DEPARTMENT OF MINES
SOUTH AUSTRALIA

GEOLOGICAL SURVEY

MINERAL RESOURCES DIVISION

CURRAMULKA LIMESTONE DEPOSITS, YORKE PENINSULA
DRILLING COMPLETION REPORT - SITE 1

Section 55, Hundred Curramulka, County Fergusson

by

A.H. BLISSETT
ASSISTANT SENIOR GEOLOGIST
NON-METALLIC MINERALS SECTION

and

C.H.H. CONOR
GEOLOGIST
NON-METALLIC MINERALS SECTION

20th May, 1970

DEPARTMENT OF MINES
SOUTH AUSTRALIA

CURRAMULKA LIMESTONE DEPOSITS, YORKE PENINSULA
DRILLING COMPLETION REPORT - SITE 1

Section 55, Hundred Curramulka, County Fergusson

by

A.H. BLISSETT
ASSISTANT SENIOR GEOLOGIST
NON-METALLIC MINERALS SECTION

and

C.H.H. CONOR
GEOLOGIST
NON-METALLIC MINERALS SECTION

CONTENTS

NO.		TITLE	SCALE
Fig. 1	70-258 Gh7	Curramulka Limestone Deposits, Yorke Peninsula-Geological Plan	1" : 4 miles 1" : ½ mile
Fig. 2	70-259 Gh7	Curramulka Limestone Deposits Site 1, Section 55, Hd. Curramulka-Geological Plan and Borehole locations.	1" : 100 ft.

Rept.Bk.No. 764
G.S. No. 4454
SR.5/6/40

20th May, 1970

DEPARTMENT OF MINES
SOUTH AUSTRALIA

Rept.Bk.No. 764
G.S. No. 4454
S.R. 5/6/40

CURRAMULKA LIMESTONE DEPOSITS, YORKE PENINSULA
DRILLING COMPLETION REPORT - SITE 1

Section 55, Hundred Curramulka, County Fergusson

ABSTRACT

Three diamond boreholes and eight air holes were drilled in the Lower Cambrian Parara Limestone, half a mile southwest of Curramulka. Analyses showed that the area containing the required grade of 85% calcium carbonate is restricted and it is doubtful whether the target of 40,000,000 short tons is available in a configuration suitable for economical opencutting. Consequently, investigations were transferred to Section 52S, 1½ miles to the east with satisfactory results, as described in another report. (Blissett and Conor, 1970).

INTRODUCTION

Following instructions from the Director of Mines, the Curramulka district was selected by Supervising Geologist M.N. Hiern as the most likely source on Yorke Peninsula of a limestone deposit fulfilling the following specifications:-

1. The presence of at least 40,000,000 short tons of limestone available for opencutting.
2. A minimum grade of 85% calcium carbonate.
3. Not more than 12% magnesium carbonate.
4. A minimum of 2.5% silica.
5. Phosphorus and sulphur content to be less than 0.04%.

On Section 55, Lower Cambrian Parara Limestone is exposed in a road metal quarry operated for a number of years by the Highways Department (See Plates 1 and 3). Sampling here in 1949 indicated that the limestone contains between 86% and 90% calcium carbonate, 1% to 4.4% magnesium carbonate and 3.7% to 9.4% silica (Johns, 1963, p.38), and therefore investigation of this area was instigated on October 10th, 1969.

Assuming a tonnage factor of 12 cu.ft. per ton and a depth of opencut of 200 ft., an area measuring 2,400 ft. by 1,000 ft. would be required to supply 40,000,000 short tons. Surveyor N. Edwards laid down a grid at 500 ft. spacings with a baseline a short distance south of the quarry face, and parallel to the strike of the limestone. An exploratory drilling programme was put into effect, using two Mindrill F.20 diamond drills and a Halco 150 air-hammer drill (See Plates 2, 3, 4). Diamond drillholes were planned at 1,000 ft. centres, with air holes filling in the 500 ft. grid points. (See Fig. 2). In order to check the accuracy of analyses from the air holes, Halco borehole CA.3 was drilled 10 ft. west of diamond drillhole CD.1. Analyses of samples over the same interval (0 to 150 ft.) in the two holes were comparable, with a maximum variation of about $\pm$ 4%. (See Appendix III).

After three diamond drillholes and eight air holes had been drilled, it was apparent from analyses from the first holes that only in the northwestern portion of the area was there limestone of the required grade available

This site was therefore abandoned because limestone of acceptable grade extends over a width of only 500 ft. and an opencut would have to be over 4,000 ft. long to yield the required tonnage. Also, objections might be raised about the proximity of the site to the town. Following a reconnaissance by M.N. Hiern, investigations were transferred to Site 2 on Section 52 S, about 1½ miles to the east, as described in a later report. (Blissett and Conor, 1970).

LOCATION AND ACCESS

The township of Curramulka is on central Yorke Peninsula, 130 miles by road from Adelaide, and is reached by a partly sealed road leading off the main bitumen road eight miles south of Ardrossan (See Fig. 1). Bitumen and good graded roads link the town with the small shallow water harbours of Port Vincent, 10 miles to the southeast, and Port Julia, the same distance to the northeast. The quarry on Section 55 is ½ mile southwest of Curramulka along a good graded road.

TITLE

Section 55 is freehold land held by D.H. Correll, with minerals reserved to the Crown.

GEOGRAPHY

Curramulka lies within a broad west-east trending dry valley lying about 100 ft. lower than the surrounding country, with internal drainage downwards through fissures and cavities in the Parara Limestone. The valley is bounded to the south by a low north-facing escarpment, on the lower slopes of which the quarry on Section 55 is sited. (See Plate 6). Curramulka cave was formerly used as a well for the town water supply before the construction of the pipeline from the Murray River. The district is agricultural, depending chiefly upon the growing of cereals and sheep grazing.

GEOLOGICAL SETTING

Regional mapping by Crawford (1965) and data from the Minlaton Stratigraphic No. 1 borehole drilled in 1956 established the following sequence containing carbonate beds in the vicinity of Curramulka, folded into a syncline plunging gently southwards.

Middle Cambrian

Ramsay Limestone.

Blue-grey nodular crystalline limestone with a softer buff argillaceous dolomitic matrix.

Lower Cambrian

"Red Bed Clastics". (Entirely concealed by post-Cambrian formations but intersected in boreholes).

Variable succession of limestones, reddish sandstones and breccia-conglomerate, reddish-brown and chocolate-coloured siltstones and shales.

Parara Limestone.

Dark blue-grey nodular crystalline limestone with a softer buff argillaceous dolomitic matrix.

Kulpara Limestone.

Pale grey to dark grey limestone with bands of pale yellowish dolomitic limestone.

The beds in the road metal quarry on Section 55 lie towards the base of the Parara Limestone near the axial plane of the syncline, striking a few degrees north of west and dipping southerly at about 5°. The limestone is blue-grey, hard and nodular with a yellowish-brown matrix which may be dolomitic. It is relatively massive with minor shaly intercalations at irregular intervals. The beds are fractured and jointed, the dominant joint set striking northerly with steep easterly dips. Pipe-like solution channels filled with reddish-brown sandy marl have formed in many of the joints (Plate 5). Thin calcite veins with traces of purple fluorite, sphalerite and galena are visible in the quarry face, and fine pyrite or chalcopyrite was noted as a coating to some hyolithids.

The outcrop of the Parara Limestone is restricted to the lower slopes of the low escarpment upon which the quarry is sited. Outcropping limestone was followed along the strike for about 4000 ft. by M.N. Hiern.

South of the quarry, the upper part of the escarpment is capped by up to at least 12 ft. of calcrete.

DRILLING PROGRAMME
(See Fig. 2)

Before the site was abandoned, three diamond drillholes totalling 737 ft. and eight air holes totalling 1,122 ft. were drilled. Detailed logs are shown in Appendices I and II.

In five of the air holes, no difficulty was experienced in reaching the maximum depth of 150 ft. to which the Halco 150 is capable of drilling. However, borehole CA.2 was stopped at 144 ft. in shattered cavernous ground; hole CA.1 was abandoned at 84 ft. because of fragments of a broken bit in shattered ground, and hole BA.2 encountered water at 144 ft.

RESULTS OF ANALYSES

Analyses are listed in Appendix III. Core from diamond drillhole CD.1 was split longitudinally over intervals determined by lithological and colour changes, one half being submitted for analysis and the other half stored in the Department of Mines core shed for future reference.

Dust and chippings from the Halco drillholes were collected in a sack attached to a cyclone. After each 6 ft. advance of the drill, the sample was removed and reduced to a convenient size in the field in a riffle box sample splitter.

Composite samples were prepared in the core laboratory by further reducing the material in a laboratory-size riffle box; weighing 6 ozs. of each 6 ft. sample, and then combining samples over intervals with a similar colour and lithology.

The first 13 samples (representing bores CQ, EA.2 and the upper part of DA.3) were submitted for full limestone analysis. However, to reduce the delay in receiving the results, later analyses were requested only for calcium carbonate and magnesium carbonate with an accuracy to within 1%, so that results were received by the field party after a few days. Core from diamond drillholes CD.2 and ED.1 was not analysed because this site was abandoned after the earlier analyses had been studied.

The figures show that the grade of limestone is not uniform in stratigraphically equivalent intervals in adjacent boreholes, and that the higher beds in the sequence are below the required grade (See Fig. 2). Limestone containing over 85% calcium carbonate has been indicated only in a zone approximately 500 ft. wide immediately south and west of the quarry. While it is likely that the above-grade rock will extend westwards along the strike of the beds, the resulting long and narrow configuration would be unacceptable for quarrying. Therefore, operations were transferred to Site 2, on Section 52 S about 1½ miles to the east.

