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FLINDERS RANGES BARITE DEPOSITS

VARIOUS TECHNICAL REPORTS ABOUT DEPOSIT MINING AND EXPLORATION, COVERING THE PERIOD AUGUST 1963 TO JUNE 1985

Submitted by
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1985

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SOUTH AUSTRALIAN BARYTES LIMITED

REPORT ON ORAPARINNA
BARYTES MINE

by B.P. Webb, M.Sc.
Geosurveys of Australia Pty. Limited.



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REPORT ON

ORAPARINNA BARYTES MINE

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I INTRODUCTION.

This report summarises the results of recent mine surveys and geological and reserves appraisal of the Oraparinna Barytes Mine. Surface and underground geological mapping was carried out during August 21st to 23rd, August 28th to September 1st and October 17th to 26th. A survey pick-up of underground workings was carried out during August 28th to September 1st and a surface survey from October 17th to 26th. The results of these various surveys have been incorporated into a comprehensive set of mine plans, and a three-dimensional interpretation study of the mine lode system has been carried out. Ore reserve calculations have been prepared for the mine area, and also for other principal lode developments within the lease area.

II UNDERGROUND SURVEY PICK-UP.

All development and stoping carried out since the previous survey by the Department of Mines in June 1960 was picked up, and incorporated into the present survey.

(i) Development.

The new development headings were surveyed by J. Ellsgood (Alexander & Symonds). Because the majority of the previously established survey stations could not be located, it was found necessary to establish a new network of permanent underground stations on both No. 2 and No. 3 Levels. A total of 29 such stations were established, and full details of their co-ordinated position and reduced levels are included with this report. Each station consists of a steel peg cemented into the floor of the workings with a reference mark painted on the adjacent walls. The survey used as datum the old station No. 210, located at 5000N and 5000E at the entrance to No. 2 level Adit. The few old stations that could be identified with certainty were

tied in with the new survey, so that the original grid network could be maintained. The survey computations indicate that the grid system relating to the co-ordinate of the new stations and can be assumed to be the same as the original grid for the purposes of the present survey.

The following development headings were surveyed:--

No. 2 Level.

Drive on 1B Lode from 5170N to 5245N.

Drive north from 5185N on 1A Lode.

No. 3 Level.

Extension of cross-cut towards 1A Lode at 5150N.

Drive north from 5430N on 1C Lode, including limits of leading stoping.

Drive north and south on (?) 1A Lode from 5440N, including limits of leading stoping.

No. 4 Winze, from No. 2 to No. 3 Level.

In the course of this work the survey was carried from No. 4 Winze on No. 3 Level, out to No. 3 Level Adit portal, thence along the surface to No. 2 level Adit portal, along No. 2 Level to No. 4 Winze and down No. 4 Winze, effecting a satisfactory closure.

(ii) Stoping.

The limits of stoping and broken ore south from No. 4 Winze on 1C Lode above No. 3 Level were picked up, using Abney level and tape, to the vicinity of the breakthrough to No. 2 Level near 5400N. The stope outline north and south of No. 2 Winze was estimated from tape measurements taken on inspection with the Mine Manager.

III UNDERGROUND GEOLOGICAL MAPPING.

All accessible development openings were mapped. In the case of openings previously mapped by the Mines Department, all accessible mapping was checked, and amended in a few instances. Development headings surveyed under the recent programme, as outlined above, were all mapped. Workings on No. 1 Level were inaccessible.

IV SURFACE SURVEY PICK-UP.

This work was carried out by W. Webbe (Surveyor) and G. Campe (Geologist) of Geosurveys of Australia Limited. All surface workings, mine dumps, buildings etc. in the general mine area were surveyed, and additional contour mapping carried out between the Mine area and Roberts Lode area. Levels were carried to the Western Lode area, and Belsen Lode area, and contour maps prepared in each case. All existing lease pegs were located, and the mine access road and water-bore and pump site picked up.

V. SURFACE GEOLOGICAL MAPPING.

Mapping previously carried out by Mines Department was checked and additional mapping carried out north of the mine open-cut, and in the Belsen Lode area.

VI PLAN PREPARATION.

The results of all the above work have been presented in a comprehensive set of mine plans. Surface plans at a scale of 40 feet to one inch cover the main mine area (SABR.5, 27), the Bainbridge-Roberts area (SABR.24), Belsen Lode (SABR.25) and Western Lodes (SABR.26). Plans of No. 1 (SABR.4), No. 2 (SABR.2) and No. 3 (SABR.7) Levels have been prepared at scale of 40 feet to one inch. Cross sectional plans at scale of 40 feet to one inch have been constructed for the Mine to

Bainbridge-Roberts area at 100 feet interval from 4900N to 6100N inclusive (SABR.7 to 19). Longitudinal sections at the same scale have been prepared for the 1A, 1B and 1C Lodes.

In addition, a comprehensive surface plan of the whole lease area has been prepared at a scale of 200 feet to one inch (SABR.23).

VII ANALYSIS OF MINE LODGE SYSTEM.

The results of a three-dimensional interpretation study of the Mine Lodge System are presented on the accompanying plans and sections. The naming of lodges as defined previously by the Mines Department has been retained, with the exception that the lodge extending northwards from the northerly intersection of 1B and 1C on No. 2 Level has been referred to as 1C lodge (formerly 1B) in conformity with current usage by the Mine Manager. The results from No. 4 Winze suggest this is a more logical arrangement, although as indicated on the mapping of the Winze (SABR.22) it is possible that a lodge intersection occurs beyond the west wall of the winze, so that the extension northwards (and upwards) from the junction can probably be referred to either 1B or 1C.

The "No. 1 Link Lodge" is rather ill-defined on No. 2 Level, but is considered to be represented by the lodges that junction with 1B Lodge immediately north of 5200N, extending back towards No. 1 Winze. The north-westerly (grid direction) continuation may be exposed when the north drive on 1A Lodge on this level is extended. On No. 3 Level, the No. 1 Link Lodge is considered to be represented by the lodge exposed in the main drive north from about 5260N to just north of 5400N, where it junctions with 1B and then with 1A. Because of the system of stoping adopted north and south of No. 1 Winze, the No. 1 Link Lodge has been grouped under the 1B Lodge for ore reserve calculation purposes, and is incorporated in the 1B Lodge longitudinal section. It is considered that the relatively flat dips observed in the lower section of the No. 3 Winze at about 60 feet above rail level are due to the fact that over this interval the winze is

actually on the No. 1 Link Lode, the dip being particularly flat at the junction with the near-vertical 1B Lode.

The matter of the probable position of the 1A Lode on No. 3 Level, and also north from 5200N on No. 2 Level, has been carefully analysed. The interpretation shown is considered to be the most logical in the light of the present evidence. Thus, it appears likely that the cross-cut on No. 3 Level is at or very close to, the hanging wall of the 1A Lode channel and that it is the 1A Lode that is exposed in the (westerly) drive north and south of 5440N on this level.

Considerable uncertainty exists in the interpretation of the relation in cross-section between 1C Lode and the unnamed lode lying some 40 feet to the west of 1C on the surface, in the interval above 2300 feet, between 5300N and 5600N. However, this does not materially affect the ore reserve calculations, as all figures above the No. 1 Level (R.L. approx. 2240) were taken from data compiled by the Mine Manager.

A generally northerly pitch of approximately 45° for the lode system is suggested by the attitude of lode intersection lines, and also by the attitude of the lines formed by the intersection of the lode shears and bedding planes of the country rock.

VIII ORE RESERVES.

Ore Reserve figures for above No. 2 Level were taken from data supplied by the Mine Manager (Mr. R. Turley). This is all "broken ore".

In the case of the remaining calculations, the reserve figures have been divided into three categories as under:--

- | | |
|-----------------------|---|
| <u>Measured Ore:</u> | Ore blocked out on two or more sides. |
| <u>Indicated Ore:</u> | Ore exposed on at least one side, and extending down to 100 feet below lowest developed level or surface outcrop. |
| <u>Inferred Ore:</u> | Unexposed ore, for which geological reasoning suggests probable existence. |

In the case of Measured and Inferred ore, every use has been made of available thickness measurements to obtain a reliable "weighted" figure. Calculations have been made over blocks of ore, the limits of each block being related to geological reasoning with relation to pitch etc. The limits of the individual blocks are shown (in the case of the Mine Area Lodes) in the appropriate Longitudinal Sections. The details of figures for each such block are available in the records section of Geosurveys of Australia Limited at Woodville, and these results are summarised on the attached Ore Reserve Tables.

In the case of the Mine Area Lodes, and Bainbridge, No. 3, No. 4 and Roberts Lode, calculations have been taken down to depth of R.L. 1900 feet (100 feet vertically below the present No. 3 Level), which is about 10 feet above creek level near the disused bore at the entrance to the Mine Area. Below this depth, exploitation of the lode system would necessitate shaft sinking and haulage of ore, and possibly pumping out of underground water seepage.

In the case of Belsen Lode, the calculations have been taken down to 2040 feet, which, again, is the lowest convenient level from which development can take place in the area without the necessity for shaft sinking.

In the case of the Western Lodes, calculations have been taken down to about 150 feet below ground level, on the assumption that these lodes would be exploited by entrance from an adit level from the major creek draining the area to the south east (grid direction) at a point near the south eastern corner of plan SABAR.26 (SABAR.23).

ORAPARINNA BARYTES MINE

SUMMARY OF ORE RESERVES

MINE AREA

Lode and Position	Broken Ore	Measured Ore	Indicated Ore	Total	Inferred Ore	Grand Total	Tons Vertical Ft.
	Tons	Tons	Tons	Tons	Tons	Tons	
1A. Above 2 level	12,000	-		12,000	11,850	23,850	
Between 2 & 3 levels	-	-	9,740	9,740	21,800	31,540	
Below 3 level to 1900'	-	-	7,950	7,950	14,670	22,620	252
Total	12,000	-	17,690	29,690	48,320	78,010	
1B. Above 2 level	-	-					
Between 2 & 3 levels	14,000	31,140		45,140	7,150	52,290	
Below 3 level to 1900'			19,700	19,700	14,000	33,700	338
Total	14,000	31,140	19,700	64,840	21,150	85,990	
1C. Above 2 level	30,000			30,000		30,000	
Between 2 & 3 levels	8,800	23,850	11,270	43,920		43,920	
Below 3 level to 1900'			33,570	33,570	28,400	61,970	600
Total	38,800	23,850	44,840	107,490	28,400	135,890	
Dumps Main - below 2 level	12,800			12,800		12,800	
West of 2 level portal	9,800			9,800		9,800	
Below open cut	2,500			2,500		2,500	
Total	25,100			25,100		25,100	
Grand Total	89,900	54,990	82,230	227,120	97,870	324,990	1190

ORAPARINNA BARYTES MINESUMMARY OF ORE RESERVESOUTSIDE LODES

Lode and Position	Broken Ore	Measured Ore	Indicated Ore	Total	Inferred Ore	Grand Total	Tons Vertical Ft.
	Tons	Tons	Tons	Tons	Tons	Tons	Tons
Bainbridge to 1900'			75,500	75,500	78,000	153,500	325
Bainbridge (E Br.) to 1900'			28,600	28,600	32,600	61,200	136
Bainbridge (N.W.) to 1900'			17,470	17,470	30,000	47,470	160
No. 3 to 1900'			10,440	10,440	32,000	42,440	100
No. 4 to 1900'			42,100	42,100	63,600	105,700	265
Roberts to 1900'			34,660	34,660	23,000	57,660	192
Total			208,770	208,770	259,200	467,970	1178
Belsen to 2040'			23,000	23,000	-	23,000	386
Western to 150' below ground level			67,800	67,800	33,900	101,700	678
Total			90,800	90,800	33,900	124,700	1064
Grand Total			299,570	299,570	293,100	592,670	2242
Final Totals	89,900	54,990	381,800	526,690	390,970	917,660	3432

ORAPARINNA BARYTES MINE

SUMMARY OF ORE RESERVES ABOVE NO. 3 LEVEL

Lode	Broken Ore	Measured Ore	Indicated Ore	Total	Inferred Ore	Grand Total
	Tons	Tons	Tons	Tons	Tons	Tons
1 A	12,000		9,740	21,740	33,650	55,390
1 B	14,000	31,140		45,140	7,150	52,290
1 C	38,800	23,850	12,590	75,240		75,240
Dumps	25,100			25,100		25,100
Grand Total	89,900	54,990	22,330	167,220	40,800	208,020
Bainbridge			75,500	75,500	45,500	121,000
Bainbridge (EBR)			28,600	28,600	19,000	47,600
Bainbridge (NW)			17,470	17,470	14,000	31,470
No. 3			10,440	10,440	22,000	32,440
No. 4			42,100	42,100	37,100	79,200
Roberts			34,600	34,600	3,800	38,400
Final Total	89,900	54,990	231,040	375,930	182,200	558,130

Tonnage Factors used in Ore Calculations.

Solid Ore	8 cu ft./ton
Broken Ore	13 cu ft./ton
Dump Ore	14.2 cu ft./ton.

RECOMMENDATION.

It is recommended that further development of the (?) 1A Lode System on No. 3 Level be carried out, both north and south from 5440N, and also by testing the lode channel exposed in the face of the cross cut west of Station 356, and driving north of this lode channel. Consideration should be given to re-opening the drive south on 1A Lode on No. 2 Level, so that suitable vertical (winze and/or rise) connection can be made to No. 3 Level development. The 1B and 1C lode system should be fully explored north on No. 3 Level.

Consideration should be given to early exploration of the Bainbridge group of lodes by cross-cutting east from No. 3 Level at 5400N, for a distance of some 500 feet. It is understood that the Mine Manager has already considered such exploration. This would also lead to access to the No. 3 and No. 4 Lodes, and Roberts Lode. Early exploration of the Bainbridge No. 3, No. 4 and Roberts Lodes is desirable, as together they contain the greater proportion of total reserves down to the No. 3 Level.

Exploration of Belsen Lode could be undertaken at a future date from the western side.

Depending upon the results of the above work, it may eventually be desirable to undertake exploration of the Western group of lodes.

B. F. Webb

B.F. Webb, M.Sc.

NO. 2 LEVEL

Co-ords.

Station	Dist.	Bearing	N	S	E	W	N	E
	00						5000	5000
16(250)	4.66	259° 30'		0.849		4.582	4999.151	4995.418
15A(251)	61.04	279° 52½'	10.468			60.136	5009.619	4935.282
11(252)	94.53	343° 24½'	90.594			26.993	5100.213	4908.289
Staple	4.77	173° 20'		4.738	0.554		5095.475	4908.843
10(253)	58.24	320° 42' 15"	45.071			36.885	5145.284	4871.404
9(254)	20.20	59° 45' 45"	10.172		17.452		5155.456	4888.856
8(255)	57.18	345° 33' 30"	55.373			14.260	5210.829	4874.596
7(256)	69.44	357° 36' 50"	69.380			2.891	5280.209	4871.705
6(257)	61.52	343° 42' 30"	59.050			17.258	5339.259	4854.447
5(258)	68.34	321° 24' 50"	53.419			42.623	5392.678	4811.824
4(259)	50.76	06° 07' 00"	50.471		5.409		5443.149	4817.233
3(260)	53.04	19° 41' 00"	49.941		17.865		5493.090	4835.098
2(261)	25.44	31° 01' 40"	21.800		13.113		5514.890	4848.211
1(262)	104.97	13° 13' 30"	102.186		24.015		5617.076	4872.226
10(253)	58.24	320° 42' 15"					5145.284	4871.404
12(263)	20.55	338° 38' 45"	19.139			7.483	5164.423	4863.921
13(264)	16.02	241° 01' 35"		7.76C		14.015	5156.663	4849.906
14(265)	47.13	267° 32' 20"		2.024		47.087	5154.639	4802.819
Old Mark	24.28	180° 58' 05"		24.277		0.410	5130.362	4802.409
14(265)	47.13	267° 32' 20"					5154.639	4802.819
15(266)	40.56	350° 17' 35"	39.979			6.839	5194.618	4795.980
Candle	29.75	305° 14' 10"	17.164			24.299	5211.782	4771.681
2(261)	25.44	31° 01' 40"					5514.890	4848.211
	17.04	13° 13' 30"	16.588		3.898		5531.478	4852.109
	26.72	26° 51' 30"	23.838		12.072		5555.316	4864.181
Co-ord.	16.21	290° 34' 00"	5.695			15.177	5561.011	4849.004
Surface:- Old Stadia Stations								
P.Mark	113.67	226° 25' 35"		78.36		82.33	4623.514	5269.751
H	278.71	229° 02' 55"		182.67		210.51	4519.204	5141.571

N.B. Figures in brackets refer to new mine station numbers.

