DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

REPT.BK.NO.83/46
AUGER DRILLING OF CRAIGIE PLAINS GYPSUM DEPOSIT NO. 2 IN 1981. SECTIONS 199 & 120, HUNDRED BROWNLOW, COUNTY EYRE

GEOLOGICAL SURVEY

by

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JUNE, 1983

DME.583/79

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Rept. Bk. No. 83/46
D.M.E. No. 583/79
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AUGER DRILLING OF CRAIGIE PLAINS GYPSUM DEPOSIT NO. 2 IN 1981 SECTION 199 AND 200, HUNDRED BROWNLOW, COUNTY EYRE

ABSTRACT

Aeolian flour and fine seed gypsum have accumulated in a lunette dune system along the eastern margin of a large depression on Craigie Plain. Between 1966 and 1980, about 12 000 tonnes of seed gypsum were mined from the richest zones of the deposit. Auger drilling has indicated that about 243 000 tonnes of flour gypsum remain with an average grade of 43% gypsum. The crude gypsum is generally unsuitable for commercial use, although selective mining of higher grade patches may provide material suitable for agricultural purposes. Further exploitation of the deposit is not recommended.

INTRODUCTION

As part of a review of gypsum resources in the Blanchetown-Morgan-Waikerie area, a flour-seed gypsum deposit, on Craigie Plain, was investigated to determine reserves and grade of gypsum.

The deposit is designated, Craigie Plains Gypsum Deposit No. 2, as distinct from the better known deposit, 2.5 km to the east, referred to as Craigie Plains Gypsum Deposit No. 1.

Between 31 March 1981 and 6 April 1981, a total of 34 auger holes, up to 9 m deep, were drilled by M.W. Flintoft (Field Assistant) using a Daihatsu tray-top mounted machine auger. Samples were collected over one metre intervals and submitted to the Australian Mineral Development Laboratories (AMDEL) to determine gypsum ($CaSO_4 . 2H_2O$) content. Selected samples were also analysed for; acid insolubles, calcium oxide (CaO),

magnesium oxide (MgO), aluminium oxide (Al_2O_3), iron as (Fe_2O_3), carbon dioxide (CO_2) and chlorine (Cl).

In July 1981, a topographic plan, with drill hole locations, was prepared by S.A.D.M.E. Survey Section.

LOCATION AND TOPOGRAPHY

Craigie Plains Gypsum Deposit No. 2 is on sections 199 and 200, hundred Brownlow, county Eyre within the District Council of Morgan part of the Riverland Planning Area. It is located about 125 km by road northeast of Adelaide, midway between Truro and Blanchetown.

Access from Truro is along the Sturt Highway for 24.7 km, thence northwards for 9 km along the unsealed Mount Mary road (Fig. 1). This route allows all weather access.

The deposit is within a gypsiferous lunette dune system on the eastern margin of a large flat depression that is subject to occasional winter flooding.

Two abandoned pits on the western side of the lunette have been bulldozed in, to form a 'natural' surface consistent with the slope of the dune and regrowth of vegetation has begun (Plate 1).

The lunette dune is riddled with wombat and rabbit burrows. Vegetation is limited to tobacco bushes and grasses with mallee eucalypts on the southern and northern sections of the dune.

MINERAL TENURE AND PRODUCTION

Craigie Plains Gypsum Deposit No. 2 is on freehold land, held by Mr. D.J. Kock of Moculta.

Any person wishing to peg a mineral claim must serve notice of entry, under Section 58 of the Mining Act 1971-1982, upon the landowner who is entitled to a proportion of the rental, under

Section 40, and compensation for any financial loss, hardship and inconvenience under Section 61.

Three Mineral Leases (M.L.) are currently held over the area by David Linke Contractor Pty. Ltd. (Fig. 2) and a record of tenure is detailed on Table 1.

Production figures from this deposit have not been recorded separately but are included in the production for Blanchetown, Linke's main source of gypsum (Barnes and Warren, 1980). From the outline of the two pits before rehabilitation (Fig. 2), an estimated 12 000 tonnes of seed gypsum were removed between 1966 and 1980. Grade was about 65% gypsum. This material was blended with high grade Blanchetown gypsum at Linke's Nuriootpa processing plant and supplied to Adelaide Brighton Cement Company at Angaston.

Due to a fall off in gypsum grade, the two pits were closed and rehabilitated in 1980.

TABLE 1

Record of Tenure, Craigie Plains Gypsum Deposit No. 2

Tenement	Area (ha)	Holder	Commencement	Expiry
ML 715 and 716	each 3.6	C.D. Bartsch transferred to D. Linke Contractor Pty. Ltd. 20.4.77	1.07.66	30.06.87
ML 721	1	C.D. Bartsch, transferred to D. Linke Contractor Pty. Ltd. 20.4.77	1.01.68 renewed 1.1.73 renewed 1.1.78	31.12.72 31.12.77 31.12.84

GEOLOGICAL SETTING

The accompanying regional geological plan (Fig. 1) is based on RENMARK (Firman, 1971) and ADELAIDE (Thomson, 1969).