CONCLUSIONS

To provide 40,000,000 short tons of limestone, and assuming a depth of opencut of 200 ft. an area about 1,000 ft. wide and 2,400 ft. long would be necessary. Analyses from

diamond drillhole CD.1 and eight air holes showed that rock of acceptable grade has been indicated only in an area south and west of the quarry less than 500 ft. wide, and 500 ft. long, with a maximum depth of 175 ft. While there may be a substantial increase in tonnage westwards along strike, no further exploration at this site is called for because the required quantity was subsequently indicated or inferred by drilling at Site 2.

REFERENCES

BLISSETT, A.H., and CONOR, C.H.H., 1970. Curramulka Limestone Deposits, Yorke Peninsula. Drilling Completion Report - Site 2. Section 52S, Hd. Curramulka, Co. Fergusson. Unpub. Rept. Dept. of Mines, S.Aust. Rept. Bk. 765.

CRAWFORD, A.R., 1965. The Geology of Yorke Peninsula. Bull. geol. Surv. S.Aust., 39.

JOHNS, R.K., 1963. Limestone, Dolomite and Magnesite Resources of South Australia. Bull. geol. Surv. S.Aust. 38.

A.H. BLISSETT
ASSISTANT SENIOR GEOLOGIST
NON-METALLIC MINERALS SECTION

AHB:CHHC:AVR:FdA
20:5:70

C.H.H. CONOR
GEOLOGIST
NON-METALLIC MINERALS SECTION

LIST OF PLATES

1. Curramulka quarry, from the north (D.D.H. CD.1 to the left: D.D.H. CD.2 to right of quarry. Camp at right background).

2. Halco 150 air hammer drill. Compressor on truck at left. Cyclone at right.

3. Halco drill in Curramulka road metal quarry.

4. Foreground: Halco drill on borehole CA.1, centre and background diamond drills on boreholes CD.2 and CD. 1.

5. Clay pipe in Parara Limestone, covered with nodular calcrete. (Curramulka quarry).

6. Panorama of Site 1 looking eastwards. Curramulka to the left. Site 2 at right background.

APPENDIX I

DIAMOND DRILL LOGS

Bore No.:	CD.1	(258 ft.)
	CD.2	(256 ft. 6 in.)
	ED. 1	(221 ft. 9 in.)

DEPARTMENT OF MINES
SOUTH AUSTRALIA

LOG OF DIAMOND DRILLHOLE
(Mindrill F.20. No.15)

Project: Curramulka limestone (Site 1) DM. SR.5/6/40

Bore No. CD 1 Bore Serial No. 620/70

Hundred: Curramulka Section: 55 Plan Reference: 70-259 Gh7

Co-ordinates: 3500W; 2000 S R.L. of Collar: 264.0'

Bearing: Vertical Depth: 258 ft.

Date drilling commenced: 16.10.69 Date drilling completed: 22.10.69

Logged by: A.H. Blissett Driller: T. Jarvis

Depth From Ft.In.	Depth To Ft.In.	LOG
0	4 0	Pinkish-cream calcrete with angular fragments and blocks of dark grey limestone.
4 0	7 1	Dark blue-grey limestone. Yellowish-brown weathered patches in upper part, giving rise to a nodular appearance.
7 1	8 8	Porous gritty calcrete. Top almost horizontal; base dips at about 45°.
8 8	69 4	Dark blue-grey fine limestone. Yellowish-brown patches in places. Thin scattered veins of calcite. Shattered and coated with pale cream calcareous powder 11 ft. to 12 ft. 4 in. Shattered 25 ft. to 29 ft; 36 ft. to 39 ft.; 41 ft. to 41 ft. 6 in.

Depth From Ft.	In.	To Ft.	In.	LOG
69	4	80	0	Dark blue-grey fine limestone. "Infillings" less yellow. Minute irregular veins of calcite 76 ft. to 80 ft.
80	0	83	6	Dark blue-grey fine limestone. Many irregular stylolites.
83	6	107	3	Dark blue-grey limestone with dark grey patches and partings. Brecciated appearance in places between 89 ft. and 100 ft. and 105 ft. to 107 ft. 3 in. with pale grey limestone in darker grey calcareous matrix.
107	3	119	0	Pale grey fine crystalline limestone with scattered stylolites. Rare partings. (?dolomitic)
119	0	127	9	Pale grey limestone with dark grey partings and patches (?dolomitic)
127	9	141	8	Pale grey limestone. Scattered thin partings and some grey to dark grey patches.
141	8	180	3	Pale to medium grey limestone, with scattered stylolites. Irregular dark grey to black partings and argillaceous infillings from 154 ft. 10in. to 163 ft. and 171 ft. 7 in. to 172 ft. 7 in. Many turbulent-bedded dark partings from 178 ft. to 180 ft. 3 in.
180	3	200	4	Massive pale grey to medium grey finely crystalline limestone with scattered stylolites. Limonitic staining in places. Vertical irregular fracture coated with fine calcite and powdery limonite 190 ft. 7 in. to 192 ft. 10 in.
200	4	207	4	Pale to medium grey massive limestone with yellowish-brown fine calcareous sandstone and siltstone patches. Scattered stylolites. Becomes finer and darker in lower part. Between 206 ft. 4 in. and 206 ft. 11 in. brecciated silicified pale to dark grey limestone with turbulent-bedded dark partings. Traces of chalcopyrite.

LOG

Depth From Ft.In.	Depth To Ft.In.	LOG
207 4	209 5	Fine grey limestone and calcareous siltstone. Top part silicified; becomes darker and faintly laminated in depth.
209 5	229 11	Mainly dense fine-grained pale grey to grey limestone with turbulent-bedding and slump-bedding in places. Silicified 206 ft. 4 in - 206 ft. 11 in.; 207 ft. 4 in. - 208 ft.; 209 ft. 5 in. - 209 ft. 10 in.; 220 ft. 8 in. - 220 ft. 9 in. and 228 ft. 8 in.-229 ft. 11in. Thin diagonal vein with galena and chalcopyrite 220 ft. 8 in. - 220 ft. 9 in.
229 11	237 10	Massive grey to pale grey crystalline limestone. Scattered irregular patches of yellowish-brown limonitic calcareous sandstone and sandy clay 231 ft. 6 in. - 237 ft. 10 in. Stylolites in places.
237 10	258 0	Massive pale grey to grey and brownish fine to medium grained limestone. Much intraformational brecciation and slump-bedding. Scattered stylolites. Hole ended in slump-bedded and turbulent-bedded pale grey to dark grey limestone.

Core Recovery: 251 ft. 2 in. = 97.3%

DEPARTMENT OF MINES
SOUTH AUSTRALIA

LOG OF DIAMOND DRILLHOLE
(Mindrill F20. No. 24)

Project: Curramulka Limestone (Site 1) DM. SR.5/6/40

Bore No.: CD2 Bore Serial No.: 621/70

Hundred: Curramulka Section: 55 Plan Reference: 70-259 Gh7

Co-ordinates: 2500W; 2000S R.L. of Collar: 226.9 ft.

Bearing: Vertical Depth: 256 ft. 6 in.

Date drilling commenced: 16.10.69 Date drilling completed: 24.10.69

Logged by: A.H. Blissett Driller: J. Jensen.

Depth From Ft.In.	Depth To Ft.In.	LOG
0	21 0	Pinkish and reddish-brown weathered cream coloured calcrete with blocks and fragments of limestone. Decomposed and intensively oxidised dark reddish-brown 12 ft. 3 in. to 18 ft. 9 in. Between 17 ft. 10 in. and 21 ft. pale cream calcrete with reddish-brown blotches forms a vertical pipe in fine blue-grey limestone.
21	25 3	Dark reddish-brown, brown and white mottled marl with fragments of limestone.
25 3	c.26 6	Clay pipe, steeply diagonal to dark blue-grey fine limestone.
c26 6	28 4	Blue-grey limestone with irregular wisps and patches of pale yellowish calcareous sandstone.
28 4	31 2	Mottled dark brown, yellowish and cream calcareous clay pipe with fragments of limestone.

Depth From Ft.	In.	To Ft.	In.	LOG
31	2	49	9	Blue-grey nodular limestone with scattered pale yellowish-brown wisps and patches which have been leached in places between 37 ft. 6 in. and 49 ft. 9 in. Some bands of sheared limestone with a shaly appearance. Irregular red and purplish mottling between 47 ft. 5 in. and 48 ft. 2 in.
49	9	73	8	Massive grey limestone with a nodular appearance. Yellowish-brown wisps and patches. A number of friable shaly bands.
73	8	107	1	Massive grey to dark grey limestone with patches of yellowish-brown calcareous siltstone and mudstone. Scattered small vughs lined with calcite crystals. Argillaceous patches less oxidised and dark grey 85 ft. to 90 ft. Small scale slump-bedding and brecciation 89 ft. 6 in. - 90 ft.; 91 ft. 7 in. - 100 ft. 2 in. Irregular vein of calcite and purple fluorite 1/8in. to ¼ in. wide diagonal to core 93 ft. 8 in. - 94 ft. 1 in.
107	1	157	11	Pale brownish grey to dark grey limestone with irregular yellowish-brown argillaceous and sandy patches marked with manganese oxide. Scattered stylolites. Traces of malachite in spots. Vertical and diagonal fractures with limonite between 139 ft. 6 in. and 146 ft. 155 ft. 9 in. - 156 ft. 6 in. Clay pipe. Reddish-brown and buff gritty marl.
157	11	162	7	Mottled reddish-brown, dark brown and yellowish-brown gritty clay. Lower part marly.
162	7	163	9	Speckled pale brownish-cream and black sandy limestone.
163	9	164	4	Irregular fissure infilled with yellowish-brown clay.