Station	Dist.	Bearing	N	S	E	W	N	E
16 (2 level)		279° 52'30"					4999.151	4995.418
(Surface)								
A)	112.25	113° 47'40"		45.288	102.709		4953.863	5098.127
B)	246.66	140° 51'00"		191.284	155.729		4762.579	5253.856
11(350)	115.47	121° 43'00"		60.705	98.225		4701.874	5352.081
7(352)	365.33	318° 30'20"	273.639			242.048	4975.513	5110.033
6(353)	294.64	318° 26'30"	220.473			195.459	5195.986	4914.574
4(357)	51.19	354° 03'15"	50.915			5.303	5246.901	4909.271
2(358)	153.14	331° 12'45"	134.214			73.746	5381.115	4835.525
3(360)	58.76	39° 00'25"	45.661		36.984		5426.776	4872.509
Nail	132.99	355° 39'25"	132.608			10.071	5559.384	4862.438
5(361)	133.65	354° 58'25"	113.136			11.710	5559.912	4860.799
7(352)	365.33	318° 30'20"					4975.513	5110.033
12(351)	262.79	138° 41'30"		197.399	173.470		4778.114	5283.503
6(353)		318° 26'30"					5195.986	4914.574
8(354)	128.25	161° 33'		121.658	40.588		5074.328	4955.162
6(353)		318° 26'30"					5195.986	4914.574
9(355)	51.03	254° 11'40"		13.899		49.101	5182.087	4865.473
10(356)	39.65	204° 48'55"		35.989		16.641	5146.098	4848.832
Face	30.92	231° 06'25"		19.414		24.066	5126.684	4824.766
2(358)		331° 12'45"					5381.115	4835.525
1(359)	75.82	331° 04'	66.356			36.681	5447.471	4798.844
Face S	37.50	193° 28'		36.469		8.733	5411.002	4790.111
Face N	32.50	03° 57'	32.423		2.239		5479.894	4801.083
Nail		355° 39'25"					5559.384	4862.438
Co-ord.	16.26	276° 33'55"	1.859			16.153	5561.243	4846.285
5(361)	133.65	354° 58'25"					5559.912	4860.799
Candle	35.482	345° 50'55"	34.405			8.675	5594.317	4852.124
Candle	35.57	347° 24'55"	34.715			7.750	5629.032	4844.374
Candle	22.081	01° 32'55"	22.073		0.597		5651.105	4844.971

N.B. Figures in brackets refer to new mine station numbers.

REDUCED LEVELSNO. 3 LEVEL

Survey No.	N	E	R.L.	New (Mine) St. No.
1	5447.470	4798.846	1999.305	359
2	5381.114	4835.527	1998.99	358
3	5426.774	4872.511	1999.04	360
4	5246.900	4909.273	1998.69	357
5	5559.910	4860.801	1999.695	361
6	5195.986	4914.576	1998.61	353
7 (C2)	4975.513	5110.035	1998.22	352
8 (C4)	5074.328	4955.164	1998.62	354
9	5182.087	4865.475	1998.65	355
10	5146.098	4848.834	1998.29	356
11 (outside)	4701.874	5352.083	1997.51	350
12	4778.114	5283.503	1996.93	351

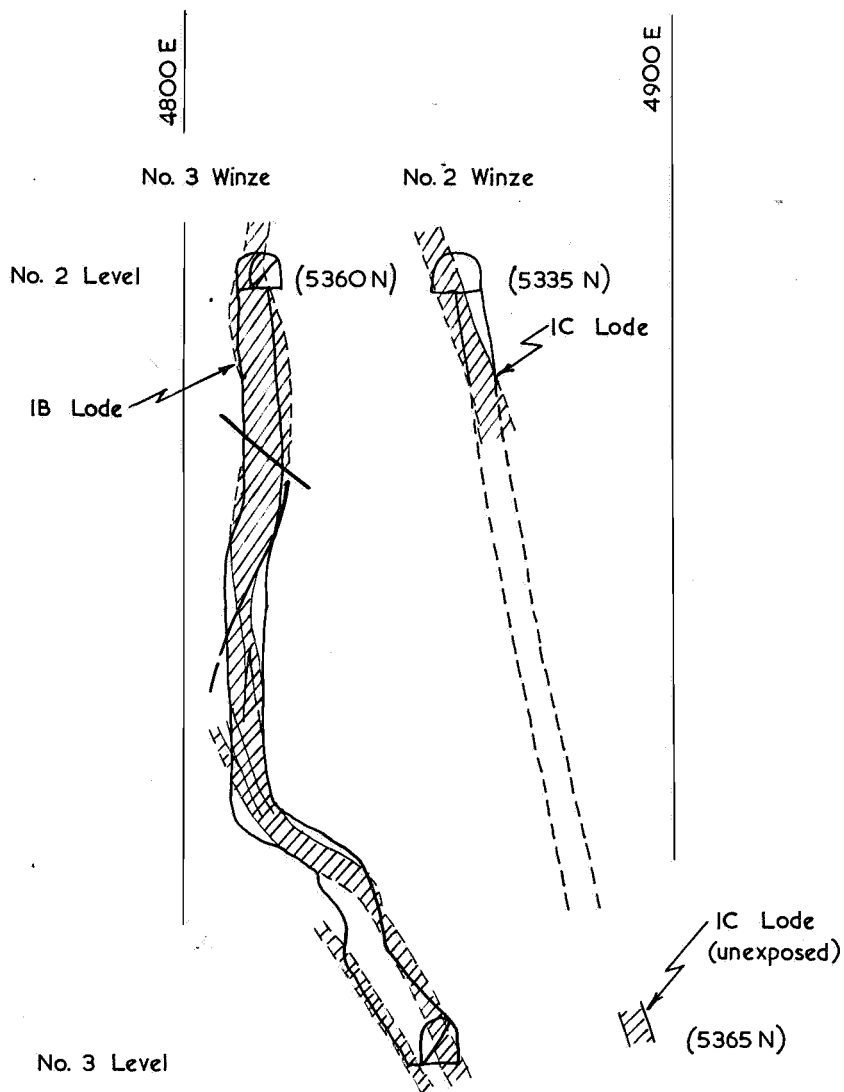
NO. 2 LEVEL

1	5617.050	4872.226	2161.94	262
2	5514.864	4848.211	2161.09	261
3	5493.087	4835.098	2160.41	260
4	5443.146	4817.233	2160.58	259
5	5392.675	4811.824	2158.62	258
6	5339.256	4854.447	2153.890	257
7	5280.206	4871.705	2152.475	256
8	5210.826	4874.596	2149.335	255
9	5155.453	4888.856	2148.15	254
10	5145.283	4871.406	2147.61	253
11	5100.212	4908.291	2146.88	252
12	5164.422	4863.923	2147.425	263
13	5156.662	4849.908	2147.860	264
14	5154.639	4802.822	2149.98	265
15	5194.618	4795.983	2150.695	266
16	4999.150	4995.420	2144.13	250
15A	5009.618	4935.284	2144.49	251
201	5000.0	5000.0	2144.0	

NO. 4 WINZE

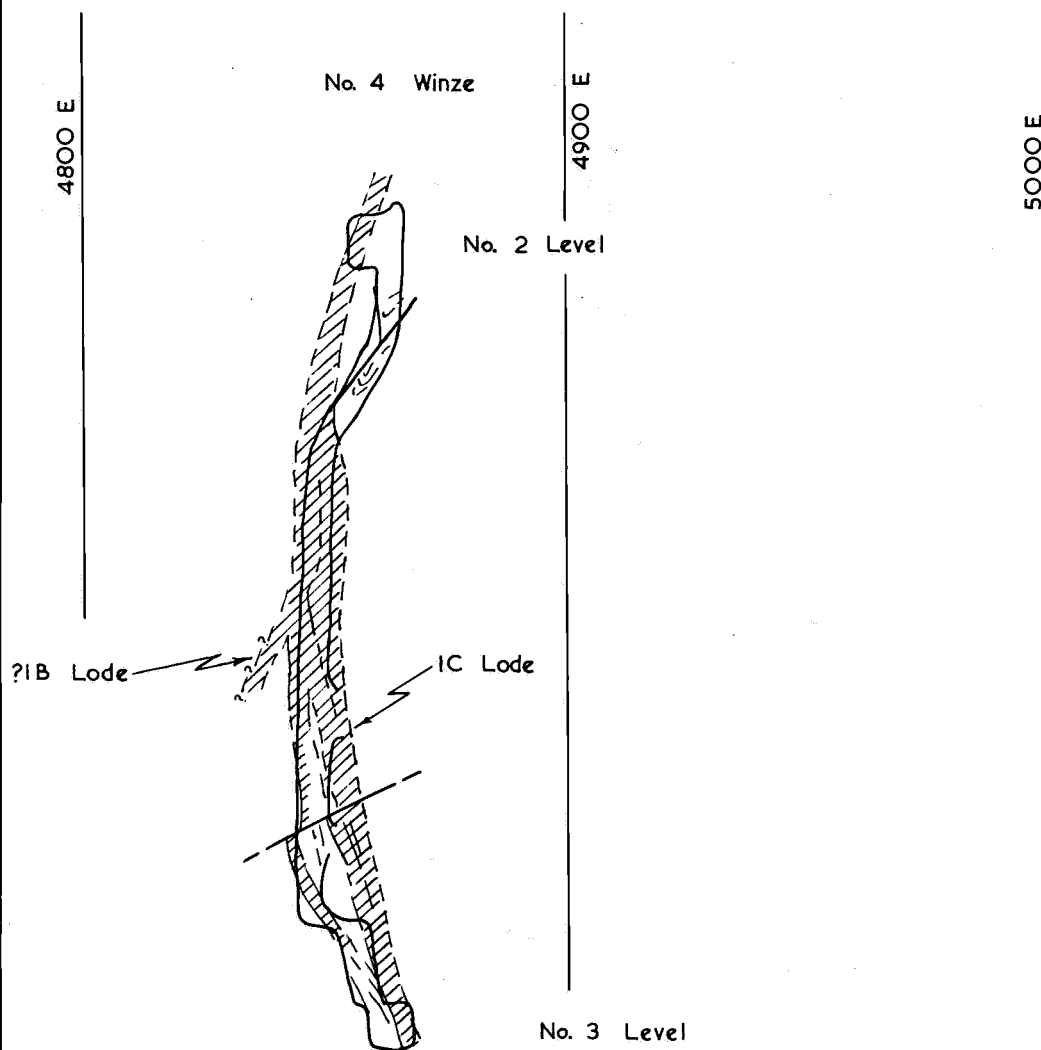
NO. 2 LEVEL

2161.87

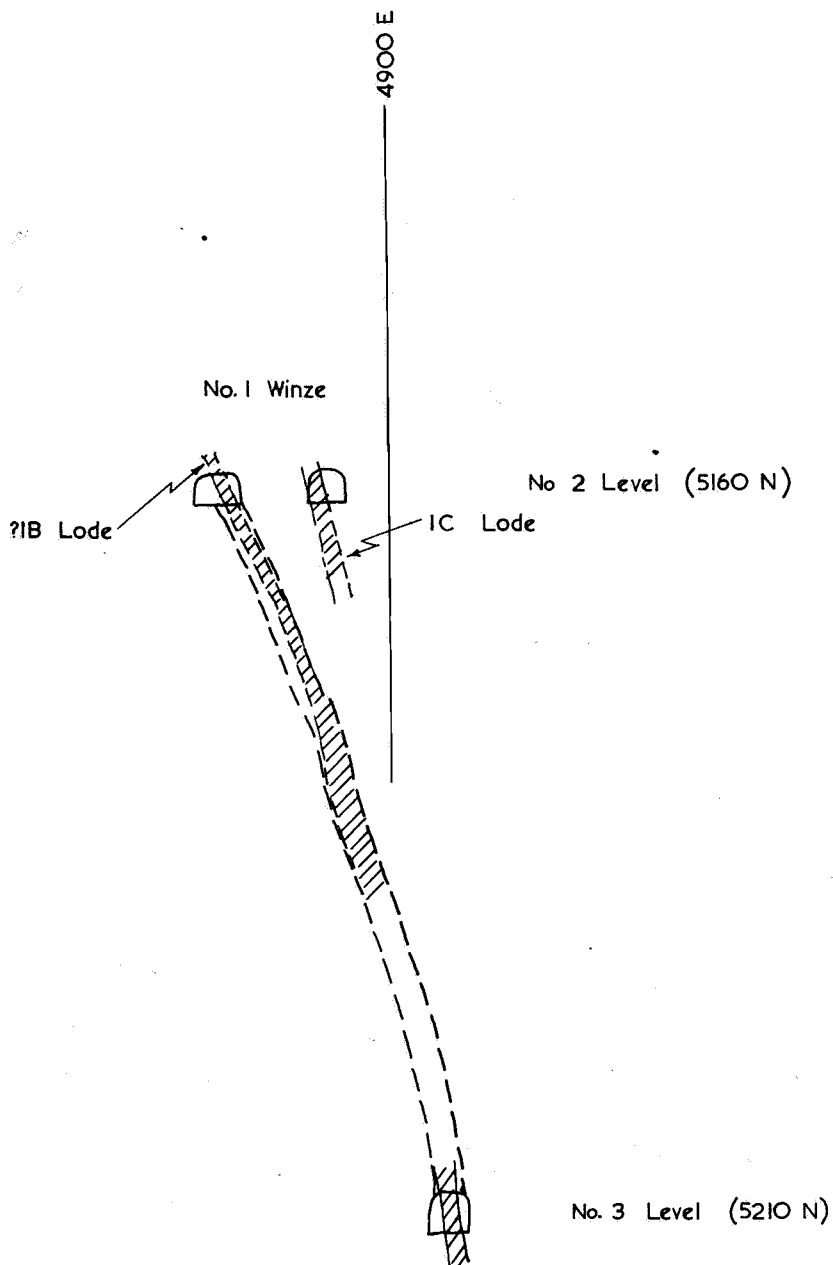


COMPOSITE PROJECTED SECTION
LOOKING NORTH

1" = 40'