Craigie Plains gypsum deposits are situated on the Murray Plain, an area of Quaternary sediments covering flat-lying Tertiary sediments of the Murray Basin.

The youngest Tertiary unit is Norwest Bend Formation, a thin sequence of marine sand and sandy limestone (Firman, 1972 and 1973) characterised by Pliocene oyster shell beds, overlying Miocene yellowish-brown sandy limestone and calcarenite of Morgan Limestone and older Mannum Limestone. These Tertiary deposits are well exposed in River Murray cliffs and small quarries at Craigie Plains Gypsum Deposit No. 1.

Overlying the weathered surface of Norwest Bend Formation is Pleistocene Blanchetown Clay, a mottled red-brown and grey-green clay containing sandy lenses, thought to be fluvio-lacustrine in origin (Firman, 1969) and characterised by gypsiferous evaporite beds. Blanchetown Clay is generally obscured by various Quaternary units including Bakara Soil, a fossil soil characterised by hard massive nodular calcrete, and Woorinen Formation, a red-brown aeolian sand.

Holocene Yamba Formation, a lacustrine gypsiferous clay and silt with marginal lunette dunes of seed and flour gypsum, is developed in low lying areas where Bakara Soil and Blanchetown Clay are absent. Lake bed gypsiferous evaporite is derived from groundwater charged with gypsum from the surrounding Blanchetown Clay. Weathering and wind erosion of the evaporite forms aeolian seed and flour gypsum on the lee side of the lake bed.

In the Blanchetown-Craigie Plains area gypsum deposits are of several forms:

- bedded crystalline gypsum within Morgan Limestone as exposed in quarries at Craigie Plains Gypsum Deposit No. 1;
- bedded crystalline gypsum in upper part of Blanchetown Clay, as exposed at Blanchetown gypsum quarry;
- lacustrine gypsiferous evaporite and associated aeolian flour and seed gypsum dunes of Yamba Formation.

PREVIOUS INVESTIGATIONS

Previous investigations at Craigie Plains have centred on the now abandoned No. 1 deposit where Dry Creek Plaster Co. Ltd. produced 51 658 tonnes of gypsum between 1937 and 1962, from crystalline gypsum in the lake bed. In 1950, reserves were estimated at 355 600 tonnes containing 68% gypsum (King, 1952). Beneficiation produced 91.9% gypsum with 40% recovery. A seed gypsum dune marginal to the lake was investigated by Willington (1956), who estimated reserves at 13 000 tonnes containing 65-70% gypsum. In 1960, Forbes (1961) recognised a bed of gypsum about 1.5 m thick below weathered Miocene Limestone, and reserves were estimated at 2 000 000 tonnes of crude gypsum.

Craigie Plains Gypsum Deposit No. 2 has not been investigated previously, apart from a test pit in the lake bed adjacent to the gypsiferous dune (Fig. 2). The pit exposed 1.5 m of grey-yellow gypsiferous clay, containing up to 30% gypsum, below 1 m of brown soil and overlying weathered limestone (Forbes, 1961).

An untested gypsiferous dune, 2.5 km north of No. 2 deposit is shown on ADELAIDE (Fig. 1).

1981 INVESTIGATIONS

A programme of 34 auger holes totalling 171.6 m were drilled (Plate 2) at 40 m intervals on 6 lines, 170 m to 250 m apart, orientated east-west across the dune (Fig. 2).

Samples for analysis were collected over 1 m intervals, either from drill cuttings brought to the surface, or by withdrawing the auger flights and collecting material from around the bit. Difficulty was experienced in obtaining samples near wombat and rabbit burrows.

During auger sampling contamination of samples is considerable and lithological boundaries can only be estimated.

Geological logs and gypsum assays for all drill holes are shown in Appendix A. Detailed analysis of selected samples are shown in Appendix B.

RESULTS OF INVESTIGATIONS

The lunette dune consists of cream-brown to pale orange flour and fine seed gypsum grading to weakly gypsiferous red-brown silt (Table 2). Thickness averages 2.5 m and gypsum content varies from 12% to 83% gypsum. Aeolian gypsum overlies 1-2 m of grey-green clay to red brown silty clay (Blanchetown Clay) containing between 17% and 39% crystalline gypsum. The holes bottomed on yellow sandy limestone with oyster shells (Norwest Bend Formation), the upper 1 m to 5 m of which is weathered to yellow-orange silty clay containing between 12% and 26% crystalline gypsum.

TABLE 2

Gypsum Terms

Name	Size Range (mm)
Flour	<0.06
Seed	
fine	0.06-0.2
medium	0.2 -0.06
coarse	0.6 -2.0
Crystalline	
fine	2 -6
medium	6 -20
coarse	>20

The average composition of gypsum as determined from the selected samples (Appendix B) is shown on Table 3. The major impurities are clay, sand and carbonate.