Depth From Ft.	In.	To Ft.	In.	LOG
164	4	202	0	Massive grey and brownish-grey limestone. Scattered pale yellowish-brown argillaceous and sandy patches. Fine and dense with Archaeocyatha 181 ft. 8 in. to 195 ft. Small-scale slump-bedding 200 ft. to 202 ft.
202	0	205	7	Fine pale yellowish-brown dolomitic limestone and dolomite (?) with black manganiferous markings. Rather flaggy in places.
205	7	205	9	Pale yellowish-brown and brown laminated calcareous siltstone and sandstone.
205	9	207	4	Fine brownish silicified limestone. passing into:
207	4	c.208	0	Fine yellowish-brown silicified dolomite. passing into:
c208	0	214	11	Pale brownish-grey and grey fine limestone. Scattered yellowish-brown argillaceous and sandy patches. Irregular vertical fractures in lower part.
214	11	225	9	Pale yellowish-brown fine dolomite (?) with black manganiferous markings. Thin irregular bands of grey limestone.
225	9	256 (end)	6	Grey to pale grey limestone, probably dolomitic in places. Scattered yellowish-brown argillaceous and sandstone patches.
				Many thin irregular bands and partings of fine-medium buff sandstone between 230 ft. and 240 ft.; also 249 ft. to 256 ft. 6 in.
				Vertical and diagonal fractures between c.236ft. and c.240 ft.
				Scattered stylolites 240 ft. to 248 ft. 6 in.
				(Intraformational breccia in last 3 in. of core).

Core recovery 240 ft. 7 in. = 93.3%

DEPARTMENT OF MINES
SOUTH AUSTRALIA

LOG OF DIAMOND DRILLHOLE
(Mindrill F.20 No. 15)

Project: Curramulka Limestone (Site 1) DM. SR.5/6/40

Bore No.: ED1 Bore Serial No.: 623/70

Hundred: Curramulka Section 55 Plan Reference: 70-259 Gh7

Co-ordinates: 3500W; 3000S R.L. of Collar: 299.7 ft.

Bearing: Vertical Depth: 221 ft. 9 in.

Date drilling commenced: 23.10.69 Date drilling completed: 29.10.69

Logged by: A.H. Blissett Driller: T. Jarvis

Depth From Ft. In.	Depth To Ft. In.	LOG
0	1 0	Calcrete.
1 0	2 0	Brownish sandy clay with fragments of calcrete.
2 0	9 0	Calcrete, with fragments of blue-grey limestone below 4 ft.
9 0	39 5	Shattered grey limestone with patches of yellowish-brown calcareous mudstone and sandstone showing black manganiferous markings. Scattered stylolites. Less shattered below about 14 ft. Between 26ft. and 35 ft. 8in. some infilled cavities containing turbulent-bedded and slump-bedded siltstone and fine sandstone (Pale yellowish and pale grey).
39 5	c.47 0	Grey limestone with much intraformational brecciation and irregular infillings of dark grey calcareous sandstone, siltstone and sandy limestone.

Depth From Ft.	Depth From In.	Depth To Ft.	Depth To In.	LOG
c47	0	143	6	Grey to dark grey limestone with irregular yellowish-brown weathered patches and infillings. Scattered stylolites. Apparently dolomitic about 75 ft. Infillings and weathered patches pinkish brown 57 ft. to 74 ft.; unweathered and grey in colour 97 ft. to 108 ft. Intraformational brecciation below c.92 ft. Scattered Archaeocyatha at about 101 ft. Traces of pyrite and chalcopyrite in places. Band of fractured dark grey argillaceous limestone 112ft. 8in. to 113ft. 9in.
143	6	173	5	Fractured dark grey to grey limestone with pale yellowish-grey weathered patches. Vertical and diagonal fractures between c.148ft. 6in. and 155ft. 6 in. Much intraformational brecciation 161ft. 4in. to 168ft. 4 in.
173	5	185	0	Grey to dark grey limestone with irregular pale yellowish weathered patches and infillings. Scattered stylolites.
185	0	204	10	Grey to dark grey and brownish sandy limestone with intraformational breccia. Scattered irregular carbonaceous partings and stylolites. Vertical fissure coated with limonite c.190ft. 3in. to 190ft. 7in. Rock sheared, with a roughly shaly appearance. 194ft. 10in. to 195ft. 5in. Two thin diagonal veins of calcite between 202ft. 6in. and 203.ft.
204	10	213	1	Grey to dark grey and brownish limestone, with confused bedding, and small-scale slump-bedding and brecciation. Scattered stylolites.
213	1	213	7	Shattered pale yellowish-brown calcareous and fine silty sandstone.

Depth From	Depth To	LOG
Ft.In.	Ft.In.	
213 7	221 9 (end)	Massive pale grey to grey limestone. Scattered pale yellowish weathered patches and segregations, becoming more abundant between c.217 ft. 6 in. and 220 ft. 6 in. Irregular stylolites.

Core Recovery: 212'4" (95.7%)

APPENDIX II

AIR DRILL LOGS

Bore No.:	BA 2	(144ft.)
	CQ	(150ft.)
	CA 1	(84 ft.)
	CA 2	(144ft.)
	CA 3	(150ft.)
	CDA1	(150ft.)
	DA 3	(150ft.)
	EA 2	(150ft.)

DEPARTMENT OF MINES
SOUTH AUSTRALIA

LOG OF AIR DRILLHOLE
(Halco 150 No. DM.186)

Project: Curramulka limestone (Site 1) D.M. SR.5/6/40

Bore No.: BA 2 Bore Serial No.: 920/70

Hundred: Curramulka Section: 55 Plan Reference: 70-259 Gh7

Co-ordinates: 3000W; 1500S R.L. of Collar: 210.3ft.

Bearing: Vertical Depth: 144ft.

Date drilling commenced: 24.10.69 Date drilling completed: 25.10.69

Logged by: A.H. Blissett and M.N. Hiern Driller: K. Merrin

Depth		LOG
From	To	
Ft.In.	Ft.In.	
0	6	Reddish-brown calcareous gritty clay; and dark grey and brownish limestone. (Brownish dust).
6	18	Pale grey and brownish limestone with yellowish brown weathered patches (Bluish dust).
18	30	Blue-grey to grey limestone (Bluish dust).
30	36	Blue-grey and grey limestone with yellowish-brown weathered argillaceous patches. (Probably dolomitic).
36	42	Pale grey and some yellowish-brown weathered limestone (Probably dolomitic).
42	54	Pale grey and blue-grey limestone. Weathered yellowish-brown in places. (Probably dolomitic).
54	102	Blue-grey limestone.

Depth		
From	To	LOG
Ft.In.	Ft.In.	
102	108	Pale grey to blue-grey limestone, weathered yellowish-brown in places.
108	126	Pale grey to grey fine limestone with yellowish brown weathered patches.
126	138	Pale grey to dark grey and pale brownish limestone.
138	144	Brownish limestone and reddish-brown gritty clay. (Water struck at 144ft.)

(END)

DEPARTMENT OF MINES
SOUTH AUSTRALIA

LOG OF AIR DRILLHOLE
(Halco 150 No. DM.186)

Project: Curramulka limestone (Site 1) DM. SR.5/6/40

Bore No.: CQ Bore Serial No.: 920/70

Hundred: Curramulka Section: 55 Plan Reference: 70-259 Gh7

Co-ordinates: 2900W; 1775S. R.L. of Collar: 185.9ft.

Bearing: Vertical Depth: 150ft.

Date drilling commenced: 16.10.69 Date drilling completed: 17.10.69

Logged by: A.H. Blissett and M.N. Hiern Driller: K. Merrin

Depth		LOG
From	To	
Ft.In.	Ft.In.	
0	24	Crystalline blue-grey limestone, mottled pale brownish between 12 ft. and 18 ft.
24	48	Blue-grey limestone with pale brownish dolomitic limestone between about 27 ft. and 48 ft.
48	54	Blue-grey to pale grey and brownish limestone; a little reddish-brown clay.
54	66	Reddish-brown gritty and sandy clay (Clay pipe).
66	72	Mixture of dark blue-grey limestone and reddish-brown gritty clay.
72	78	Blue-grey limestone. A few lumps of reddish-brown clay.
78	102	Dark blue-grey fine limestone. Some paler bands between 84 ft. and 102 ft.
102	120	Pale grey fine limestone, pale yellowish-brown dolomitic (?) limestone, pale yellowish-brown finely crystalline in lower part.

Depth		LOG
From	To	
Ft.In.	Ft.In.	
120	132	Blue-grey fine limestone; with some pale yellowish-brown dolomitic limestone showing black manganiferous markings.
132	144	Medium grey to dark blue-grey limestone, with yellowish-brown dolomitic limestone.
144	150 (End)	Mixture of dark blue-grey fine limestone and yellowish-brown dolomite.

DEPARTMENT OF MINES
SOUTH AUSTRALIA

LOG OF AIR DRILLHOLE
(Halco 150 No. DM.186)

Project: Curramulka limestone (Site 1) DM. SR.5/6/40

Bore No.: CA.1 Bore Serial No.: 920/70

Hundred: Curramulka Section: 55 Plan reference: 70-259 Gh7

Co-ordinates: 2000W; 2000S R.L. of Collar: 215.7 ft.

Bearing: Vertical Depth: 84 ft.

Date drilling commenced: 22.10.69 Date drilling completed: 23.10.69

Logged by: A.H. Blissett & M.N. Hiern Driller: K. Merrin

Depth From	Depth To	LOG
Ft.In.	Ft.In.	
0	6	Fragments of calcrete and brownish-weathered blue-grey limestone.
6	12	Brownish-weathered blue-grey limestone; some fragments of calcrete.
12	30	Yellowish-brown weathered blue-grey limestone with argillaceous patches. Traces of malachite.
30	48	Pale grey and cream coloured limestone, with yellowish-brown weathered patches. (Probably dolomitic).
48	66	Pale grey, blue-grey and cream coloured limestone. (Probably dolomitic). Some yellow-brown weathered patches. Traces of malachite in places.
66	78	Blue-grey to pale grey limestone (Probably dolomitic). Weathered yellowish-brown in places.
78	84	Pale grey and brownish limestone; fragments of soft reddish-brown clay.