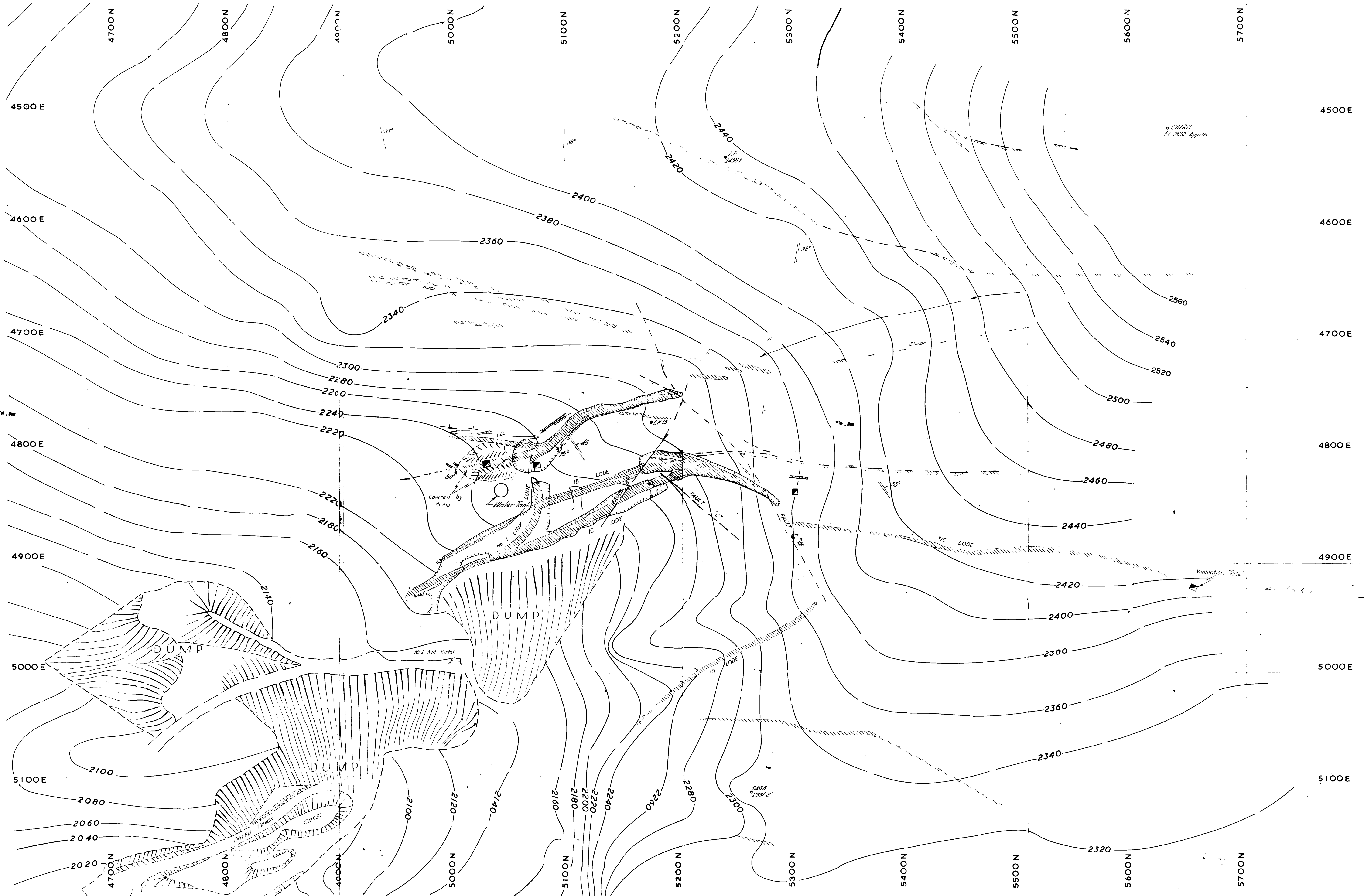
PROJECTED SECTION AT 5560 N
LOOKING NORTH