TABLE 3

Average Composition (%) of Crude Gypsum in Dune
(from auger holes A3, C3, D2, G.1A and G.2X)

Gypsum	Acid Insolubles	Acid Soluble CaO	MgO	Al_2O_3	Fe_2O_3	CO_2	Cl
42	38	19	1.8	1.5	1.2	6.0	0.07

Total carbonate ($CaCO_3$ + $MgCO_3$) - 12.9

RESERVES

Reserves are calculated from the cross sections (Fig. 3), detailed in Appendix C and classed as indicated.

Reserves of flour-fine seed gypsum in the total area tested, as outlined on Figures 2 and 3, and for each ML are presented on Table 4.

TABLE 4

Gypsum Reserves

Area	Tonnes	Gypsum Content (%)
ML 715	57 000	40
ML 716	56 000	43
ML 721	14 000	55
Total Area Tested	243 000	43

USES OF GYPSUM

Gypsum is a major industrial mineral with the following uses (Barnes and Warren, 1980):

- cement manufacture, minimum grade 77%;
- plaster manufacture, minimum grade 75%;
- agricultural uses, minimum grade 50%.

Thus, only the indicated 14 000 tonnes of crude gypsum with grade of 55% on ML 721 (Table 4) is suitable for agricultural purposes. The remainder of the deposit is too low grade for

commercial use without some beneficiation although small pockets of higher grade material may exist.

CONCLUSIONS AND RECOMMENDATIONS

The higher grade areas of the gypsiferous dune were mined between 1966 and 1980, when about 12 000 tonnes of seed gypsum averaging about 65% gypsum were removed from two pits. These were rehabilitated in 1980 and regrowth of vegetation has begun.

Auger drilling has shown that the dune is a mixture of flour and fine seed gypsum with indicated reserves of 243 000 tonnes with a gypsum content averaging 43%.

Overall, the gypsiferous dune is too low grade for cement, plaster or agricultural use. However, small zones of higher grade material, marginally suitable for agricultural uses, do exist.

Beneficiation of the crude gypsum would not be economically viable owing to small reserves, low average grade and fine grained nature.

It is suggested that the deposit has more importance as a refuge for wombats than as a gypsum resource, and in view of the large reserves of better quality gypsum at Blanchetown, further exploitation of this deposit is not recommended.

BJM:DP

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APPENDIX A.

GEOLOGICAL LOGS OF AUGER HOLES AND GYPSUM ASSAYS.
(Assays extracted from AMDEL reports
AC 157/82 and AC 2908/82)

GEOLOGICAL LOGS

Hole No. (R.L.)	Sample Interval (m)	Sample No.	Gypsum Content (%)	Description
A.1 (52.2m)	0-2.5	A1205/81	12.0	Pale brown flour to 1.4 m, yellow and grey clay + gyp. to 1.8 m, yellow silt-clay to 2.5 m
A.2 (53.1m)	0-3	A1206/81	27.1	Cream-pale orange gyp. silt*1 to 2 m, yellow silt-clay + gyp. and oyster shells to 4 m.
	3-4			
A.3 (54.3m)	0-1	A1056/81	46.0	Cream flour.
	1-2	A1057/81	56.0	As above + minor coarse gyp. frags
	2-3	A1058/81	46.0	As above
	3-4	A1059/81	34.3	As above to 3.8 m, then cream seed.
	4-5	A1060/81	16.5	Cream seed to 4.5 m, then yellow silt.
	5-6	A1061/81	21.0	Green-grey clay + gyp. frags.*2
A.4 (54.4m)	0-2	A1207/81	44.4	Cream-brown gyp. flour.
	2-5	A1208/81	17.6	Orange-yellow silt + gyp. frags.
	5-6			Grey-green clay + gyp. frags.
	6-7			Red-silty clay + gyp. frags.
A.5 (52.9m)	0-3	A1209/81	28.8	Brown-orange gyp. silt to 3 m. Hard limestone at 3 m.
B.1 (52.1m)	0-2	A1210/81	14.7	Pale brown gyp. silt to 1.4 m, then grey-green clay + gyp. frags.
	2-3.15			Yellow clay + gyp. frags. Hard limestone at 3.15 m.
B.2 (52.8m)	0-2	A1211/81	39.4	White flour to 0.4 m, then cream-brown flour.
	2-3	A1212/81	8.2	Yellow silt + gyp. frags.
	3-6			Yellow clay + gyp. frags and oyster shells.
B.3 (54.3m)	0-3	A1213/81	57.2	White flour to 0.5 m, then cream-brown flour.
	3-5	A1214/81	31.2	yellow silt + gyp. frags.
	5-8			green-yellow clay + gyp. frags and oyster shells.
B.4 (55.1m)	0-1	A1215/81	82.7	White flour.
	1-3.9	A1216/81	39.0	Red-brown gyp. clay-sand to 3.4 m, then green-yellow clay + gyp. frags.
B.5 (55.1m)	0-1	A1217/81	46.5	Cream flour.
	1-3	A1218/81	28.0	Red-brown clay-sand.
	3-3.5			Grey-green clay, limestone at 3.5 m.