(Hole abandoned - broken bit)

DEPARTMENT OF MINES
SOUTH AUSTRALIA

LOG OF AIR DRILLHOLE
(Halco 150 No. DM.186)

Project: Curramulka limestone (Site 1) DM. SR.5/6/40

Bore No.: CA 2 Bore Serial No.: 920/70

Hundred: Curramulka Section: 55 Plan Reference: 70-259 Gh7

Co-ordinates: 3000W; 2000S R.L. of Collar: 250.7 ft.

Bearing: Vertical Depth: 144 ft.

Date drilling commenced: 20.10.69 Date drilling completed: 22.10.69

Logged by: A.H. Blissett and M.N. Hiern Driller: K. Merrin

Depth		
From	To	LOG
Ft.In.	Ft.In.	
0	12	Calcrete and dark blue-grey to grey limestone.
12	18	Blue-grey and brownish limestone. Fragments of calcrete.
18	24	Blue-grey limestone.
24	36	Blue-grey limestone with brownish weathered sand.
36	60	Blue-grey limestone and yellowish-brown weathered argillaceous limestone.
60	108	Blue-grey limestone with some yellowish-brown weathered argillaceous patches. (Blue dust).
108	138	Blue-grey limestone, partly yellowish weathered in places with black manganiferous markings (Probably dolomitic).
138	144	Shattered blue-grey limestone with yellowish-brown sand.

DEPARTMENT OF MINES
SOUTH AUSTRALIA

LOG OF AIR DRILLHOLE
(Halco 150 No. DM.186)

Project: Curramulka limestone (Site 1) DM. SR.5/6/40

Bore No.: CA.3 Bore Serial No.: 920/70

Hundred: Curramulka Section: 55 Plan Reference: 70-259 Gh7

Co-ordinates: 3510W; 2000S R.L. of Collar: 264.0 ft.

Bearing: Vertical Depth: 150 ft.

Date drilling commenced: 23.10.69 Date drilling completed: 24.10.69

Logged by: A.H. Blissett and M.N. Hiern Driller: K. Merrin

Depth		LOG
From	To	
Ft.In.	Ft.In.	
0	6	A few inches of reddish-brown sandy soil on calcrete with fragments of dark blue-grey limestone.
6	12	Dark blue-grey limestone with yellowish-brown blotches. Traces of calcrete.
12	24	Dark blue-grey limestone. Some yellowish-brown blotches.
24	30	Blue-grey limestone and weathered yellowish-brown argillaceous limestone.
30	66	Blue-grey and brownish limestone. Traces of malachite in lower part.
66	78	Dark blue-grey and grey limestone.
78	108	Blue-grey and brownish limestone.
108	120	Pale grey to blue-grey limestone, dolomitic in places.
120	132	Pale grey and brownish limestone, dolomitic in places; traces of dark grey shale.
132	150	Pale grey and brownish limestone. Traces of malachite 138 ft. to 144 ft.

DEPARTMENT OF MINES
SOUTH AUSTRALIA

LOG OF AIR DRILLHOLE
(Halco 150 No. DM.186)

Project: Curramulka limestone (Site 1) DM. SR.5/6/40

Bore No.: CDA.1 Bore Serial No. 920/70

Hundred: Curramulka Section: 55 Plan reference: 70-259 Gh7

Co-ordinates: 3000W; 2250S R.L. of Collar: 263.5 ft.

Bearing: Vertical Depth: 150 ft.

Date drilling commenced: 12.11.69 Date drilling completed: 13.11.69

Logged by: A.H. Blissett Driller: K. Merrin

Depth		
From	To	LOG
Ft.In.	Ft.In.	
0	6	Cream and brownish calcrete and silcrete on pale grey to grey limestone.
6	12	Pale grey to grey and brownish limestone.
12	24	Pale grey to dark grey limestone. Mottled brownish and pale yellowish in places.
24	48	Dark blue-grey to pale blue-grey limestone. Some yellowish-brown weathered fine calcareous sandstone.
48	54	Dark blue-grey fine limestone.
54	60	Pale grey to dark blue-grey and brownish limestone. Weathered yellowish-brown and reddish-brown in places.
60	78	Dark blue-grey limestone. Some yellowish-brown weathered fine calcareous sandstone.
78	84	Blue-grey limestone with scattered pale yellowish-weathered patches.

Depth		LOG
From	To	
Ft.In.	Ft.In.	
84	108	Blue-grey to dark blue-grey limestone.
108	138	Blue-grey to dark blue-grey limestone. Traces of pale yellowish fine calcareous sandstone and siltstone in places.
138	150	Blue-grey to dark blue-grey limestone, with pale grey and yellowish-brown fine calcareous sandstone and siltstone increasing in depth.

DEPARTMENT OF MINES
SOUTH AUSTRALIA

LOG OF AIR DRILLHOLE
(Halco 150 No. DM.186)

Project: Curramulka limestone (Site 1) DM. SR.5/6/40

Bore No.: DA.3 Bore Serial No.: 920/70

Hundred: Curramulka Section: 55 Plan Reference: 70-259 Gh7

Co-ordinates: 3000W; 2500S R.L. of Collar: 274.5 ft.

Bearing: Vertical Depth: 150 ft.

Date drilling commenced: 18.10.69 Date drilling completed: 20.10.69

Logged by: A.H. Blissett & M.N. Hiern Driller: K. Merrin

Depth		
From	To	LOG
Ft.In.	Ft.In.	
0	6	Fragments of calcrete and dark grey limestone. Some gravel.
6	12	Fragments of pale grey and dark grey limestone; a little calcrete.
12	18	Pale grey and dark grey fine limestone. Some fragments of yellowish-brown dolomite.
18	24	Pale grey limestone, and yellowish-brown dolomite with black manganiferous markings.
24	36	Pale grey limestone and brown dolomite. (Cream coloured dust).
36	42	Similar to 24-36', with some blue limestone.
42	48	Dark blue-grey to grey fine limestone. Some weathered argillaceous chips. (Blue dust).
48	54	Mainly dark blue-grey limestone; some paler fragments. (Blue dust).
54	60	Similar. A few chips of yellowish-brown weathered calcareous and argillaceous material (Blue dust).

Depth		
From	To	LOG
Ft.In.	Ft.In.	
60	84	Dark grey and blue-grey limestone. Some yellowish-brown weathered argillaceous chips, particularly from 72'-78'. (Blue dust).
84	114	Blue-grey limestone, similar to 42'-48' but argillaceous chips only slightly weathered. Fragments of yellowish-brown dolomite and pale grey limestone, 108'-114'.
114	120	Grey to dark grey and pinkish limestone. Fragments of yellowish-brown dolomite.
120	126	Grey and pinkish limestone. Some yellowish-brown weathered calcareous and argillaceous chips. (Cream-coloured dust).
126	144	Pale grey to dark grey and pinkish limestone with yellowish-brown dolomite (Cream coloured dust).
144	150	Pale grey to medium grey limestone, and yellowish-brown dolomite. (Creamy-blue dust).

DEPARTMENT OF MINES
SOUTH AUSTRALIA

LOG OF AIR DRILLHOLE
(Halco 150 No. DM.186)

Project: Curramulka limestone (Site 1) DM. SR.5/6/40

Bore No.: EA.2 Bore Serial No.: 920/70

Hundred: Curramulka Section: 55 Plan Reference: 70-259 Gh7

Co-ordinates: 3000W; 3000S R.L. of Collar: 285.0 ft.

Bearing: Vertical Depth: 150 ft.

Date drilling commenced: 17.10.69 Date drilling completed: 18.10.69

Logged by: A.H. Blissett & M.N. Hiern Driller: K. Merrin

Depth		
From	To	LOG
Ft.In.	Ft.In.	
0	2	Reddish-brown gritty clay soil on buff and yellowish-brown weathered calcrete with fragments of dark grey limestone.
2	6	Weathered calcrete with fragments of blue-grey limestone.
6	12	Calcrete with small fresh fragments of dark grey limestone.
12	18	(Poor recovery). Fractured dark grey limestone fragments in pale yellowish gravelly sand. (Fissure infilling?).
18	36	Fine pale yellowish and buff silt and sand, with small fragments of dark grey limestone. (Fissure infilling?).
36	42	Dark grey limestone.
42	72	Dark grey and grey limestone, probably dolomitic in places. Some yellowish-brown weathered patches.

Depth		
From	To	LOG
Ft.In.	Ft.In.	
72	108	Blue-grey limestone, some pale brownish horizons.
108	150 (End)	Mainly dark blue-grey fine limestone with traces of pale grey limestone. Weathered yellowish-brown in places.