PROJECTED SECTION
LOOKING NORTH



SOUTH AUSTRALIAN BARYTES LIMITED
ORAPARINNA BARYTES MINE
No. 3 LEVEL
GEOLOGICAL PLAN
SCALE 1 INCH TO 40 FEET

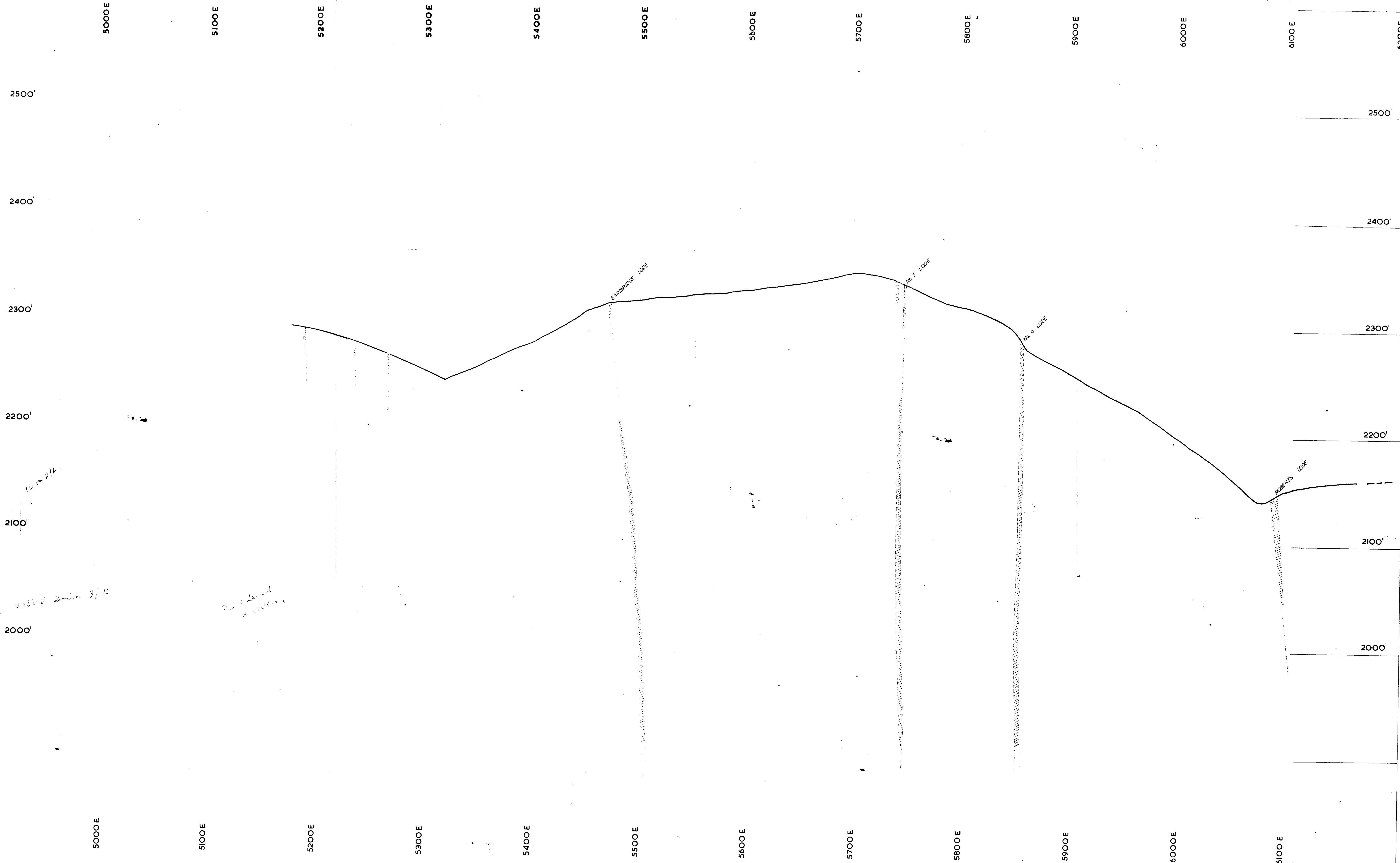


SOUTH AUSTRALIAN BARYTES LIMITED
ORAPARINNA BARYTES MINE
MINE LODE SYSTEM
SURFACE PLAN
SCALE 1 INCH TO 40 FEET

3757(1)-3

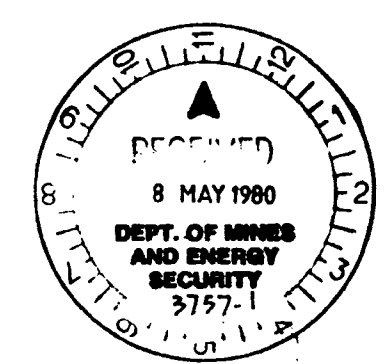


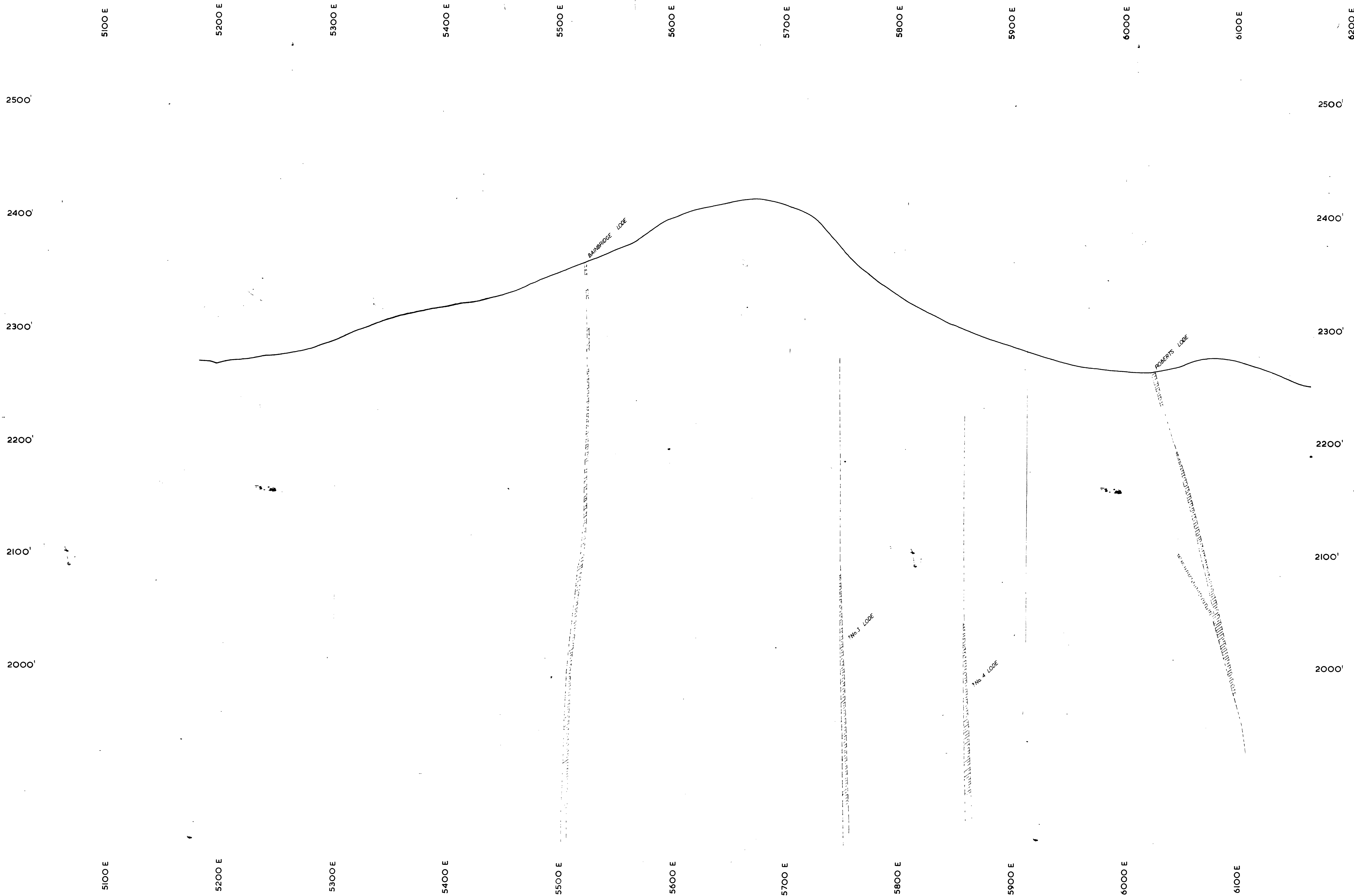
November, 1963



SOUTH AUSTRALIAN BARYTES LIMITED
ORAPARINNA BARYTES MINE
CROSS SECTION 5900N (4900E-6200E)
SCALE 1 INCH TO 40 FEET

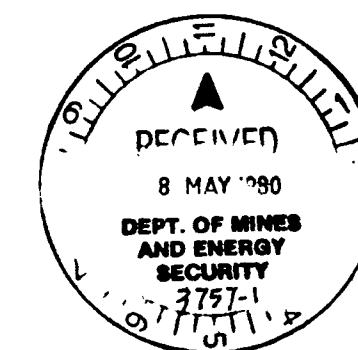
3757(C)-4



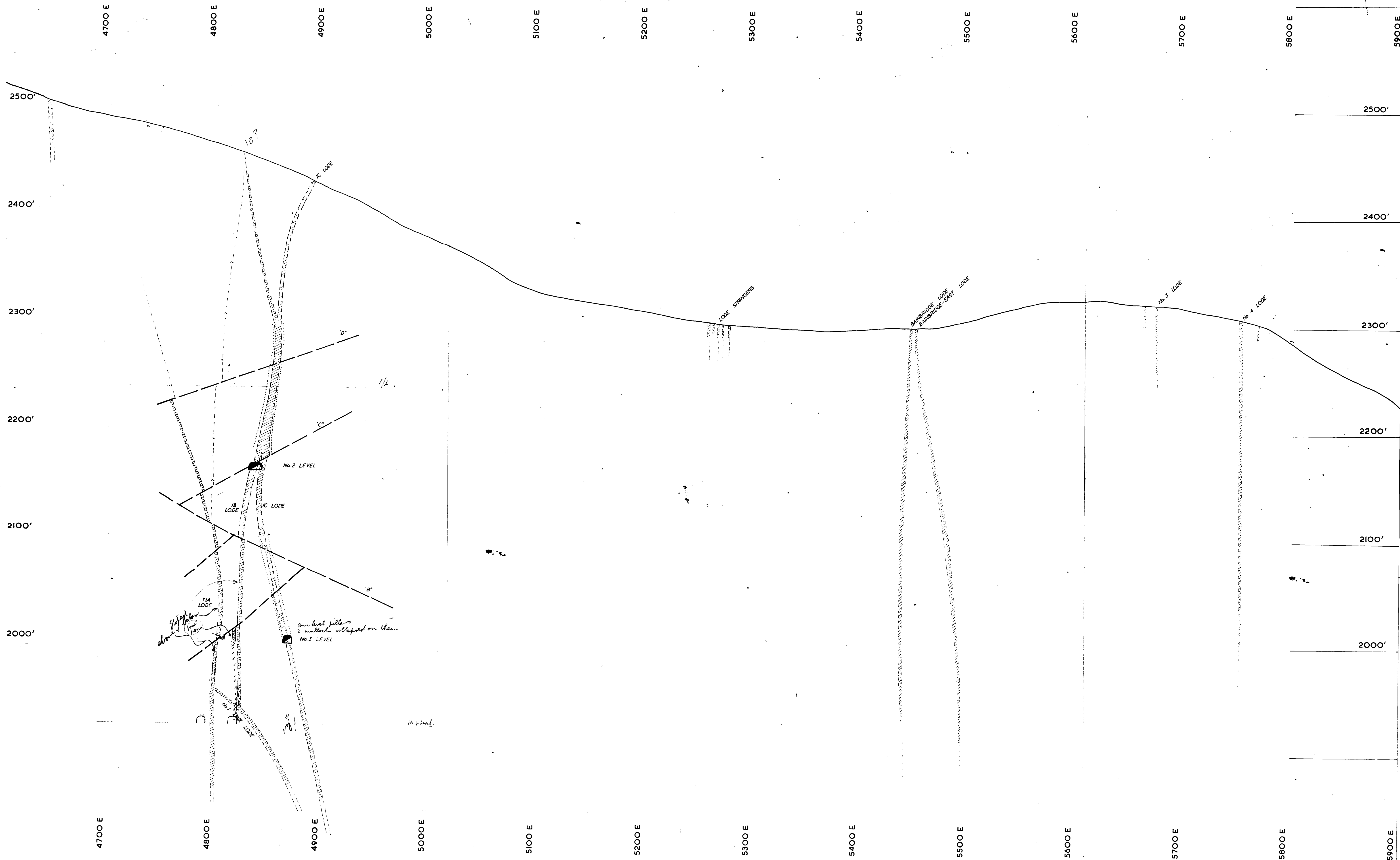


SOUTH AUSTRALIAN BARYTES LIMITED
 ORAPARINNA BARYTES MINE
 CROSS SECTION 6100N (5000E-6200E)
 SCALE 1 INCH TO 40 FEET

3757(1)-5

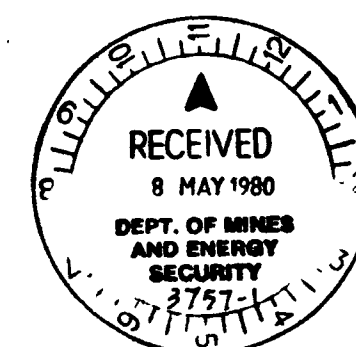


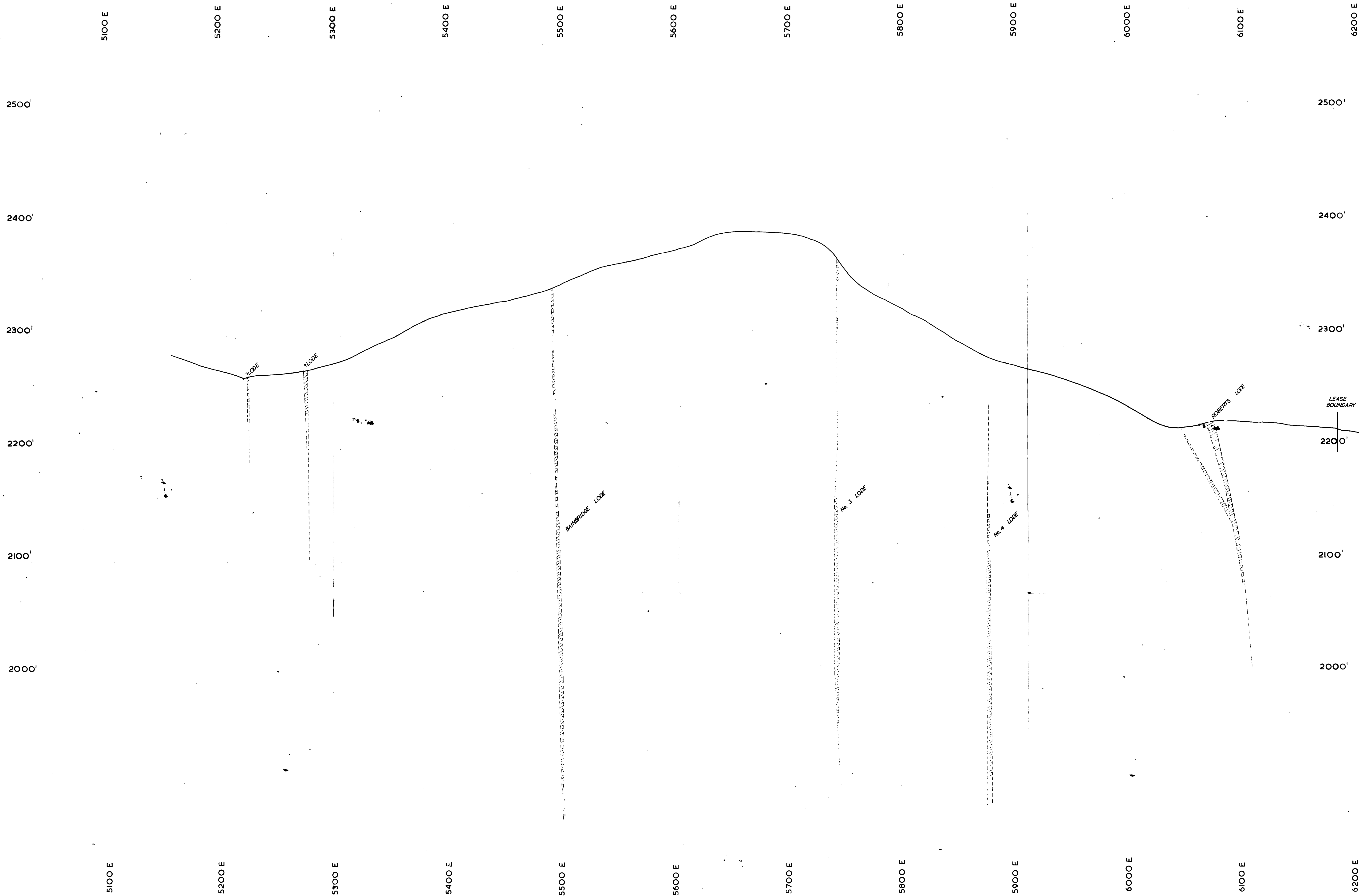
November, 1963



SOUTH AUSTRALIAN BARYTES LIMITED
ORAPARINNA BARYTES MINE
CROSS SECTION 5500N (4600E-5900E)
 SCALE 1 INCH TO 40 FEET

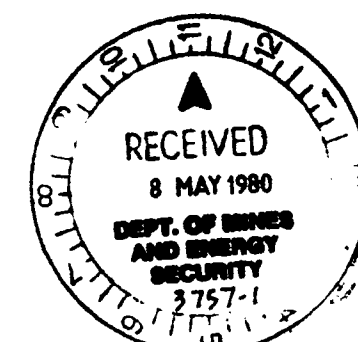
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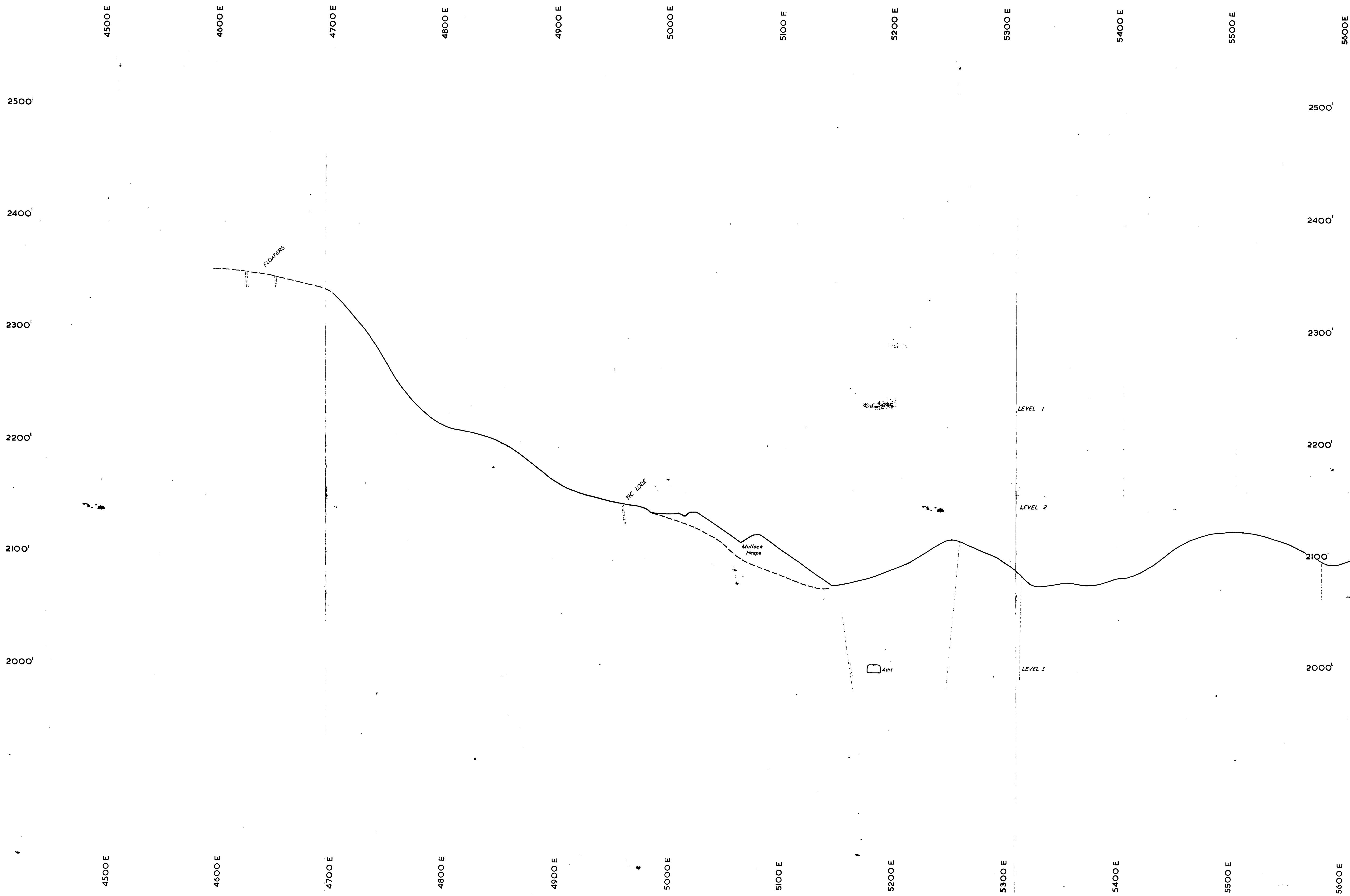