*1 gyp. silt represents weakly gypsiferous silt.
*2 gyp. frags. represents gypsum crystal fragments.

Hole No. (R.L.)	Sample Interval (m)	Sample No.	Gypsum Content (%)	Description
B.6	0-1	A1219/81	38.2	Pale brown flour and silt.
(55.2m)	1-3	A1220/81	24.7	Red-brown gyp. clay-sand.
	3-4			Grey-green clay, limestone at 4m
C.1	0-2	A1221/81	31.8	Pale brown silt and flour.
(52.1m)	2-4.5			Pale yellow silt + gyp. frags.
C.2	0-3	A1222/81	47.3	Pale brown silt and flour.
(54.3m)	3-5			Grey-green clay + gyp. frags.
	5-6			Yellow clay + gyp. frags.
C.3	0-1	A1062/81	52.0	Pale brown silt and flour.
(55.4m)	1-2	A1063/81	51.0	as above.
	2-3	A1064/81	48.5	as above.
	3-4	A1065/81	26.4	Red-brown gyp. clay-silt.
	4-5	A1066/81	11.8	Yellow clay.
	5-6	A1067/81	11.8	as above.
C.4	0-3	A1223/81	38.1	Pale brown silt and flour.
(56.2m)	3-5	A1224/81	20.9	Red-brown silty-clay.
	5-7.5			Yellow clay + gyp. frags.
C.5	0-2	A1225/81	38.5	Pale brown silt and flour.
(54.8m)	2-4	A1226/81	17.8	Brown clay.
	4-6			Yellow clay + gyp. frags.
D.1	0-2	A1227/81	25.4	Pale brown silt and flour.
52.6m)	2-3			Yellow-orange calcareous silt.
	3-3.5			Yellow weathered limestone.
D.2	0-1	A1068/81	51.0	20 cms of white flour on red-
(54.1m)				brown gyp. silt.
	1-2	A1069/81	42.4	Red-brown gyp. silt.
	2-3	A1070/81	31.8	As above.
	3-4	A1071/81	26.0	Pale yellow silt + gyp. frags.
	4-5	A1072/81	19.3	as above.
	5-6	A1073/81	18.5	as above, limestone at 6 m.
D.3	0-2	A1228/81	39.9	Pale red-brown gyp. silt.
(54.7m)	2-5	A1229/81	16.1	Red-brown silty-clay.
	5-5.4			Yellow clay + gyp. frags.
D.4	0-3	A1230/81	38.9	Pale brown flour and silt.
(55.4m)	3-4	A1231/81	21.9	Red-brown clayey silt.
	4-6			Green-yellow silt-clay + gyp. frags.
	6-6.25			Yellow limestone.
D.5	0-2	A1232/81	37.9	Pale red-brown flour & silt.
(55.0m)	2-5	A1233/81	18.0	Brown silty clay + gyp. frags.
	5-6			Yellow clay + gyp. frags.

Hole No. (R.L.)	Sample Interval (m)	Sample No.	Gypsum Content (%)	Description
D.6	0-2	A1234/81	30.3	Pale brown silt & flour.
(54.6m)	2-3	A1235/81	18.0	Brown silty clay.
	3-5			Yellow silt + gyp. frags and oyster shells.
E.1	0-2	A1236/81	5.45	Yellow silt + oyster shells.
(52.4m)	2-4.5			Yellow silty clay, hard limestone at 4.5 m.
E.2	0-3	A1237/81	37.7	Pale brown silt and flour.
(53.4m)	3-5.4			Yellow-orange silt-clay + oyster shells.
E.3	0-1	A1238/81	16.1	Pale brown silt.
(55.6m)	1-5	A1239/81	18.6	Red-brown silt.
	5-9			Yellow-orange silt-clay.
E.4	0-3	A1240/81	28.5	Pale red-brown flour & silt.
(55.5m)	3-5	A1241/81	18.8	Red-brown silt-clay + gyp. frags.
	5-6			Yellow-brown silty clay.
F.1				Not Drilled.
(53.7m)				
F.2	0-2	A1242/81	16.0	Pale red-brown clay-silt.
(54.34m)	2-3			Yellow-brown silt + oyster shells.
F.3	0-3	A1243/81	12.5	Pale red-brown silt.
(55.47m)	3-4	A1244/81	12.9	Yellow silt.
F.4	0-3	A1245/81	9.85	Pale red-brown silt.
(55.9m)	3-6	A1246/81	13.5	Grey-green silt clay to 4 m, then yellow silty clay + oyster shells.
F.5	0-3	A1247/81	12.0	Red-brown silt.
(56.0m)				
F.6	0-1	A1248/81	5.40	Red-brown silt.
(56.3m)	1-4.5	A1249/81	12.9	Red-brown silty clay.
G.1A	0-0.5	A1074/81	55.2	White flour.
(55.2m)	0.5-1	A1075/81	57.9	Pale brown gyp. silt.
	1-1.5	A1076/81	78.5	as above
	1.5-2	A1077/81	58.3	as above
	2-2.5	A1078/81	48.0	as above
	2.5-3	A1079/81	23.0	as above + sand.
	3-3.5	A1080/81	27.9	Red brown silt.
	3.5-4	A1081/81	26.4	as above
	4-4.5	A1082/81	21.0	Yellow-grey, silt clay + gyp. frags.
	4.5-5	A1083/81	21.8	as above
	5-5.5	A1084/81	27.2	as above
	5.5-6	A1085/81	19.9	as above with orange-yellow silt at 6 m.