APPENDIX III

ANALYSES (AMDEL)

AMDEL REPORTS AN.1521-70; AN.1647-70; AN.1740-70

ANALYSES
%

Sample Mark	Bore No.	Depth (feet)	Calcium Carbonate $CaCO_3$	Magnesium Carbonate $MgCO_3$	Silica SiO_2	Aluminium oxide Al_2O_3	Ferric oxide Fe_2O_3	Phosphorus pentoxide P_2O_5
A1193/69	CQ	0'- 24'	86.5	6.3	4.4	0.99	0.45	0.95
A1194		24'- 48'	81.2	11.9	4.0	0.79	0.45	0.70
A1195		78'-102'	88.8	8.0	1.9	0.40	0.31	0.28
A1196		102'-120'	87.9	1.2	10.7	0.17	0.17	0.14
A1197		120'-132'	79.7	15.4	3.6	0.60	0.47	0.04
A1198		132'-144'	74.3	14.9	9.5	0.46	0.48	0.03
A1199		144'-150'	62.8	32.7	2.8	0.60	0.49	0.03
A1200	EA2	0'- 12'	82.7	3.1	9.9	1.46	0.73	0.18
A1201		12'- 36'	74.4	11.4	9.4	1.44	1.21	0.63
A1202		36'- 72'	82.0	9.0	5.2	1.03	0.82	0.82
A1203		72'-108'	84.3	7.5	4.6	0.99	0.71	0.80
A1204		108'-150'	83.5	6.4	6.0	0.66	0.35	0.70
A1205	DA3	12'- 24'	71.2	20.6	5.1	0.48	0.26	1.06
A1236		24'- 36'	77.1	16.7	-	-	-	-
A1237		36'- 42'	65.8	26.2	-	-	-	-
A1238		42'- 84'	84.3	8.1	-	-	-	-
A1239		84'-108'	78.7	8.3	-	-	-	-
A1240		108'-114'	77.3	14.2	-	-	-	-
A1241		114'-144'	79.0	15.9	-	-	-	-
A1242		144'-150'	84.3	11.4	-	-	-	-

ANALYSES (%)

SAMPLE MARK	BORE NO.	DEPTH (feet)	CALCIUM CARBONATE $CaCO_3$	MAGNESIUM CARBONATE $MgCO_3$
A1206/69	CD1	0' - 12'4"	88.1	3.6
A1207		12'4"- 24'	87.0	2.5
A1208		24' - 30'	85.2	1.0
A1209		30' - 66'	88.1	3.2
A1210		66' - 78'	88.1	6.9
A1211		78' -108'	83.2	7.9
A1212		108' -120'	85.8	9.6
A1213		120' -132'	84.0	12.0
A1214		132' -150'	91.2	5.5
A1215		150' -175'	89.5	7.8
A1216	CA3	0' - 12'	84.3	4.6
A1217		12' - 24'	87.4	2.9
A1218		24' - 30'	81.2	2.7
A1219		30' - 66'	85.1	4.2
A1220		66' - 78'	88.6	6.1
A1221		78' -108'	86.6	6.4
A1222		108' -120'	87.1	8.0
A1223		120' -132'	84.4	11.1
A1224		132' -150'	95.5	3.0
A1227	CA2	0' - 12'	86.3	1.1
A1228		12' - 18'	91.9	1.1
A1229		18' - 24'	89.7	1.4
A1230		24' - 36'	82.0	4.0
A1231		36' - 60'	85.8	5.0
A1232		60' -78'	89.9	4.9
A1233		78' -108'	86.4	6.6
A1234		108' -138'	84.0	11.3
A1235		138' -144'	84.6	5.0

ANALYSES (%)

SAMPLE MARK	BORE NO.	DEPTH (feet)	CALCIUM CARBONATE $CaCO_3$	MAGNESIUM CARBONATE $MgCO_3$
A1243/69	CA1	0' - 30'	83.7	4.2
A1244		30' - 48'	72.9	20.0
A1245		48' - 66'	69.2	23.2
A1246		66' - 78'	78.4	14.2
A1247		78' - 84'	80.6	4.3
A1265	BA2	0' - 6'	50.2	1.7
A1266		6' - 30'	84.3	6.4
A1267		30' - 36'	75.7	12.5
A1268		36' - 42'	81.8	10.7
A1269		42' - 54'	80.8	11.8
A1270		54' - 78'	87.9	6.4
A1271		78' - 102'	86.7	8.8
A1272		102' - 126'	90.6	2.9
A1273		126' - 138'	78.2	13.0
A1423/69	CDA1	0' - 24'	73.7	9.6
A1424		24' - 48'	82.7	8.05
A1425		48' - 60'	81.6	4.25
A1426		60' - 78'	82.1	5.95
A1427		78' - 90'	84.3	7.45
A1428		90' - 108'	87.7	6.8
A1429		108' - 138'	84.5	7.8
A1430		138' - 150'	70.9	19.7

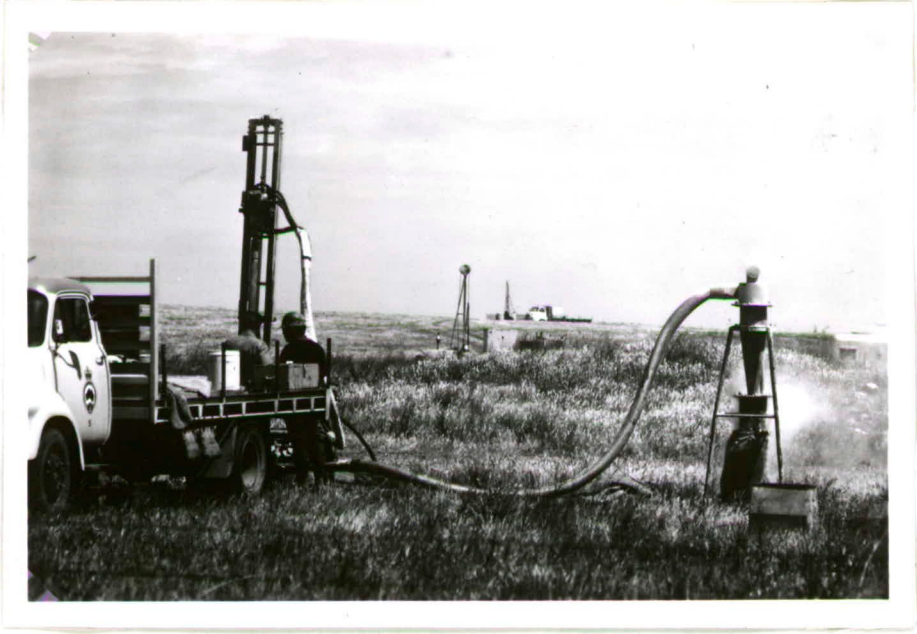
Analyses by: C.R. Trigg and C. Holland

PLATES

1. Curramulka quarry from the north (D.D.H. CD.2 to left, and D.D.H. CD.1 to right of quarry. Camp at right background.

2. Halco 150 air-hammer drill. Compressor on truck at left. Cyclone at right.

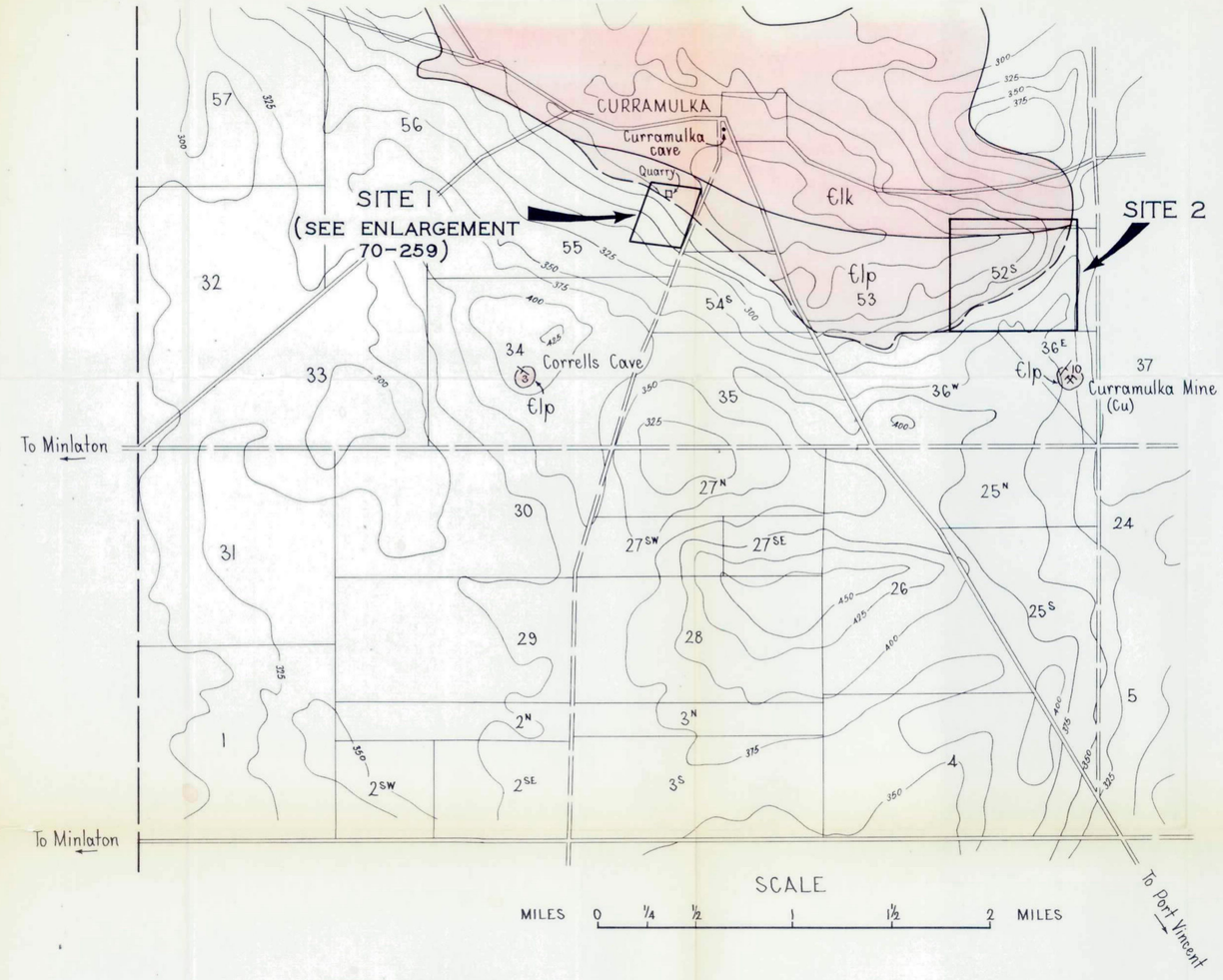
3. Halco drill in Curramulka road metal quarry.