SOUTH AUSTRALIAN BARYTES LIMITED
ORAPARINNA BARYTES MINE
CROSS SECTION 6000 N (5000E-6200E)
SCALE 1 INCH TO 40 FEET

3757(1)-7

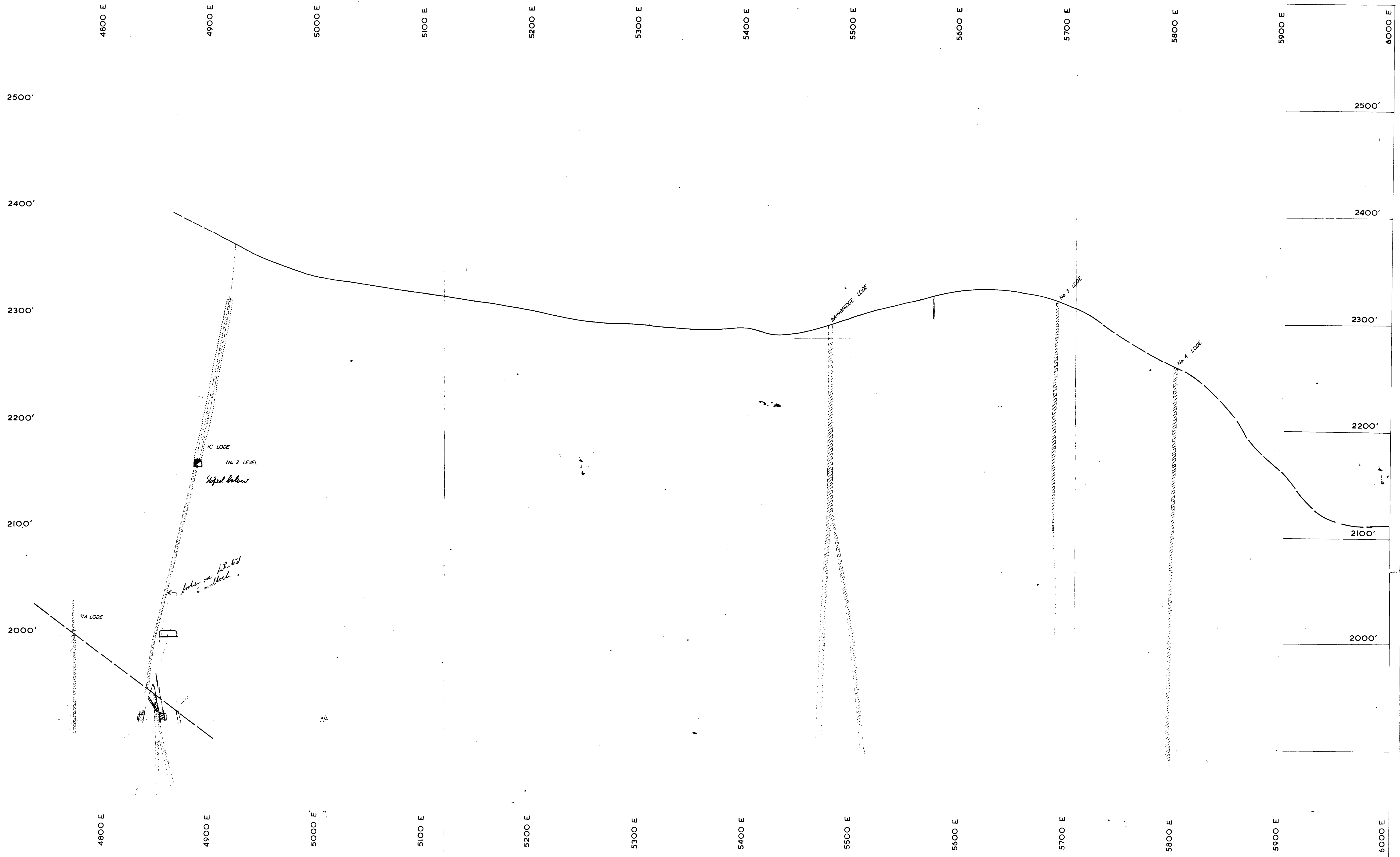




SOUTH AUSTRALIAN BARYTES LIMITED
ORAPARINNA BARYTES MINE
CROSS SECTION 4900N (4400E-5600E)
SCALE 1 INCH TO 40 FEET

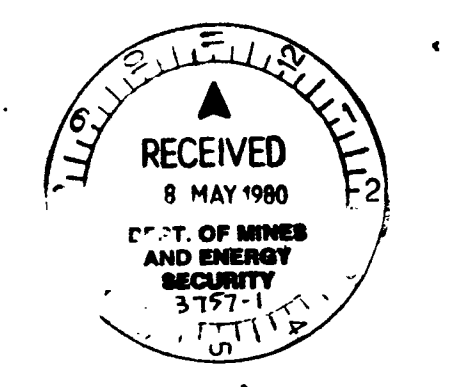
37570-9

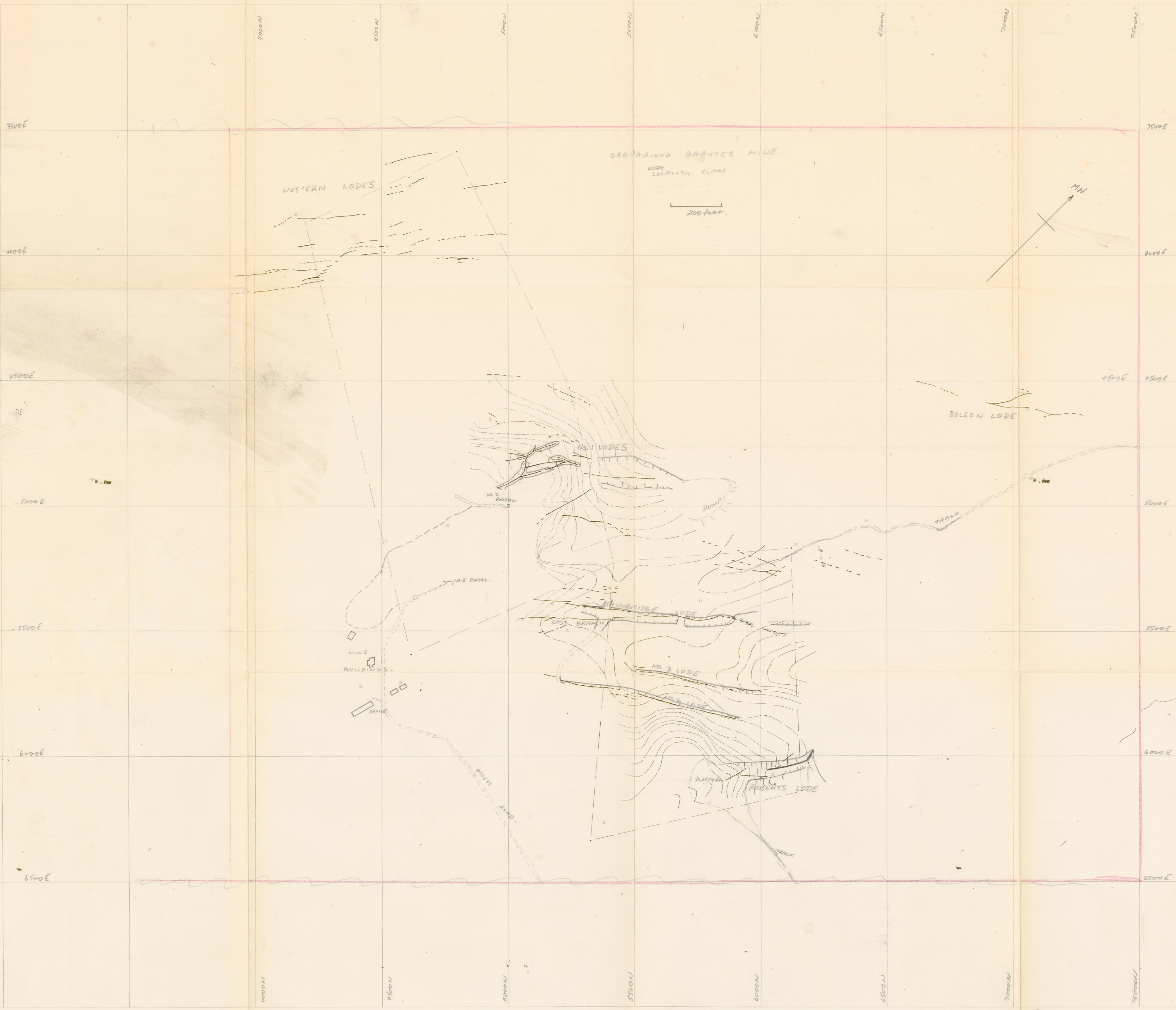




SOUTH AUSTRALIAN BARYTES LIMITED
ORAPARINNA BARYTES MINE
CROSS SECTION 5700N (4700E - 6000E)
SCALE 1 INCH TO 40 FEET

3757(1)-12





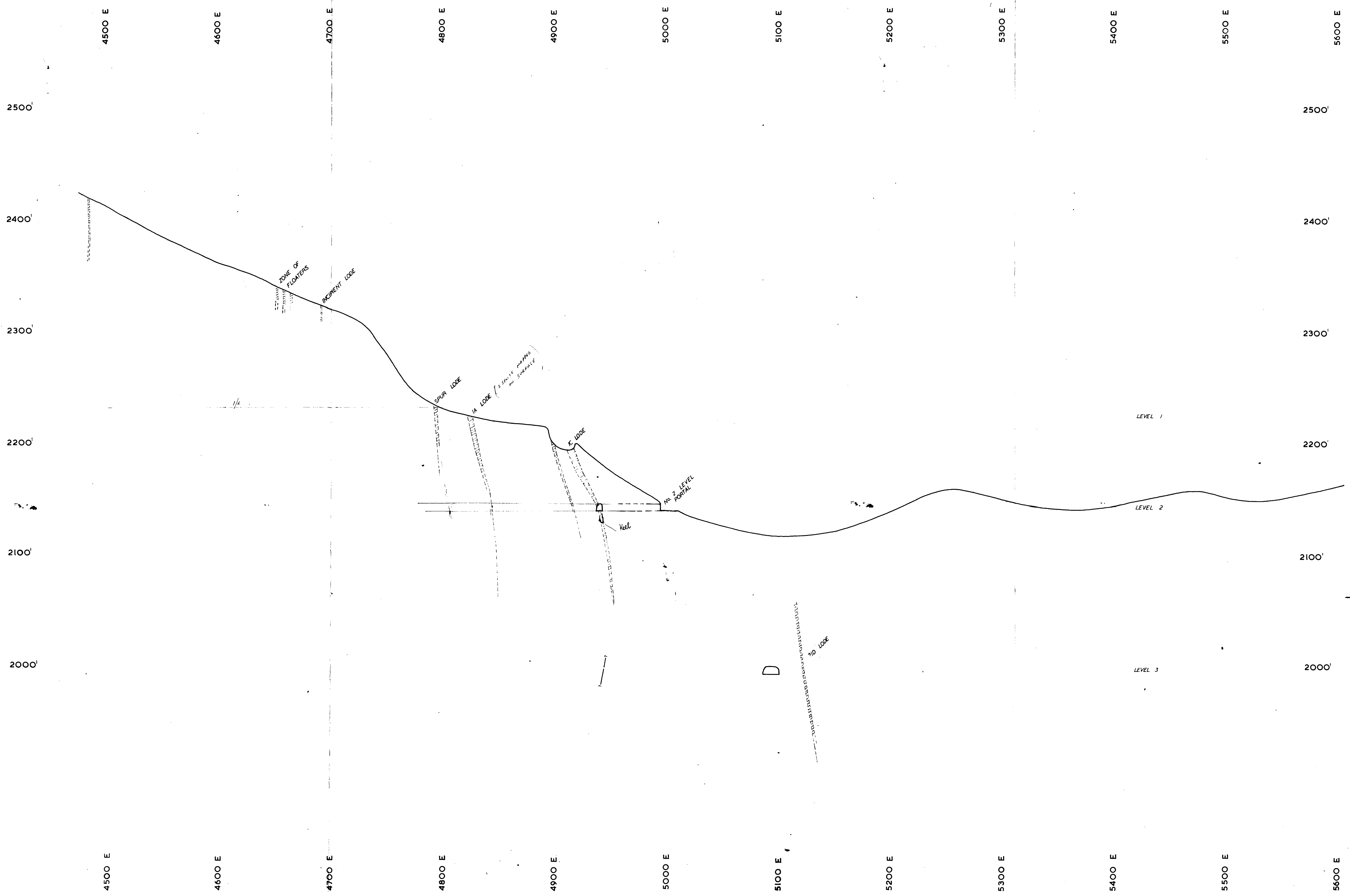
SOUTH AUSTRALIAN BARYTES LIMITED
 ORAPARINNA BARYTES MINE

1" = 200'
 Reduce to 1" = 400'

(1) Delete contours
 (2) Write words inside
 (3)

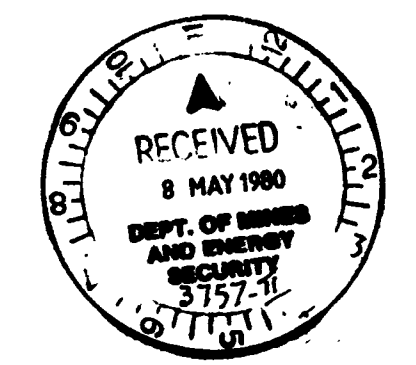
3757(1)-13



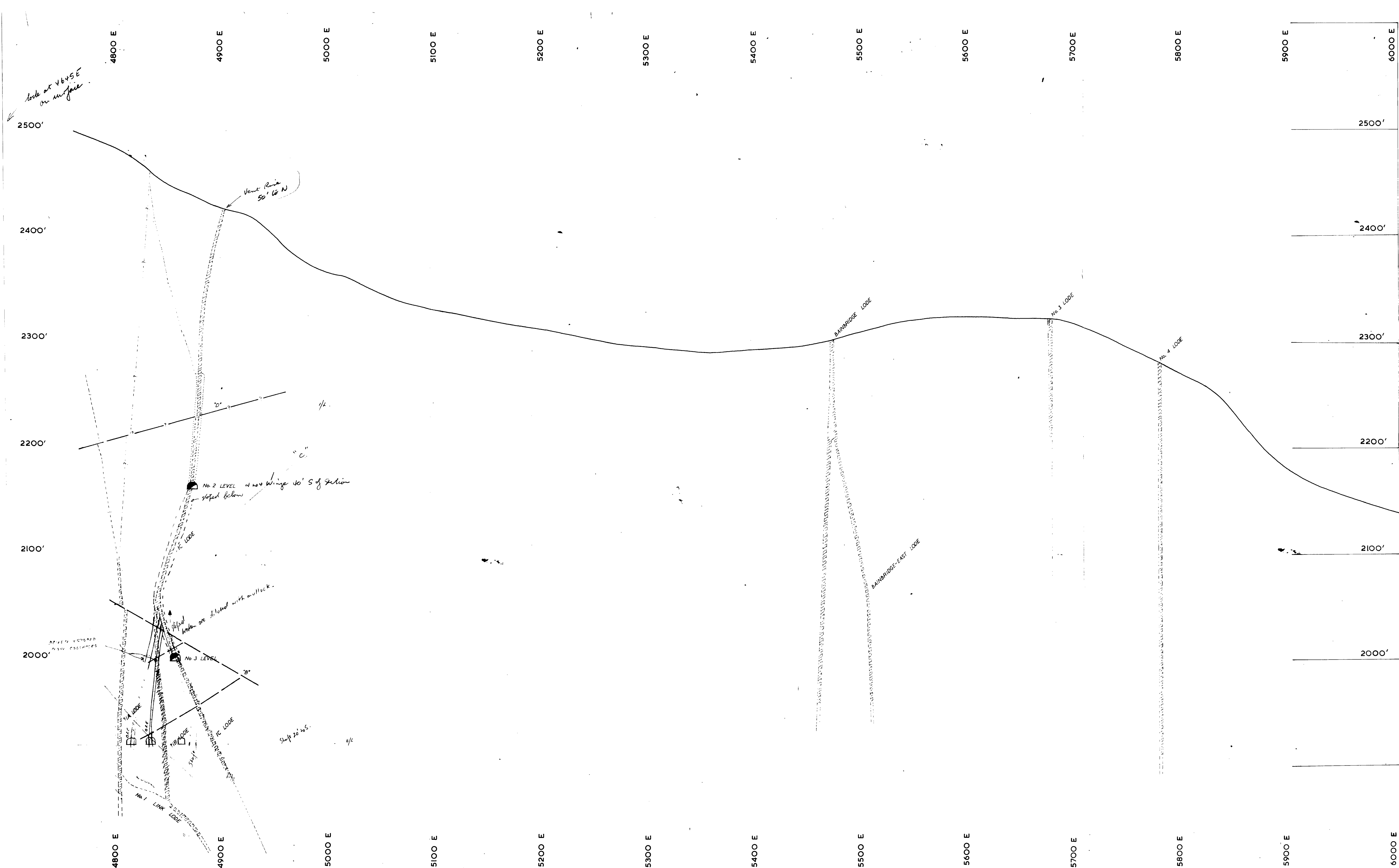


SOUTH AUSTRALIAN BARYTES LIMITED
ORAPARINNA BARYTES MINE
CROSS SECTION 5000N (4400E-5600E)
 SCALE 1 INCH TO 40 FEET

3757(II)-1

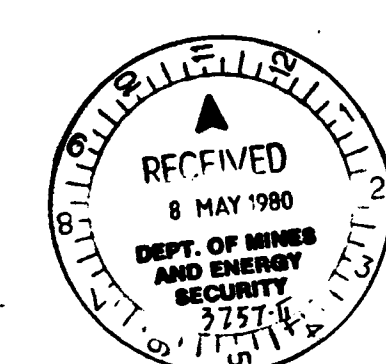


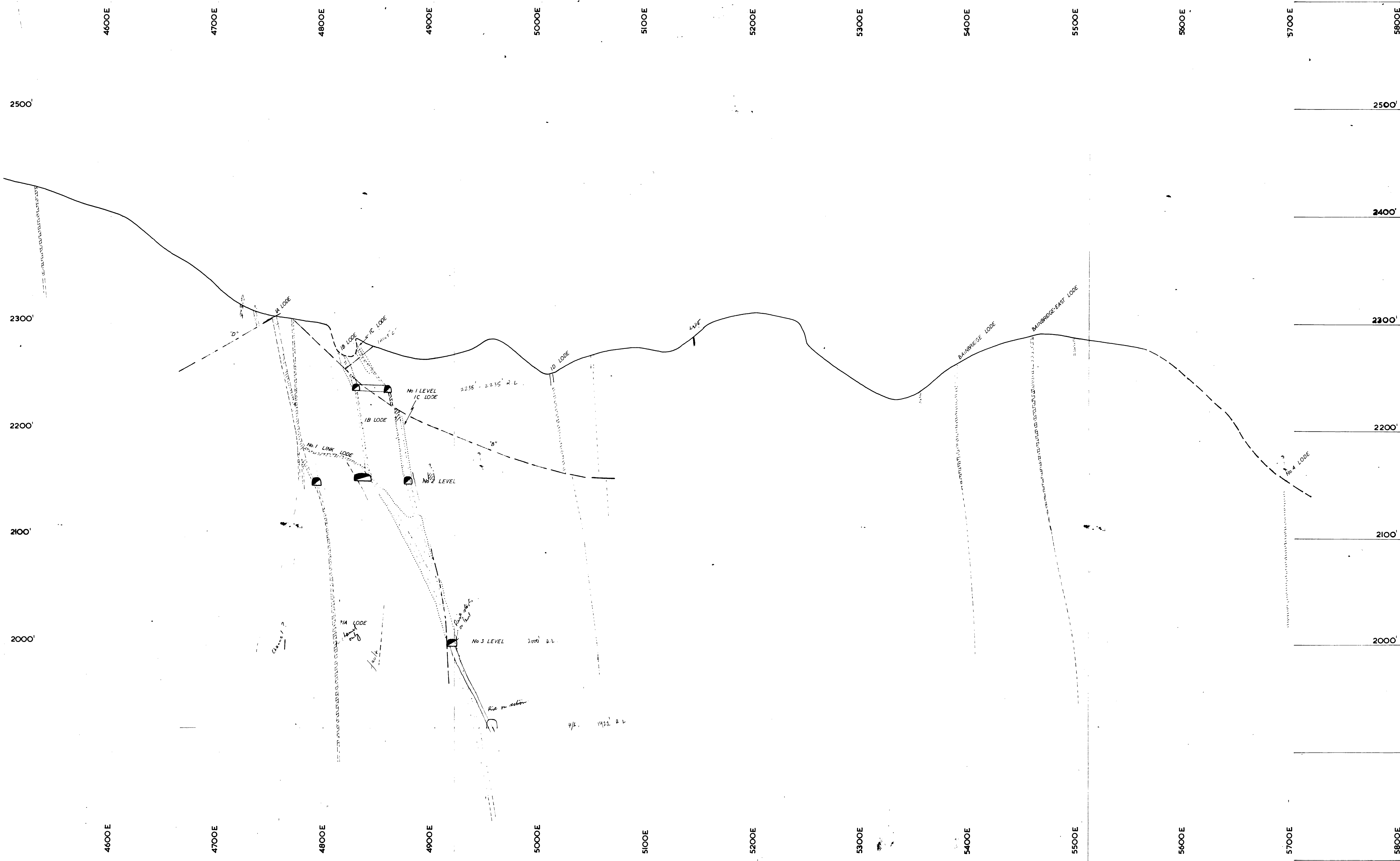
November, 1963.