Hole No. (R.L.)	Sample Interval (m)	Sample No.	Gypsum Content (%)	Description
G.2	0-1	A1250/81	25.3	Pale red-brown gyp. silt.
(54.8m)	1-3	A1251/81	28.3	as above
G.2X	0-0.5	A1086/81	42.5	Pale brown silt and flour.
(55.9m)	0.5-1	A1087/81	37.3	as above
	1-1.5	A1088/81	34.5	as above
	1.5-2	A1089/81	28.3	as above
	2-2.5	A1090/81	35.1	as above
	2.5-3	A1091/81	33.5	as above
	3-3.5	A1092/81	23.1	as above
	3.5-4	A1093/81	41.8	Red-yellow clay + gyp. frags.
	4-4.5	A1094/81	45.6	as above.

APPENDIX B

CHEMICAL ANALYSIS OF SELECTED SAMPLES
(Extracted from AMDEL report AC 157/81)

CHEMICAL ANALYSIS (%)

Sample No.	Gypsum ($CaSO_4 2H_2O$)	Acid Insolubles	Acid Soluble CaO	MgO	Al_2O_3	Fe_2O_3	CO_2	Cl
A1056/81	46.0	34.2	20.4	1.59	1.22	1.00	6.00	0.12
A1057	56.0	27.0	21.5	2.31	1.67	1.22	5.10	0.13
A1058	46.0	32.8	19.3	1.95	2.06	1.46	5.55	0.06
A1059	34.3	36.5	17.9	3.74	2.09	1.24	9.35	0.02
A1060	16.5	43.2	13.8	5.94	2.42	1.42	13.1	0.05
A1061	21.0	37.5	16.0	6.94	2.72	1.66	14.8	0.04
A1062	52.0	28.5	21.8	1.16	1.15	0.88	5.10	0.11
A0163	51.0	31.4	21.3	1.12	1.08	0.89	4.90	0.10
A1064	48.5	32.1	19.9	1.88	1.78	1.44	5.25	0.06
A1065	26.4	44.7	15.4	2.60	2.29	1.91	8.15	0.04
A1066	11.8	47.9	13.8	6.37	1.87	1.42	14.8	0.06
A1067	11.8	49.9	11.6	5.49	2.53	1.91	12.1	0.11
A1068	51.0	31.6	21.3	1.10	0.94	0.88	4.90	0.02
A1069	42.4	37.7	18.5	1.55	1.24	1.12	5.35	0.03
A1070	31.8	42.8	17.0	2.64	1.48	1.32	8.10	0.05
A1071	26.0	34.6	18.6	7.68	1.21	0.83	16.3	0.05
A1072	19.3	45.9	14.7	6.43	1.38	0.76	13.6	0.03
A1073	18.5	44.0	15.1	6.93	1.18	0.84	14.7	0.02
A1074	55.2	27.8	22.1	1.21	0.88	0.80	4.55	0.11
A1075	57.9	25.3	23.4	1.46	0.76	0.70	5.15	0.08
A1076	78.5	10.7	28.7	0.49	0.33	0.30	3.00	0.06
A1077	58.3	26.2	22.8	0.98	0.95	0.84	4.05	0.08
A1078	48.0	35.7	19.8	1.24	1.16	1.07	4.60	0.10
A1079	23.0	56.0	12.1	1.85	1.63	1.55	5.65	0.10
A1080	27.9	43.6	16.1	2.31	1.76	1.50	8.05	0.10
A1081	26.4	47.0	14.9	2.64	2.19	1.78	7.80	0.09
A1082	21.0	44.3	14.1	4.92	2.55	1.93	11.1	0.12
A1083	21.8	40.1	15.4	6.24	2.19	1.69	13.3	0.12
A1084	27.2	37.3	18.3	5.24	1.80	1.35	13.1	0.10
A1085	19.9	36.1	23.7	3.12	1.17	0.98	16.9	0.09
A1086	42.5	40.0	18.4	1.22	1.02	0.91	4.90	0.05
A1087	37.3	43.4	17.4	1.40	1.17	1.01	5.65	0.11
A1088	34.5	45.6	16.5	1.55	1.30	1.13	5.80	0.09
A1089	28.3	52.0	14.3	1.34	1.32	1.26	5.45	0.06
A1090	35.1	47.2	16.0	1.60	1.55	1.32	5.35	0.05
A1091	33.5	48.1	15.7	1.60	1.61	1.28	5.50	0.03
A1092	23.1	54.1	13.4	1.97	2.22	1.72	6.75	0.06
A1093	41.8	37.5	16.1	1.51	3.95	2.17	3.60	0.09
A1094	45.6	36.9	16.3	1.22	3.49	1.90	2.50	0.10

APPENDIX C

CALCULATION OF RESERVES

Assumptions

Specific gravity of gypsiferous dune - 0.69 which is the value of compacted flour gypsum (King, 1951).