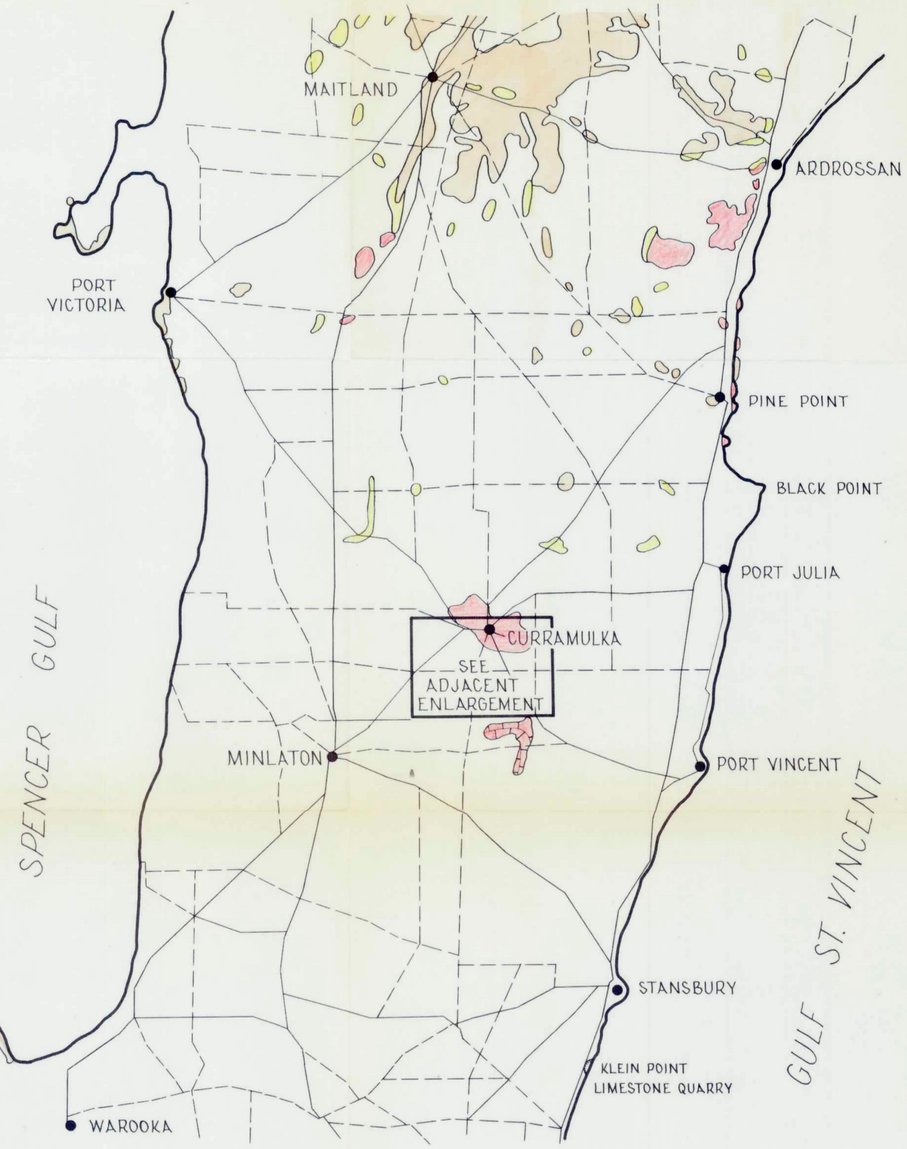


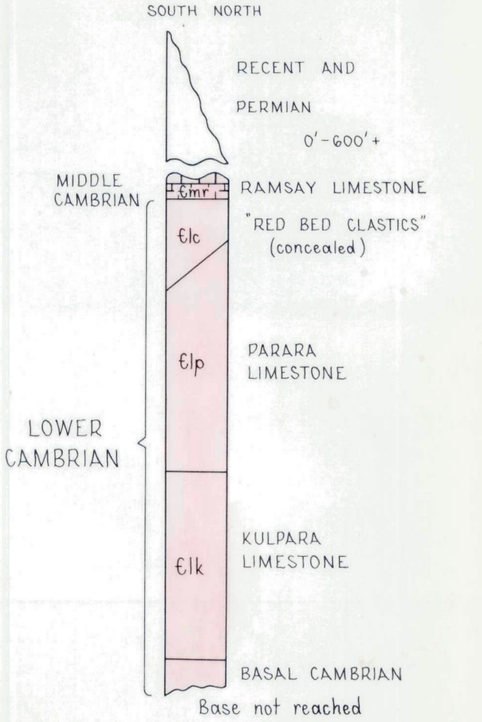
4. Foreground: Halco drill on borehole CA.1: centre and background, diamond drills on boreholes CD.2 and CD.1.

5. Clay pipe in Parara Limestone, covered with nodular calcrete (Curramulka quarry).

6. Panorama of Site 1 looking eastwards. Curramulka to the left. Site 2 at right background.

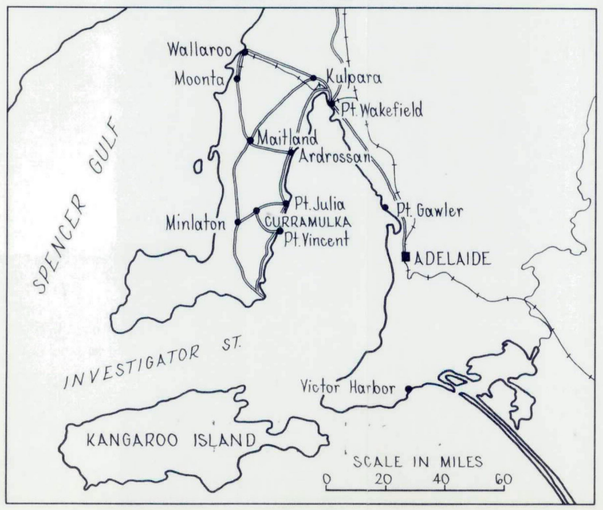






STRATIGRAPHIC COLUMN
(SOUTH OF CURRAMULKA)
Based on Minlaton Nos 1 and 2 Stratigraphic Boreholes
1 inch = 500 feet

LOCALITY PLAN



LEGEND

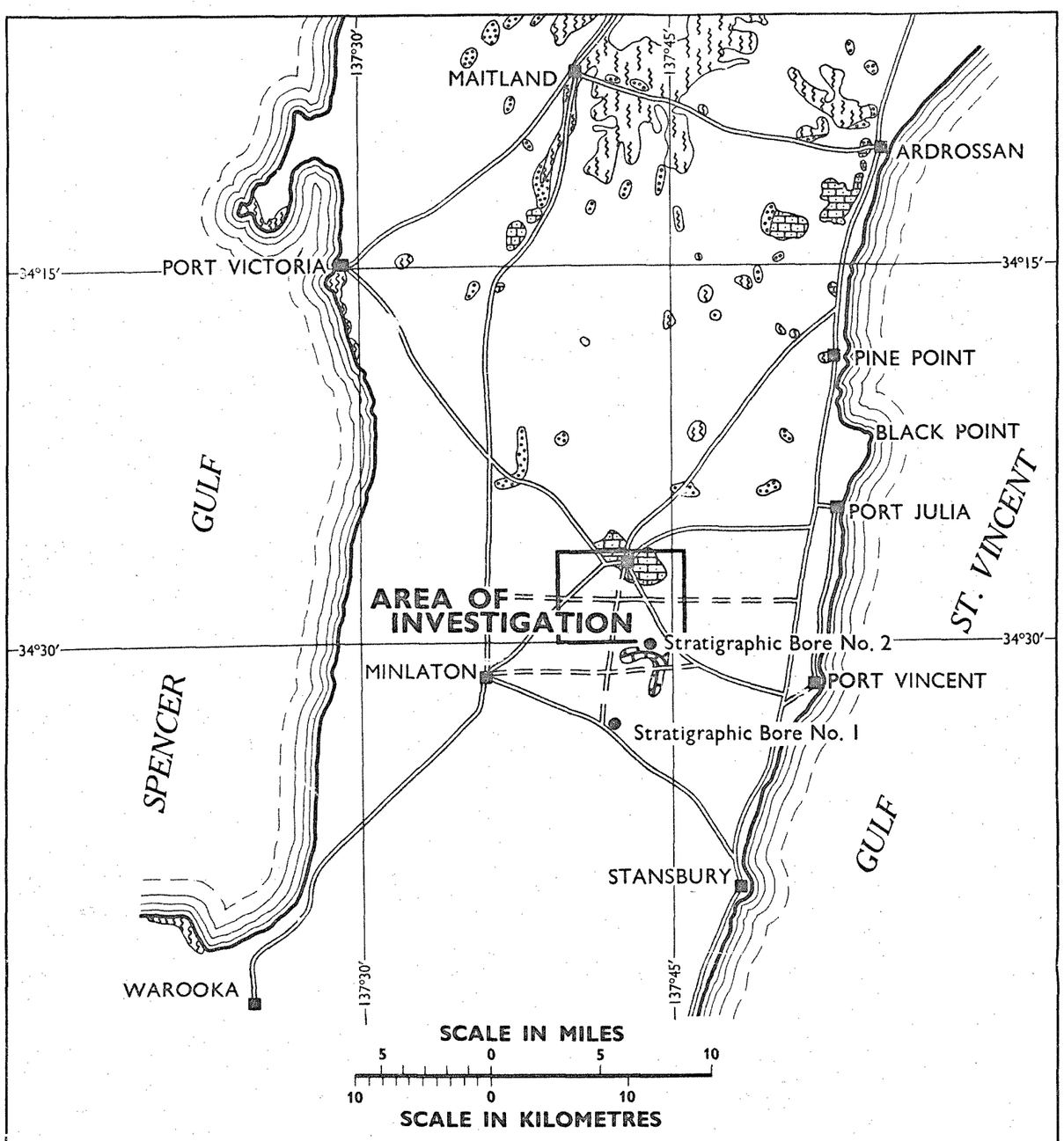
- QUATERNARY, TERTIARY AND PERMIAN
- RAMSAY LIMESTONE, "RED BED CLASTICS", PARARA LIMESTONE, KULPARA LIMESTONE — MIDDLE / LOWER CAMBRIAN
- ADELAIDE SYSTEM — PROTEROZOIC
- OLDER PROTEROZOIC
- Major Roads
- Minor Roads