SOUTH AUSTRALIAN BARYTES LIMITED
 ORAPARINNA BARYTES MINE
 CROSS SECTION 5600N (4700E-6000E)
 SCALE 1 INCH TO 40 FEET

3757(II)-2

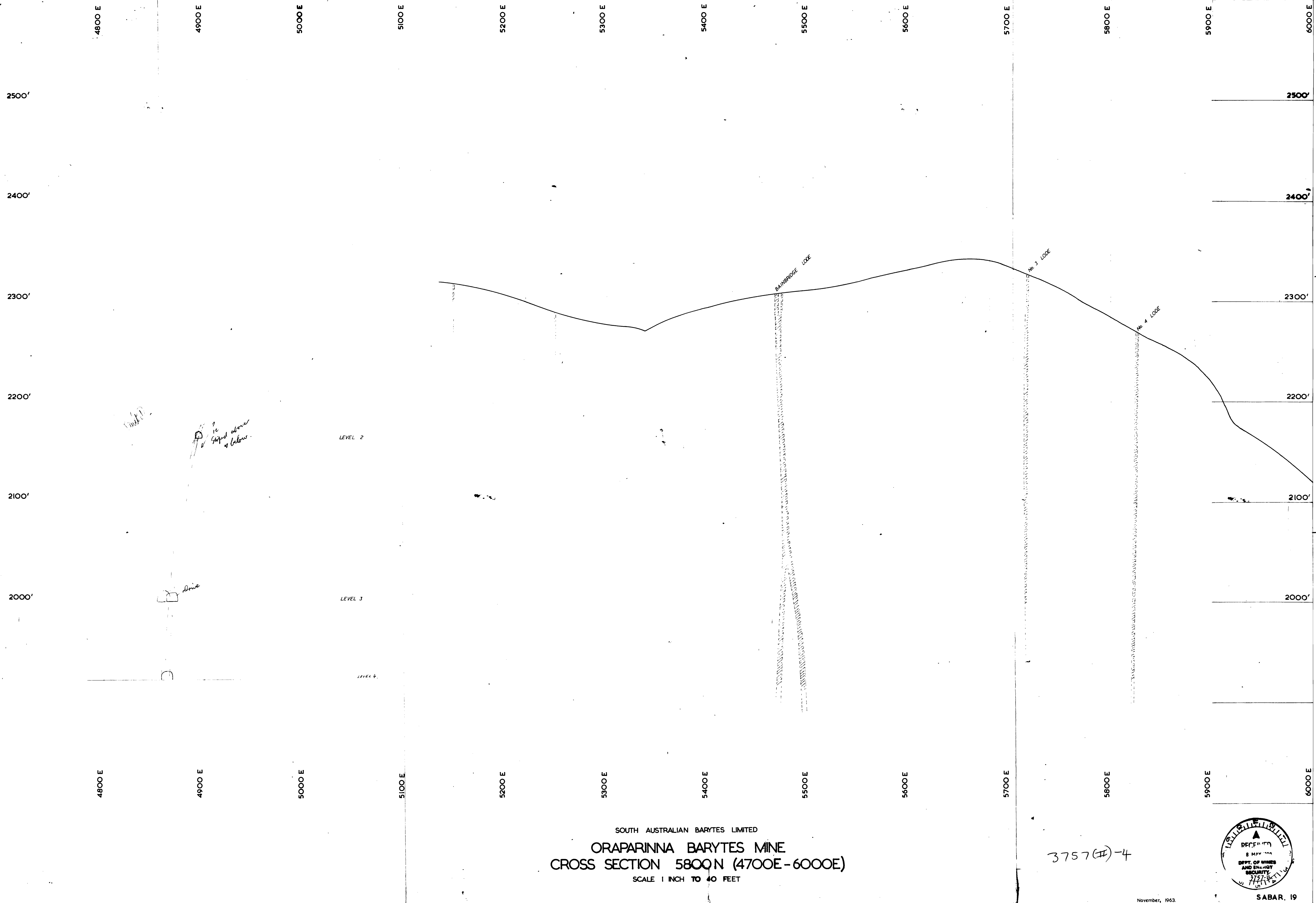




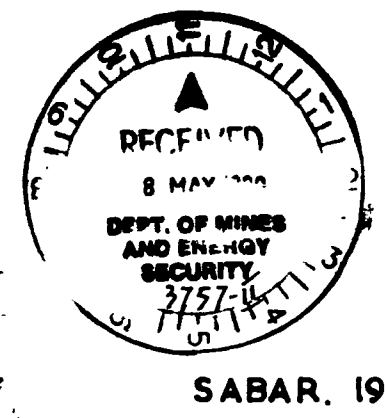
SOUTH AUSTRALIAN BARYTES LIMITED
ORAPARINNA BARYTES MINE
CROSS SECTION 5200N (4500E-5800E)
 SCALE 1 INCH TO 40 FEET

3757(II)-3

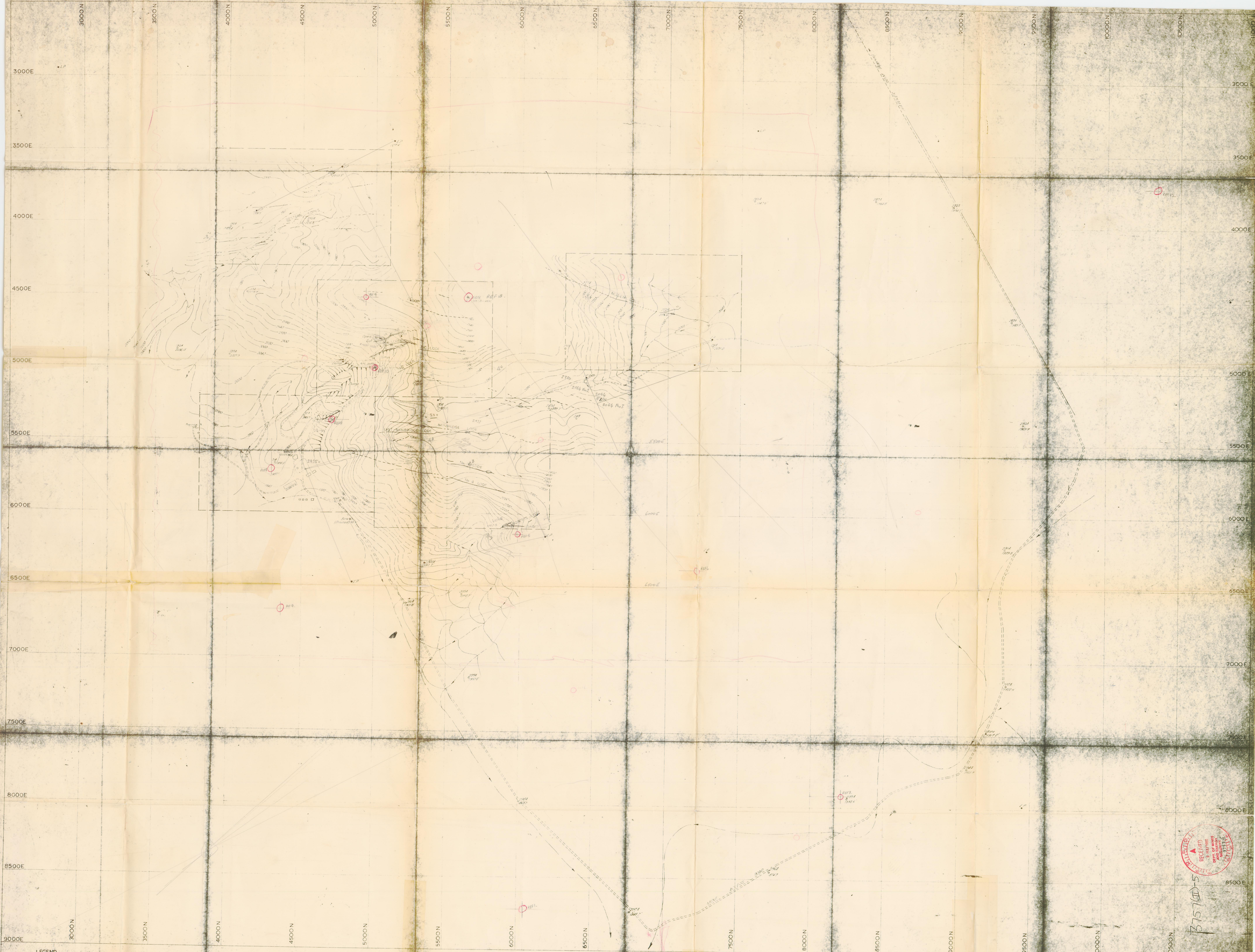




SOUTH AUSTRALIAN BARYTES LIMITED
ORAPARINNA BARYTES MINE
CROSS SECTION 5800 N (4700 E - 6000 E)
SCALE 1 INCH TO 40 FEET



November, 1963.