Cut-off grade - 30% gypsum.

Reserves were calculated from areas of cross sections.

Area of influence of each section being half the distance to each adjacent section.

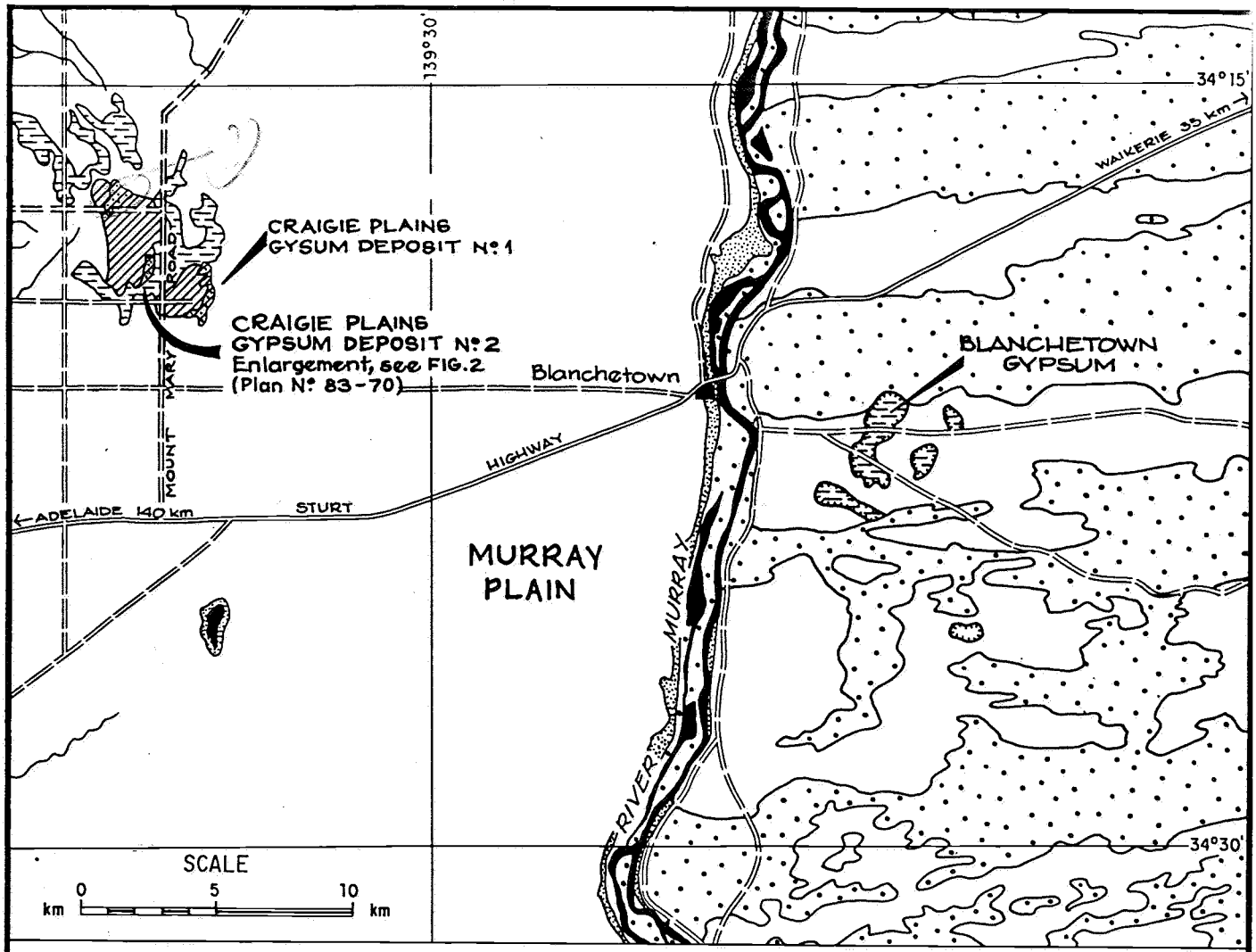
Average gypsum grade for each section was calculated as a weighted average from drill hole intersections.

Average grade of total deposit was calculated as a weighted average from average grade and volume represented by each section.