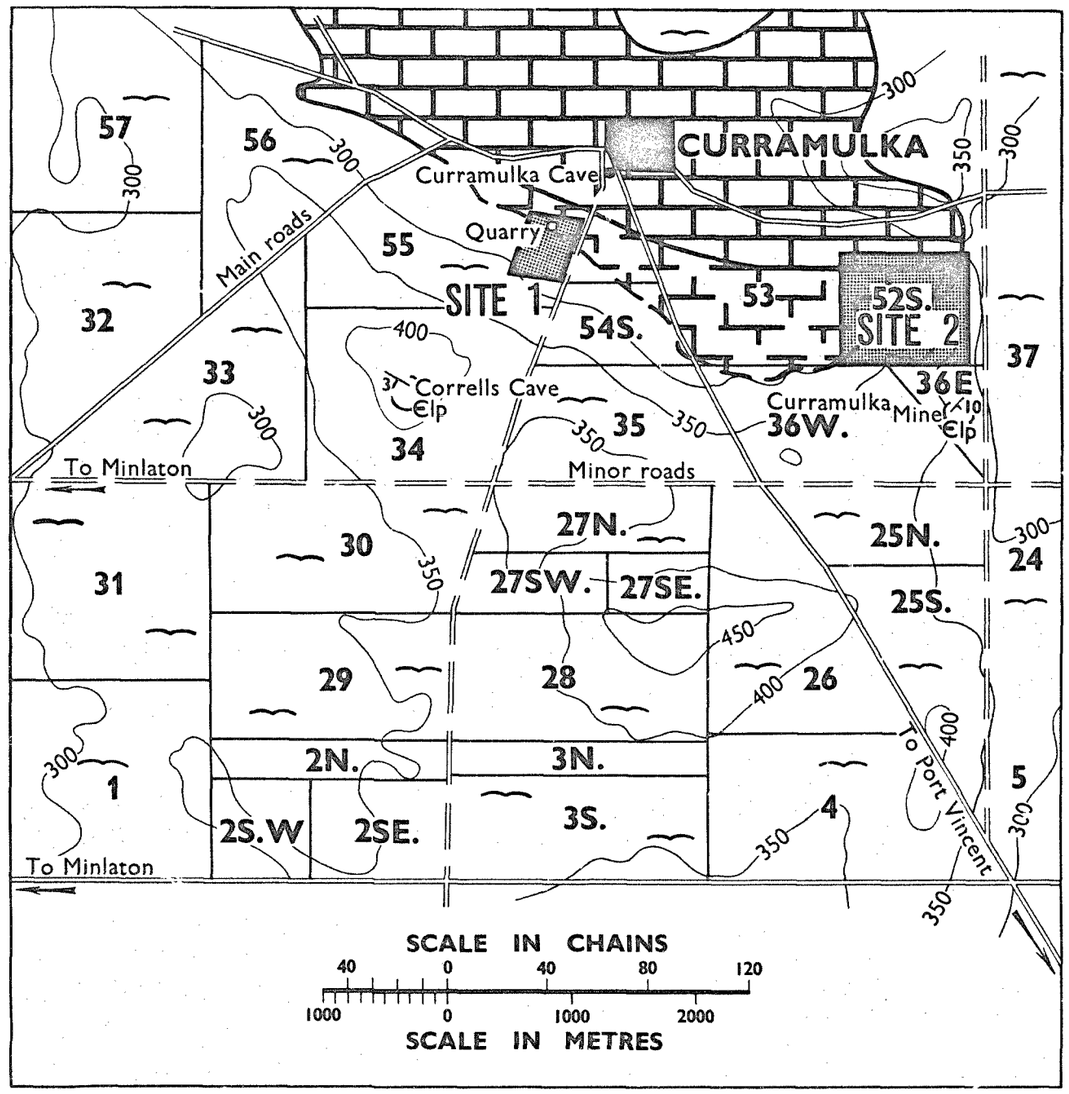
DEPARTMENT OF MINES — SOUTH AUSTRALIA

CURRAMULKA LIMESTONE DEPOSITS
YORKE PENINSULA
GEOLOGICAL PLAN

NON-METALLIC MINERALS SECTION	GEOLOGIST	Drn. A.H.B.	SCALE: As shown
		Tcd. R.H.	70-258
		Ckd. L.V.W.	Gh7
Director of Mines	SEN. GEOLOGIST	Exd.	DATE: 5 May 1970

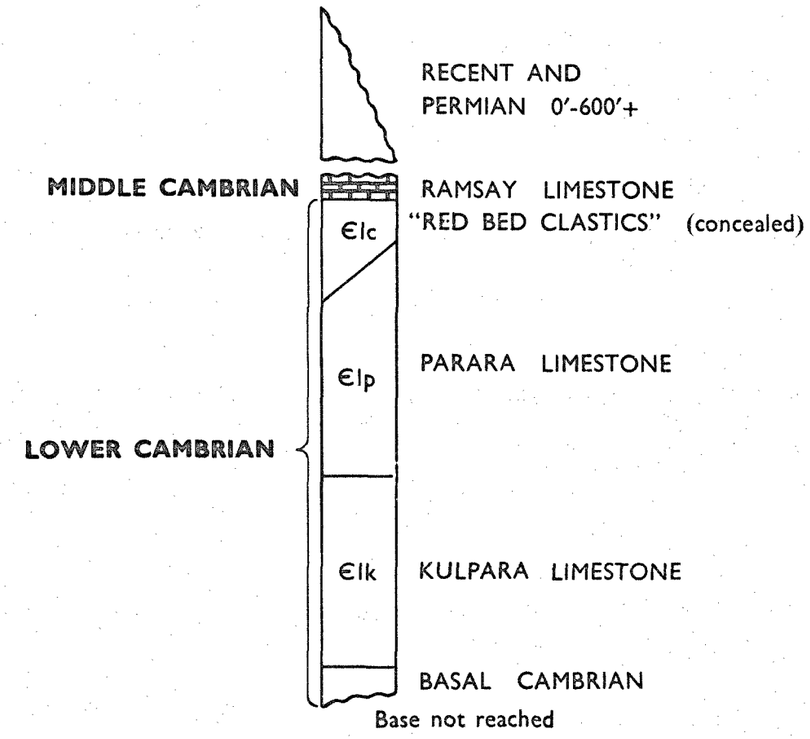
Reduce to 5½ inches





LEGEND

QUATERNARY TERTIARY PERMIAN		
MIDDLE CAMBRIAN		RAMSAY LIMESTONE
		RED BED CLASTICS
LOWER CAMBRIAN		PARARA LIMESTONE
		KULPARA LIMESTONE
PROTEROZOIC		ADELAIDE SYSTEM
OLDER PROTEROZOIC		



