILICA DEPOSIT SEC. 7 HD. BELVIDERE DIAGRAMMATIC PLAN AND SECTION	SCALE: Diagrammatic S7573 Gk6 DATE: 4 Dec 1969



SCALE

MILES 1 0 1 2 3 4 MILES

KILOMETRES 1 0 1 2 3 4 5 6 7 KILOMETRES

LEGEND

CAINOZOIC

Sediments of the Barossa Valley

PROTEROZOIC

Glacial beds—tillite,grits,shales

Sandstones—fine grained,arkosic?

Laminated silty shales,locally schistose

Anticlinal axis

Au
Gold mine

S/S
Sandstone quarry

Geology from Kapunda and Truro one mile map areas

69—105

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