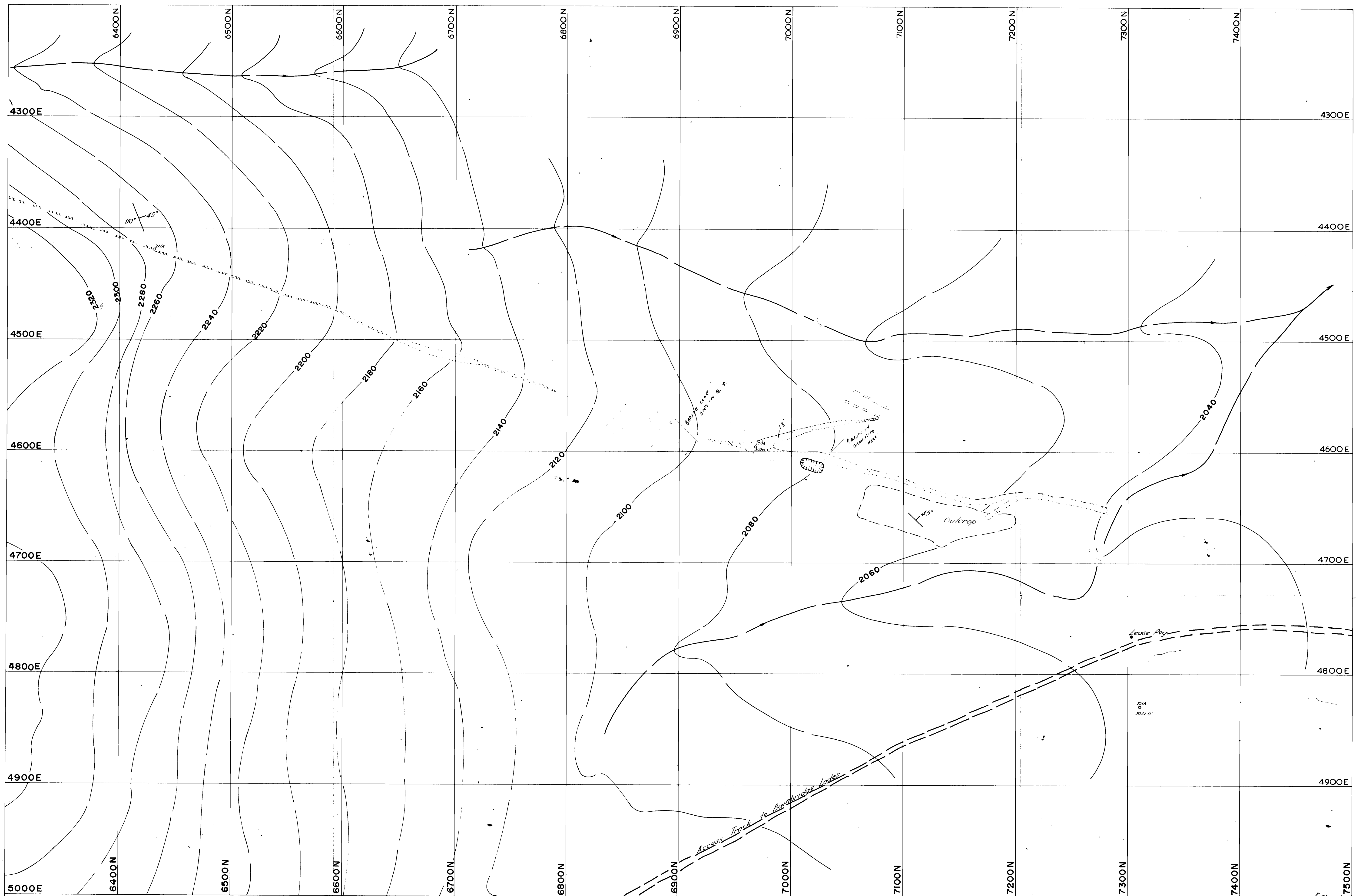


LEGEND
• LEASE PEGS
○ SURVEY STATION

SOUTH AUSTRALIAN BARYTES LIMITED
ORAPARINNA BARYTES MINE
GENERAL SURFACE PLAN : LEASE AREA
SCALE 1 INCH = 200 FEET

ORAPARINNA MINE
GENERAL SURFACE PLAN

RECEIVED
31/10/5
B75740-5



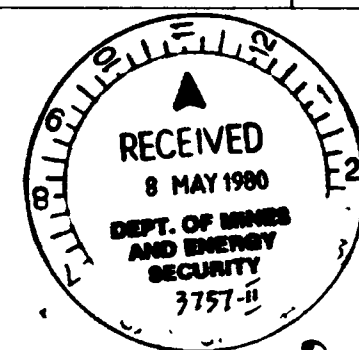
SOUTH AUSTRALIAN BARYTES LIMITED

ORAPARINNA BARYTES MINE

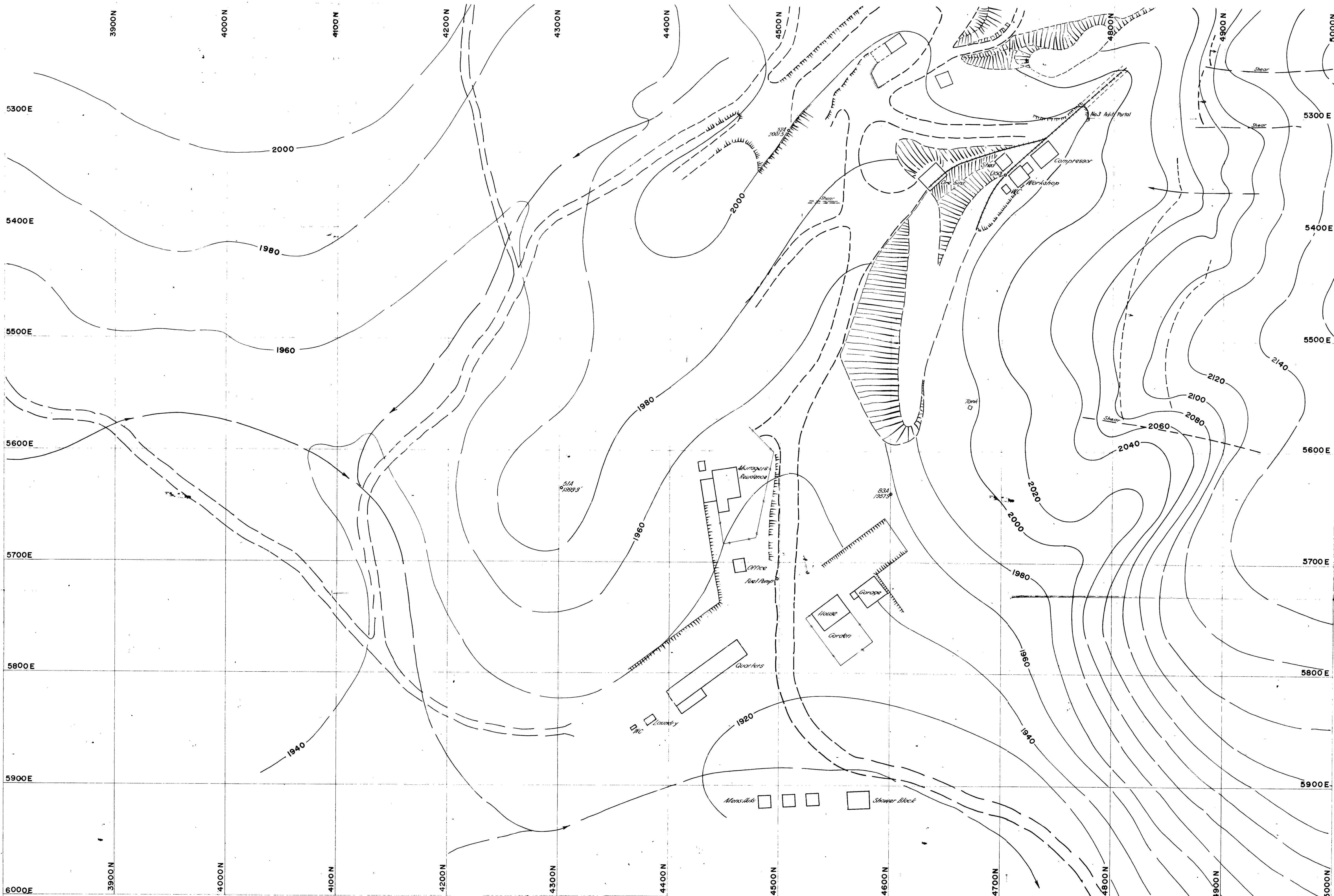
SURFACE PLAN - BELSEN LODES

SCALE 1 INCH TO 40 FEET

3757(II)-7



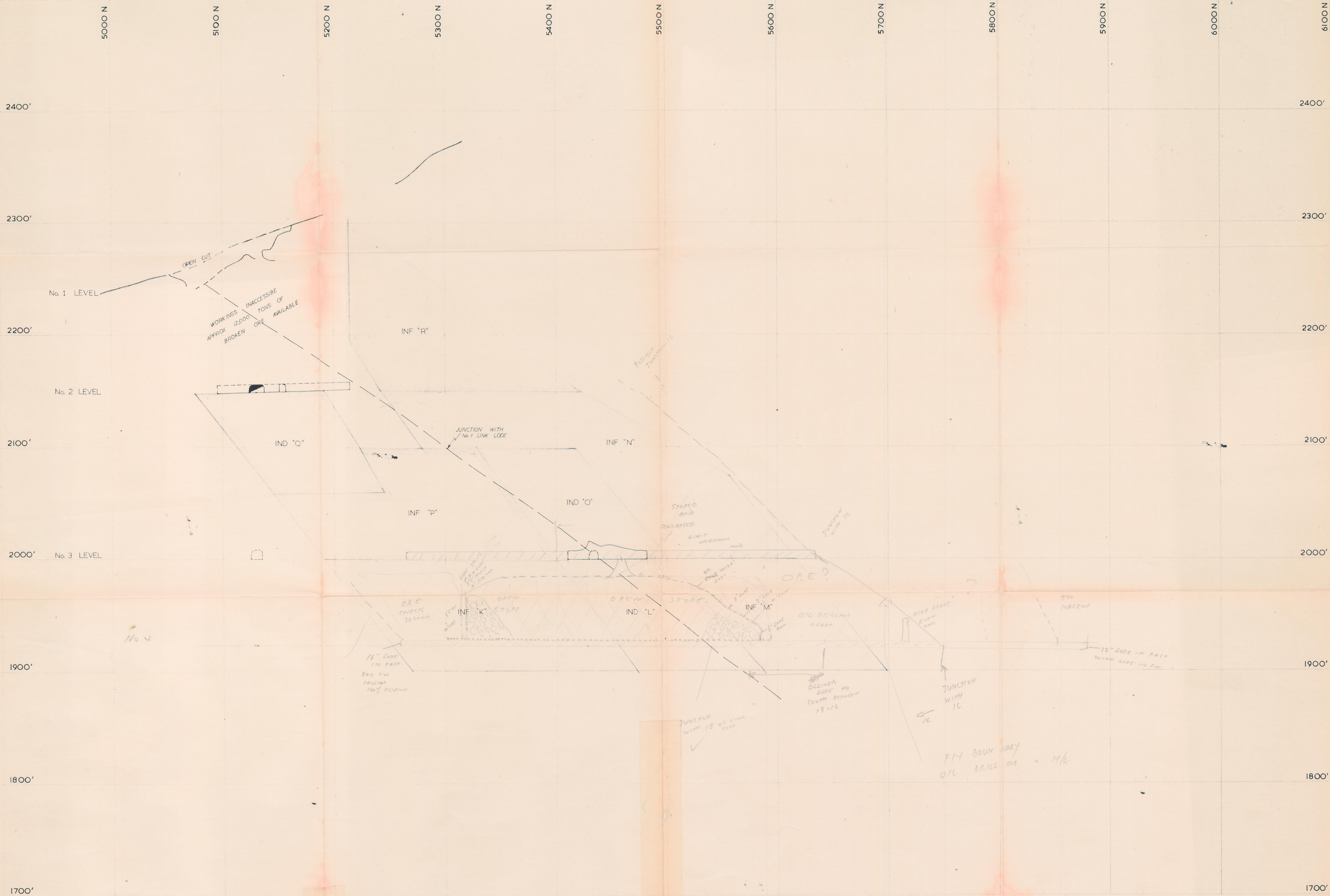
BELSEN



SOUTH AUSTRALIAN BARYTES LIMITED
 ORAPARINNA BARYTES MINE
 SURFACE PLAN - MINE AREA
 SCALE 1 INCH TO 40 FEET

3757(11)-9

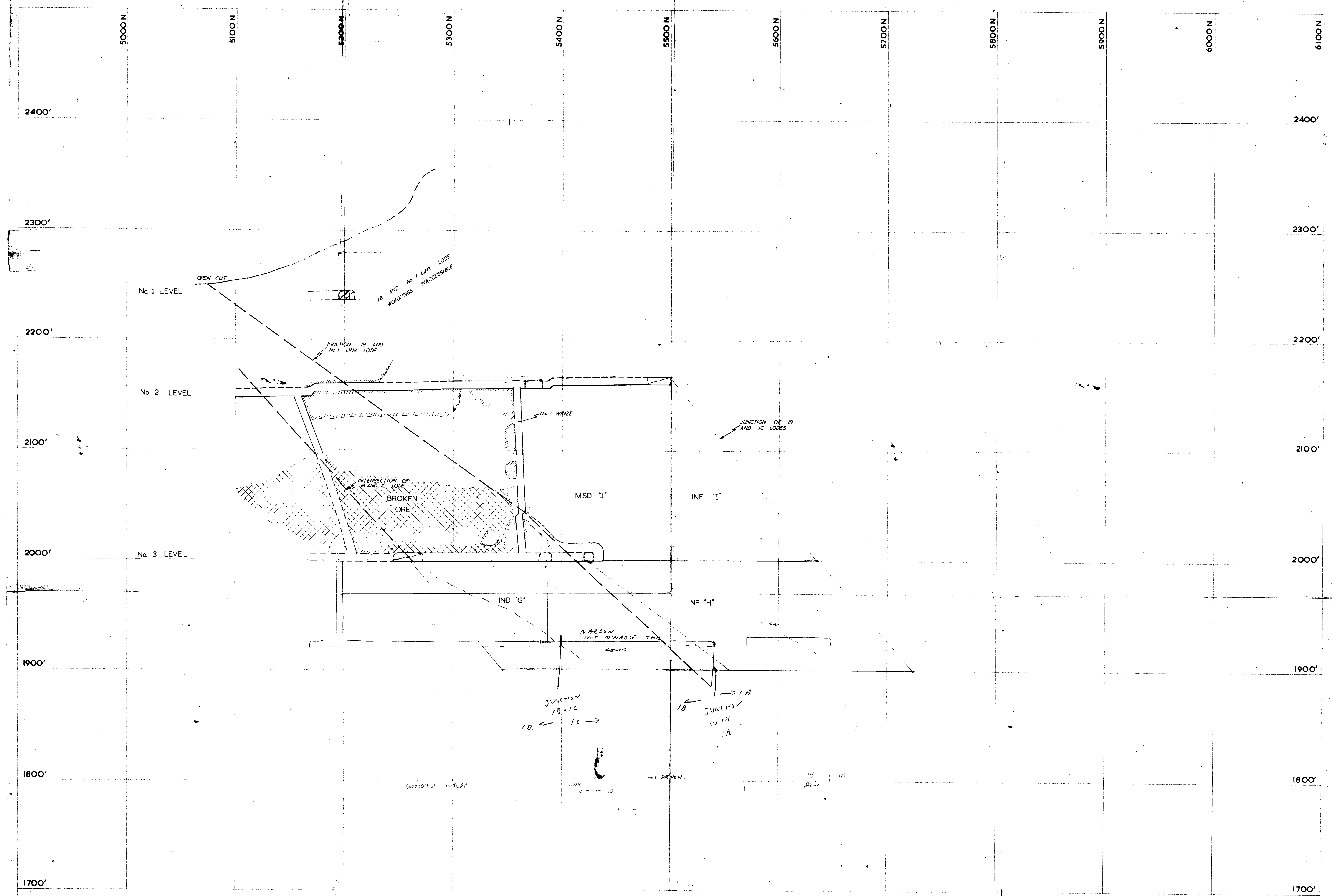




SOUTH AUSTRALIAN BARYTES LIMITED
ORAPARINNA BARYTES MINE
IA LODE LONGITUDINAL SECTION
SCALE 1 INCH TO 40 FEET

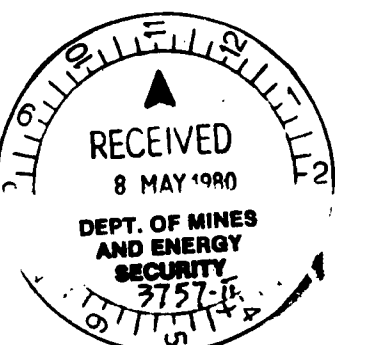
3757(II)-10





SOUTH AUSTRALIAN BARYTES LIMITED
ORAPARINNA BARYTES MINE
IB LODE LONGITUDINAL SECTION
SCALE 1 INCH TO 40 FEET

3757(II)-11



ENV 3757.-III

222

SURVEY OF BARITE DEPOSITS
FLINDERS RANGES
SOUTH AUSTRALIA.

R.B. REID
CATHCART MINING CORP.
18 MACKINNON PARADE.
NORTH ADELAIDE. 5006
22 - 1 - 1974

This report was compiled on behalf of Newbold General Refractories Limited during December 1973 from reports, both published and unpublished, available from the South Australian Department of Mines; Exploration Licence reports, and the author's knowledge of barite deposits in the Flinders Ranges.

Although many of the reports quoted are several years old, the information contained therein is still relevant in most cases and deposits extensively worked since the time of the respective reports have been visited by the author to gain up to date information.

THE DEPOSITS.

As the mill at Quorn, presently operated under receivership by South Australian Barytes, has an influence on the economic viability of the deposits, they have been arranged in order of distance from Quorn. With minor exceptions this listing would also be in order of distance from Adelaide, 220 miles south of Quorn.

Reserves figures on the various deposits are those the author considers to be easily recoverable by open-cut mining, except where otherwise specified.

All available information on title is included in this list and no claims or leases carried exemptions from labour conditions.

1. SALTIA. (1 mile south of Saltia, 12 miles, by road, west of Quorn).

The lode outcrops intermittently for a distance of 500 feet. It has been worked to a depth of 50 feet in parts, but mining ceased because of the large amount of hematite in the barite.

RESERVES: 1,000 tonnes oil drilling.

2. WILMINGTON (GREAT GLADSTONE MINE). (14 miles south of Quorn)

Specular hematite and secondary copper minerals are associated with the barite at the Great Gladstone Mine.

Approximately 3,000 tonnes of oildrilling grade barite was recovered from this and adjacent lodes to the south in 1971-72.

The most accessible ore has been removed from this area, but several priority choosed veins still remain in cultivated land and may produce amounts

similar to the above ledges.

RESERVES: Possible 2,000 - 5,000 tonnes.

024

3. YANYARRIE. (30 miles east of Quorn).

This deposit is a replacement of purple siltstones in a small "diapir". It was discovered in 1971 by Gold - Copper Explorations N.L. during a stream - sediment geochemical survey and has since been costeamed to a depth of six feet. Approximate outcrop dimensions are 1,500 feet by 100 feet and apart from the costeams there is no indication of depth.

Sampling by the author indicates an average grade between 70% and 80%. Metallurgical testing showed that jigging at minus 3/8 inch did not give a product suitable ~~four~~ oil-drilling grade (pers.com). It is suggested however that this material blended with a higher grade barite may meet specifications for oil-drilling.

TITLE: M C 210 and 211 Gold ~~Copper~~ Exploration Ltd.

23 Peel Street. ADELAIDE.

RESERVES: Approximately 12,000 tonnes per vert foot 70% Ba SO₄.

M. Lease 4365 & 4364.

4. CARRIETON. (2 miles south of Carrieton railway station, 38 miles east of Quorn).

Small outcrops of barite occur in "diapiric" breccia.

5. OLADDIE. (4 miles east, by road, from Oladdie homestead, 45 miles east of Quorn).

High grade barite, is contained in two veins, striking north. Where these veins have been worked they are 6 feet to 8 feet wide. They can be traced intermittently for 300 feet, but become quartz rich to the north.

Approximately 3,000 tonnes of this ore was mined and milled for oil-drilling grade during 1971-72 by Jedda Mining N.L. This material was unsaleable due to host rock contamination and the majority is stock-piled at Orreroo. Further mining of this deposit appears impracticable.

RESERVES: 2,000 tonnes milled low grade oil-drilling.

low grade in a gang of veins - max 2m wide

6. YAPPALA. (2 miles north of Yappala Homestead, 45 miles north east of Quorn).

Barite replacing "diapiric" breccia, similar to Yanyarrie deposit.

Poor exposure of this barite due to a cover of talus makes prediction of size impossible without costings.

7. ARKABA. ($\frac{1}{2}$ mile west of the Morolana scenic road, 11 miles west of the Hawker-Blinman road, 65 miles north east of Quorn).

An east-striking vein, 1,000 feet long and varying in thickness from 2 feet to 40 feet occurs in a large fault with associated smaller veins.

The vein contains quartz and specular hematite impurities and is stained with malachite and azurite.

Four analyses gave the following results:

	1	2	3	4
BaSO ₄	97.00	94.00	94.30	95.99
SrSO ₄	1.50	3.35	-	-
SiO ₂	0.20	0.88	2.40	1.68
Fe ₂ O ₃	1.05	0.11	1.97	1.56

Reference: Blissett, A.H.(1968). Barytes deposit, section 16, Hd. Morolana, G. Hanson (Unpub. report, S.A.D.M.)

South Australian Barytes Limited open cut this deposit to a depth of 100 feet during 1971-72 to obtain approximately 23,000 tonnes of oil-drilling barite. Most of the workings are now unsafe, but small amounts of ore could still be mined.

TITLE: ML. 3535 & 3536, M.C. 199

South Australian Barytes, 74 South Tce. ADELAIDE.

RESERVES: 4,000 tonnes, oil-drilling grade.

- No too low, requires blending

8. ARKABA. (1 mile North west of SABAR deposit, 65 miles N.E Quorn).

A large number of narrow lodes are present in this area. In places the ore would make industrial grade and where lode widths are more than three feet wide this ore has been mined to depths of up to 40 feet.

A thousand tonnes of oil-drilling barite could be gathered from this area, and a lode adjacent to the south could produce a further 1,000 tonnes.

An undetermined small quantity of industrial grade ore could be mined underground from these veins, but mining would be difficult due to the narrowness of the lodes.

TITLE: M.L. 3241 & 3242. Steetley Australasia Ltd.

100 Eastern Parade,

GILLMAN. S.A.

and David Victor Linke,

Box 117, MURICOPTA. S.A.

RESERVE: 2,000 tonnes oil-drilling grade. Industrial grade ore may be recovered by underground mining.

9. MT. LAURA. (1 mile north of Whyalla, 65 miles S.W. of Quorn).

Two small veins of high grade barite strike north east. These lodes have been worked to a depth of 19 feet.?)

10. MT. WHYALLA. (3 miles north of Mt. Whyalla, 70 miles S.W. of Quorn).

A series of lenses with a maximum thickness of 4 feet, strike east and have been worked to a depth of 20 feet, where they pinch out.

11. CORUNNA. (1 mile north of 6 Mile Dam, 80 miles west of Quorn).

A $\frac{3}{4}$ mile long, east-striking vein system contains patches of barite and patches of quartz. Associated minerals are fluorite, galena, chalcopyrite and pyrite. It is unlikely that barite could be recovered economically from this deposit.

12. WARCOWIE. (8 miles S.E. of Warcowie Homestead, 80 miles N.E. of Quorn).

Several small lodes in this area have been worked in the past to depths up to 10 feet. The ore is suitable only for oil-drilling and lack of access rendered these deposits of little value.

13. MT. NEVILLE. (9 miles north of Mt. Neville, 80 miles N.E. of Quorn).

Several small lodes of barite occur in diapiric rocks within the Enorama Formation. The small size, low quality and lack of access makes this deposit of no economic value.

near Mt Neville

14. MAGGIE HILL. (7 miles south of Maggie Hill, 82 miles N.E. of Quorn).

A small lode averaging 4 feet wide for a distance of 200 feet has been mined to a depth of 20 feet. Approximately 1,700 tonnes of oil-drilling ore and 200 tonnes of low-strontium "A" grade ore suitable for medical purposes was recovered from this deposit in 1973. Contamination is decreasing at depth, but future mining would need to be underground.

TITLE: ML 4053. R.R. Reid,
18 McKinnon Parade,
NORTH ADELAIDE.

SiSO₄ 10-170g

15. PERMATTY LAGOON. (6 miles N.E. of McLeay railway station, 90 miles N.W. of Quorn).

Coarsely crystallized barite mixed with clay, outcrops over an area 80 feet by 1,000 feet. This barite appears to be derived from a flat-lying lode the dimensions of which are not exposed.