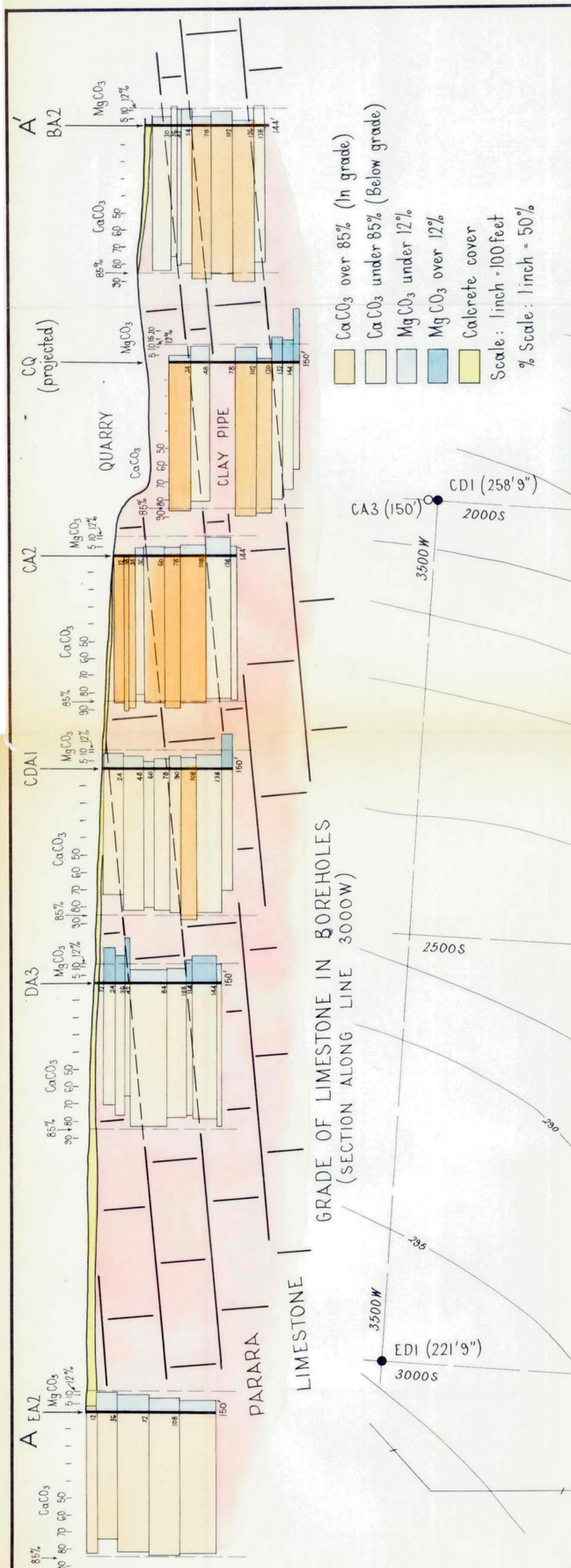
STRATIGRAPHIC COLUMN

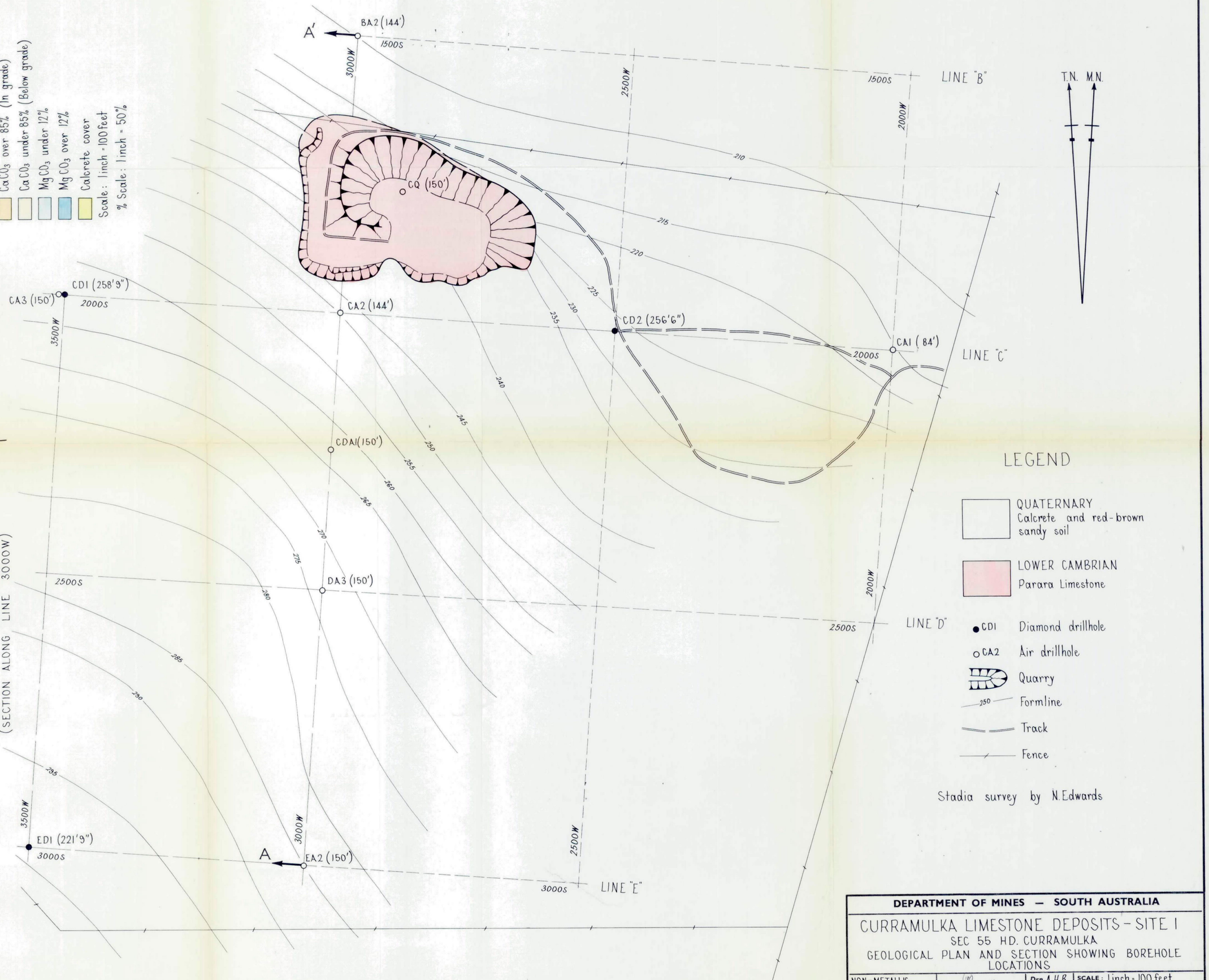
(SOUTH OF CURRAMULKA)

Based on Minlaton No. 1 and No. 2
Stratigraphic boreholes

70-258 MR 132 A. H. Blissett Assistant Senior Geologist S.A. Dept. of Mines

Fig. 2 Geological Plan of Curramulka Limestone Deposits Yorke Peninsula R.132





LEGEND

- QUATERNARY — Calcrete and red-brown sandy soil
- LOWER CAMBRIAN — Parara Limestone
- CD1 — Diamond drillhole
- CA2 — Air drillhole
- Quarry
- 250 — Formline
- Track
- Fence

Stadia survey by N.Edwards

DEPARTMENT OF MINES — SOUTH AUSTRALIA

CURRAMULKA LIMESTONE DEPOSITS - SITE 1

SEC 55 HD. CURRAMULKA

GEOLOGICAL PLAN AND SECTION SHOWING BOREHOLE LOCATIONS

NON-METALLIC MINERALS SECTION	GEOLOGIST	Drn. A.H.B.	SCALE: 1inch = 100 feet
		Tcd. R.H.	70-259 Gh7
		Ckd. L.V.W	
Director of Mines	SEN. GEOLOGIST	Exd.	DATE: 30 April 1970

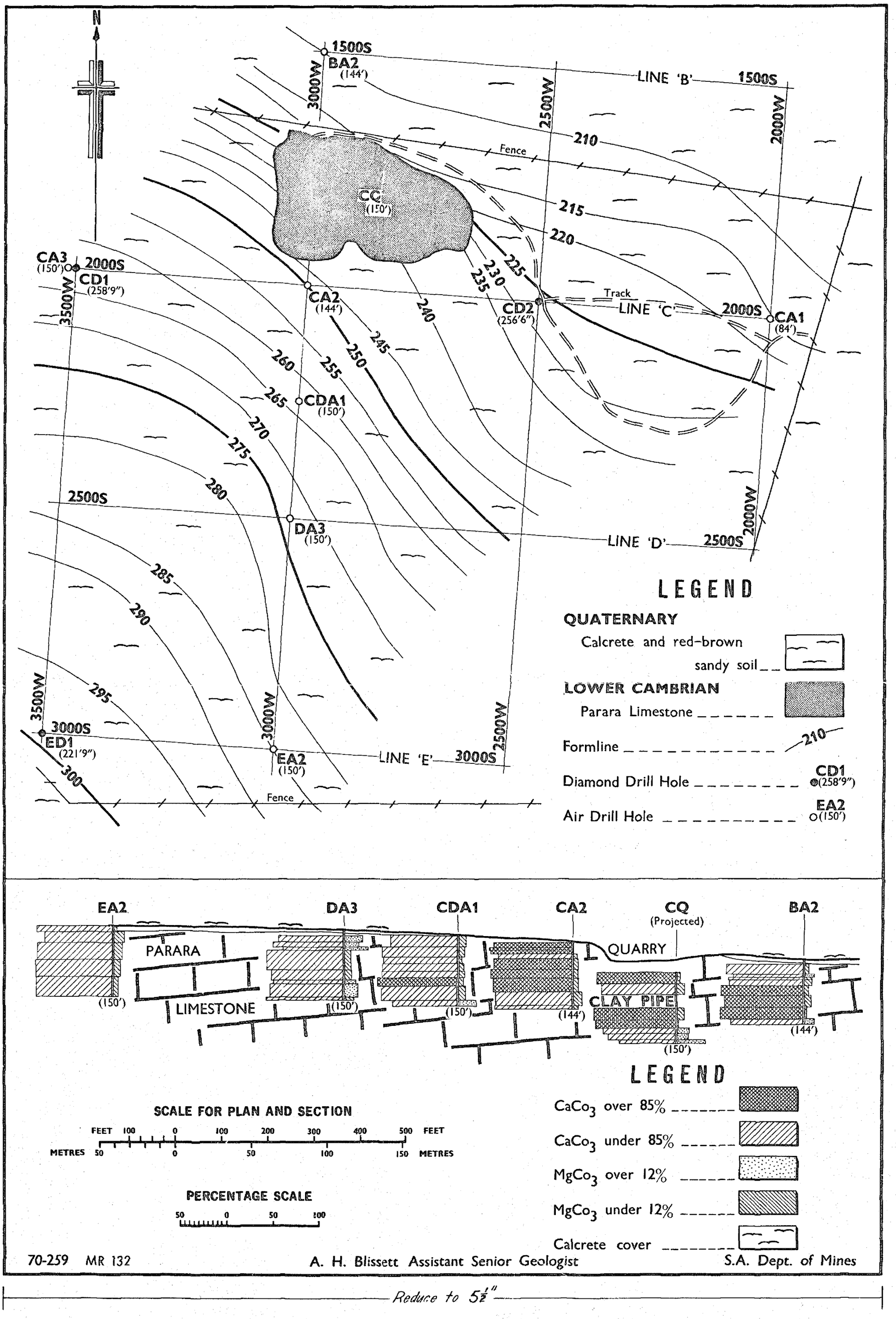


Fig. 5 Geological plan and section showing borehole locations. Sec.55 Hd. Curramulka. Curramulka Limestone Deposits. Site 1

R.132

MME 70-259 11/1947 18-2-71

Reduce to 5½"

SCALE IN FEET
100 0 100 200 300 400 500
50 0 50 100 150
SCALE IN METRES

8

1227