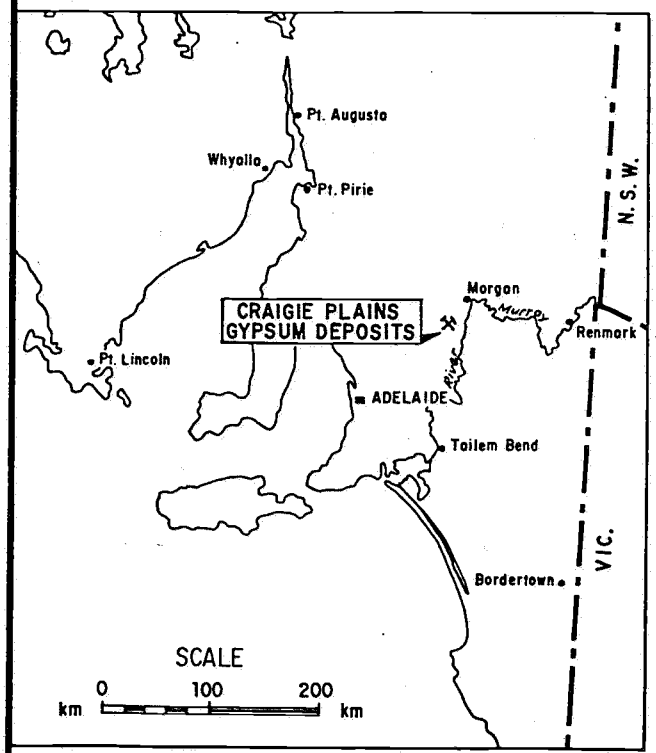
Section	Area of Section (m^2)	Lateral Extent (m)	Volume (m^3)	Weighted Av. % gypsum
A-A'	270	275	74 200	45
B-B'	290	210	60 900	52
C-C'	450	250	112 500	42
D-D'	460	225	103 500	37
E-E'	95	200	19 000	38
F-F'		NO RESERVES		
		TOTAL	370 100 m^3	43%
	EQUIVALENT TONNES		255 000	
	Less mined out area		12 000	
		TOTAL TONNES	243 000	(43% gypsum)

PLATE 1: Craigie Plains Gypsum Deposit No. 2. View south showing dune with rehabilitated working pit (note regrowth of vegetation) and lake bed to the right (April, 1981) (Photo No. 33319).

PLATE 2. Craigie Plains Gypsum Deposit No. 2. Daihatsu tray-top mounted auger drill at work. (April, 1981) (Photo No. 33320).



LOCALITY



REFERENCE

HOLOCENE — PLEISTOCENE — MIOCENE

YAMBA FORMATION : Lacustrine gypsiferous clay and silt, marginal lunette dunes of flour and seed gypsum.

WOORINEN FORMATION : Aeolian pale reddish brown quartz sand with carbonate silt.

BAKARA SOIL : Fossil soil with moderately hard massive nodular or sheet calcrete.

BLANCHETOWN CLAY : Greenish grey, red brown and green mottled sandy clay. Crystalline gypsum interbeds.

MORGAN LIMESTONE and MANNUM FORMATION : Marine yellowish brown sandy limestones.

River, lake.

FIG. 1

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

CRAIGIE PLAINS GYPSUM DEPOSIT No.2
LOCATION AND REGIONAL GEOLOGY

COMPILED B. J. M.	— C D O DATE
DRAWN M.F.L.	SCALE 1:250 000
DATE 8-2-83	PLAN NUMBER S16577
CHECKED	

3073

3073

T.N.

EDGE OF FLAT

A A1 A2 A3 A4 A5 A'

TP1 54·68

Sec. 199

Approx. location of test pit (Forbes, 1961)

Old fence line

B B1 B2 B3 B4 B5 B6 B'

DAM

Sec. 201

MOUNT MARY ROAD

ML721

G2(3m) 3m, 27%

CP4 55·90

G2x(4·5m) 3·5m, 33%

TP2 55·94

Sec. 200

C C1 C2 C3 C4 C5 C'

ML716

TP3 55·66

G1A(6m) 4m, 47%

ML715

D D1 D2 D3 D4 D5 D6 D'

E E1 E2 E3 E4 E'

CP3 55·95

F F1 F2 F3 F4 F5 F6 F'

REFERENCE

- D6 — Cross section with auger hole location and number
- ..... Area of rehabilitation
- Old workings before rehabilitation
- — — Limit of reserve calculations
- ▲CP4 55·90 — Survey station with Elev. in metres
- Topographic contour (1m interval)
- ○G2(3m) 3m, 27% — Auger hole location, number and depth
- Thickness of gypsum with gypsum content (%)

NOTE: For location of area see Fig.1, (plan S16577)
For cross sections (with auger hole details) see Fig.3, (plan 83-71)

SCALE
0 50 100 150 200
METRES

Survey: J.A. Harrison (Jan.'80)
S.F.B. 624, 629
Elevations A.H.D.
A.M.G. Conv. -54' 18"

CRAIGIE PLAINS GYPSUM DEPOSIT No.2

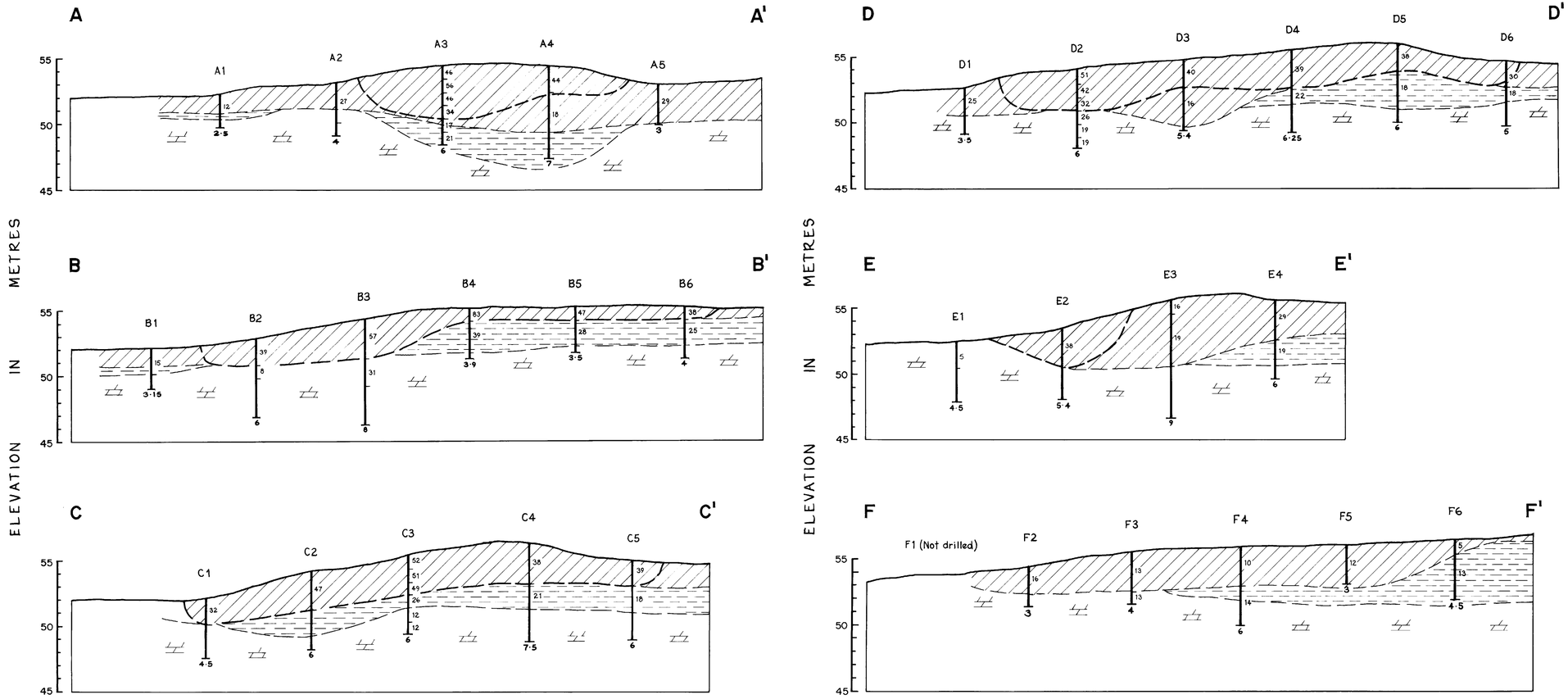
SECTIONS 199 AND 200, HD. BROWNLOW

TOPOGRAPHICAL PLAN WITH DRILLHOLE LOCATIONS

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

COMPILED B.J.M.
DRAWN M.F.L.
DATE 27-2-83
CHECKED
C.D.O. DATE 4.8.83
SCALE 1:2500
PLAN NUMBER 83-70

FIG. 2



REFERENCE

HOLOCENE — YAMBA FORMATION : Cream-brown to pale orange flour and fine seed gypsum grading to weakly gypsiferous red brown silt.

PLEISTOCENE — BLANCHETOWN CLAY : Grey-green clay to red-brown silty clay with minor crystalline gypsum.

PLIOCENE — NORWEST BEND FORMATION : Yellow sandy limestone with oyster shells, the upper 1 to 5m of which is weathered to yellow, yellow-orange silty clay with minor crystalline gypsum.

Approximate geological boundary

Limit of reserve calculations

D4 — Auger hole number

39 / 22 / 6·25 — Sample interval with gypsum content as %

Depth of hole in metres

SCALE
0 20 40 60 80 100
METRES

NOTE : For location of cross sections see Fig. 2, (plan 83-70)

FIG. 3

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

COMPILED B.J.M. | DRAWN M.F.L. | DATE 14-2-83 | CHECKED

CRAIGIE PLAINS GYPSUM DEPOSIT No.2
GEOLOGICAL CROSS SECTIONS

SCALE 1:1000

PLAN NUMBER 83-71

3073