After removal of the clay by washing, a sample analysed:

No. 10-1111

BaSO ₄	98.25%
SiO ₂	0.80%
Fe ₂ O ₃	0.24%

Small amounts of barite have been mined from this location in the past, but the shallow pits are now full of water.

Reference: Johns, K.F. (1968). S.A.D.M.Bull. 41, pp66-67

TITLE: E.L. 81 Mount Gundon Mines P/L. Expires 19/7/74.

RESERVES: Possible 5,000 tonnes

16. LINKES LODGE. (1 mile N.E. Appealinna Mine, 90 miles N.E. of Quorn).

This lode has a length of 3,000 feet and strikes approximately E.N.E.

It has been worked for a distance of 1,000 feet on the eastern side of the road (M.L. 3413) where it averages 12 feet wide. The lode continues a further 1,000 feet past these workings but has not been opened up. On the western side of the road the lode maintains a width of 12 feet for a distance of 800 feet where it begins to narrow off. Only small openings have been made in this area. (M.L. 3414).

Barite in this deposit contains approximately 5% quartz, 15% siderite and 2% chalcopyrite. Selected ore has been used for oil-drilling grade by both S.A. Barytes and Streetley Minerals. Approximately 3,000 tonnes per annum is shipped from this deposit at present.

TITLE: M.L. 3413 S. Henery Erving Leffner
and Maxwell Kuchel. TAU. DA. S.A.

M.L. 3414 Streetley Australasia P/L.

Box 74.

ROSEWATER EAST. S.A.

RESERVES: M.L. 3413 15,000 tonnes oil-drilling
1,500 tonnes per verticle foot below this point.
M.L. 3414 24,000 tonnes oil-drilling.
1,200 tonnes per verticle foot below this point.
Eastern end 5,000 tonnes oil-drilling.

17. BAIRSTOW'S LODE. (1 mile north of Linkes Lode, 90 miles N.E. of Quorn).

Two parallel lodes striking N.E. The eastern lode is 1,500 feet long, western lode 1,000 feet long. This ore is similar to that at Linkes Lode and has been used to produce oil-drilling barite by S.A. Barytes. The lodes are irregular but average 6 feet wide and dip west as 60° . The majority of near-surface ore has been mined, leaving about 2,000 tonnes that might be recovered easily. However the persistance of the lodes at depth should warrant deeper mining if the demand exists.

TITLE: National Park.

RESERVES: 2,000 tonnes oil-drilling.

18. HALLS LODE. (3 miles east Appealinna Mine, 93 miles N.E. of Quorn).

This N.E. striking lode, averages 9 feet wide for a distance of 300 feet. It has been opened up on both sides to a depth of 15 feet, but the ore was found to contain quartz resulting in a specific gravity of 4.0 instead of the required 4.2 for oil-drilling. However this ore has a relatively low iron content and may be saleable as an industrial product. Alternatively it could be blended for oil-drilling purposes.

TITLE: M.L. 4306 Clarence Abraham Bairdow
10 Palmer Street,
PORT PIRIE.

RESERVES: 6,000 tonnes.

19. BOWRING LODS. (7 miles east of Appealinna Mine, 97 miles N.E. of Quorn)

A series of near-parallel lodes outcropping on the foot hills of Loves Mine Range. The lodes were exposed by South Australian Barytes during 1972 and approximately 8,000 tonnes of oil-drilling ore mined. A similar quantity of ore could easily be obtained and further ore would be available at greater depth.

TITLE: M.L. 4321 South Australia Barytes,
74 South Terrace,
ADELAIDE.

RESERVES: 8,000 tonnes oil-drilling

20. MCRAB'S LODE. (10 miles east of Appealinna Mine, 100 miles N.E. of Quorn)

Several poorly exposed lodes high in the Loves Mine Range. The strongest lode, at present being opened up, can be traced continuously for 150 feet, with an average width of 4 feet. The majority of this ore is contaminated by specular hematite, but small amounts of "A" grade may be recovered.

TITLE: M.L. 141 and 192. Frederick John McRae,
HAWKER,
SOUTH AUSTRALIA.

RESERVES: 1,000 tonnes oil-drilling.

21. SOUTH AUSTRALIAN BARYTES. (100 miles N.E. of Quorn).

This mine has been in operation since 1947, during which time approximately 183,000 tonnes of barite has been mined. Most of this ore has been of industrial grade, though much has been used to produce oil-drilling grade product.

A total length of 800 feet of lode has been mined in the underground workings, on four levels, to a depth of 450 feet. The average width of lode mined on each level is 6.5 feet, giving reserves of 650 tonnes per verticle foot.

At the present stage of development approximately 18,000 tonnes of ore could be recovered from the four level without endangering the safety of the mine. If the mine was to be worked to exhaustion however, a further 3,000 tonnes could probably be recovered from both the three and four levels by extraction of pillars.

Averages of seven analyses of the barite, at the surface, gave:

BaSo ₄	96.8%
SiO ₂	2.7%
Fe ₂ O ₃	0.13%
H ₂ O	0.21%

NO. 11 An extension of the lode, being worked by Cathcart Mining Corporation, onto M.L. 2933 contains approximately 12,000 tonnes of industrial grade ore.

References: Gibson, A.A. (1956). S.A.M.R. 102, pp. 84-91.
Nixon, L.G.B. (1960) S.A.M.R. 113, pp 10-15.

TITLE: M.L. 2933-36 South Australian Barytes,
2996
3235-37 74 South Terrace,
ADELAIDE.

RESERVES: 46,000 tonnes industrial grade ore from underground workings.

22. MATTHEWS LODE (3 miles east of South Australian Barytes Mine).

A lode of black barite, containing minor galena, outcrops intermittently for a distance of 1200 feet. The majority of the easily accessible ore has been removed and used as oil-drilling grade. It is unlikely the price for oil-drilling grade ore would warrant further work on this deposit, but as it has a particularly high specific gravity (4.4) it

may be worth more to blend with barite such as that for Halls Lode (No. 18).

TITLE: M.L. 4109 Bernard Lawrence Matthews,
Box 07,
Hawker. S.A.

RESERVES: 2,000 tonnes. — *what material? prob? how?*

23. MARTINS WELL. (8 miles N.E. of Martins Well Homestead, 110 miles N.E. of Quorn).

Very little is known of this deposit. It is reported to have been worked to a depth of 150 feet by its present owner, who produces approximately 1,500 tonnes per annum of industrial grade ore. Total production is sold to Minerals (S.A.) P/L.

TITLE: M.L. 2990. James Herbert Coad,
Box 54,
HAWKER. S.A.

24. WEAVERS WELL. (12 miles N.E. of Martins Well Homestead, 114 miles N.E. of Quorn).

Two small lodes of high-grade barite, with minor surface stain outcrop just west of the tank at Weavers Well. Quarter of a mile west are a series of narrow lodes in quartzite which could only be worked by underground methods but do not warrant this expense.

RESERVES: 1,000 tonnes industrial grade.

25. ARTIPEKA HILL. (8 miles S.E. of Martins Well Homestead, 110 miles N.E. of Quorn).

Three lodes occur in this area, and some industrial grade material has been obtained from each of J.H. Coad. Contamination by hematite has prevented further work.

TITLE: M.C. 281 Theofield Oscar Marshall,
Box 148,
NURIOOPTA. S.A.

Plus Coad's lodes

RESERVES: 5,000 tonnes oil-drilling.

25a *what about Black Hill - Barite deposits*

26. DE PARILAND. (3½ miles south of the Parachilna-Blinman road, 10 miles east of Parachilna, 110 miles north of Quorn).

No. 2
A vein of barite, 150 feet long, with a maximum width of 8 feet, strikes north. (Mansfield, L.L. (1946). S.A.M.R. 84, pp.156).

No. 3
A track has recently been made to this deposit which outcrops high on the A.B.C. Range. Excavations made in 1973 show that the lode dips conformably with the bedding and that the ore contains specular hematite making it suitable only for oil-drilling.

RESERVES: 1,000 tonnes. — *much more.*

27. NILPENA. (6 miles N.E. of Nilpena siding, 110 miles north of Quorn).

Two veins, which vary in thickness from 18 inches to 6 feet, strike N.E. and outcrop for a quarter of a mile. The barite is stained black by manganese. Similar deposits occur 2 miles to the south.

Reference: Mansfield, L.L. (1946). S.A.M.R. 84, pp. 155-159.

TITLE: E.L. 118 Bridge Minerals P/1. (13/12/74)

RESERVES: 10,000 tonnes oil-drilling grade.

28. CAREY HILL. (11 miles east of Blinman, 125 miles N.E. of Quorn).

Two veins, 1,000 feet long, strike easterly and have a maximum width of 8 feet.

Partial analysis gave:

BaSO ₄	96.2%
SiO ₂	1.43%
Fe ₂ O ₃	0.17%

Reference: Ridgway, J.E. (1952). S.A.M.R. 94. pp. 35-37.

No. 2
These lodes have been opened up exposing 300 feet of barite averaging 10 feet wide, with some host rock inclusions. Approximately 1,000 tonnes was sent to Quorn for oil-drilling during 1973. Some industrial grade barite could be hand-picked from this deposit.

TITLE: M.C. 212 & 213 M.L. 4107

Hubert Malcolm Finlayson Nickles

3 Lorna Road,

PARA HILLS. 5096.

*Confirming
analysis of
C.H. 101
102*

29. MT. JAMES (EDIACARA MINE) (1 mile S.W. of Mt James; 130 miles north of Quorn).

Several small deposits have been recorded in this area, but no detailed information is available. It would be expected, by the host rocks, that high grade barite could occur in this area.

TITLE: E.L. 46 Carpentaria Exploration Co. P/L. (15/3/74).

*How
high grade in
Barite not
mined.*

30. MT. CHAMBERS. (20 miles N.E. of Mirrealpa Head Station, 150 miles N.E. of Quorn).

*Confusing
Mt C
Mt S
J.P.P.*
A vein of high barite, 4 feet wide and 150 feet long, has been worked to a depth of 50 feet. Two similar veins occur a mile to the north. Small tonnages of high grade barite could be obtained by underground methods.

Reference: Mansfield, L.L. (1946). S.A.M.R. 84. pp. 155.

TITLE: M.L. 4319 & 4320 J.H. Coad,
Box 54, HAWKER, S.A.

31. MT. PROVE. (2 miles S.W. of Mt Krome, 150 miles N.E. of Quorn).

One main vein
Several veins, the largest of which is 500 feet long and 15 feet wide at its widest point strike N.N.E. Reserves are estimated at 500 tonnes per vertical foot. (Mansfield, L.L. (1946). S.A.M.R. 84. pp. 156-158)

Barite ridge
This deposit, the main lode of which forms the crest of a siltstone ridge, 50 feet above the adjacent creek level, has been exposed on the western side to a depth of 25 feet for a distance of 150 feet. Although the colour improves with depth, the majority of ore at 25 feet is not of "A" grade colour. The lode also contains bands of quartz, which could be removed by gravity - separation. Small quantities from this deposit are at present being mined for oil-drilling grade at Quorn and lower industrial grades by Jarvis Industries.

TITLE

RESERVES: 15,000 tonnes, 20% of which could be hand-picked for industrial grades.

32. MT. SERLE (ANGEPITA) (4 miles south of Mount Serle Homestead, 163 miles north of Quorn).

Several veins, with an average width of 5 feet and extending to 1,000 feet, vary from almost pure quartz to almost pure barite.

(Ridgway, J.L. (1952). S.A.M.R. 94. pp. 32-37.

This deposit was visited recently by the author and it was found that the majority of near-surface barite had been mined. Approximately 4,000 tonnes of barite could be obtained by open cut methods, but would require mechanical separation. This may result in "A" grade barite.

Underground mining of this deposit, to a depth of 120 feet, should produce 10,000 tonnes of industrial grade barite.

TITLE: E.L. 96 held by Aquitaine Australia Minerals P/L and Fox Mining and Exploration P/L until 19/9/74.

RESERVES: 4,000 tonnes, which could be partly recovered as industrial grade.

10,000 tonnes industrial grade ore could be mined underground.

33. WEEKEROO (WALPARUTA) (7 miles north of Weekeroo Homestead, 180 miles from Quorn).

Several large and irregular deposits of granular barite, with a high percentage of quartz and hematite, are estimated to contain 3,500 tonnes per vertical foot. A bulk sample from this deposit assayed 62.4% BaSO_4 . Although low grade, this deposit is suitable for quarry mining and the coarse grained nature of the included quartz should allow gravity separation, though previous tests have been unsuccessful. (S.A.D.M. Bulletin 35).

RESERVES: 3,500 tonnes per vertical foot, 60% BaSO_4 .

34. AMEROO HILL. (1 mile south of Ameroo Hill, 200 miles from Quorn).

Small lenses of barite are reported at this location. — Two separate depts.
Reference: S.A.D.M. Bull. 34.

35. MT. MULGA (BCOLCOOMATA). (1 mile east of Drew Hill) (210 miles from Quorn).

Granular

Granular barite, containing 5% to 20% quartz, 2% to 25% iron oxide and 1% chalcopryite, occurs in elongate, north-striking bodies. This deposit is similar to the Weekeroo deposit but contains slightly less quartz.

Reference: S.A.D.M. Bull. 34

NO ML - Shetty
ML - Kuchel

TITLE: E.L. 83 Carpentaria Exploration Co. P/L (expires 19/7/74)

RESERVES: 3,500 tonnes per vertical foot, 67% BaSO₄

36. DOKE ROCK. (3 miles north of Dome Rock Copper Mine, 240 miles from Quorn).

Granular barite containing 10% to 50% quartz and 5% to 30% hematite, with minor apatite and zircon, outcrop over an area 100 feet by 200 feet. This barite also similar to Weekeroo deposit.

Reference: Dickinson, S.S. (1949). Barite deposits near Dome Rock.

S.A.M.R. 89, pp. 100-102.

S.A.D.M. Bull. 34.

TITLE: E.L. 47 Carpentaria Exploration Co. P/L.

RESERVES: 2,000 tonnes per verticle foot 60% BaSO₄

SUMMARY OF BARYTE RESERVES WITHIN 200 MILES OF QUORN.

036

OIL-DRILLING.

75,000 tonnes owned independently or not ^{covered?} concerned by lease.
12,000 tonnes owned by South Australian Barytes.
25,000 tonnes owned or controlled by Steetley Minerals.

12,000 tonnes per verticle foot 70% BaSO_4 at Yanyarrie (No 3).
3,500 tonnes per verticle foot 60% BaSO_4 at Weekeroo (No 13).
3,500 tonnes per verticle foot 70% BaSO_4 at Mt. Mulga (No 35).

INDUSTRIAL GRADE.

40,000 tonnes owned by C.M.C. controlled by Newbold. *NO!*
46,000 tonnes owned by South Australian Barytes (No 21).
14,000 tonnes owned by Fox Mining. (No 32).
8,000(?) tonnes owned by J.M.Coad. (No 23).
3,000 tonnes (No 31).

*Linke's Lode
+
Bowering Lodes
extension*

ASSESSMENT AND RECOMMENDATION.

From the above summary, it can be seen that South Australian Barytes still maintain the balance of power with respect to reserves of both oil-drilling and industrial grade barite. South Australian Barytes reserves are however not the most easily worked in the short term.

The most important deposit of oil-drilling barite is Linke's lode, (No 16) half of which is owned by Steetley Minerals. Selectively mined ore from this deposit is milled directly by Steetley Minerals for a low-grade oil-drilling product. This ore is delivered to Adelaide for approximately \$16.00 per tonne. During 1972 South Australian Barytes were paying \$7.50 per tonne for this ore delivered in Quorn. The price may now be expected to have risen approximately \$1.00 to \$8.50 per tonne.

The present price paid by South Australian Barytes for oil-drilling ore in Quorn is \$9.50 per tonne from Carey's Hill (No 28). This price compares with estimated mining and cartage costs from the Bowering Lodes (owned by

South Australian Barytes) of \$8.50 per tonne, including royalties and overheads.

With the exception of Linkes Lode and several of the small deposits close to Quorn it can be seen that the basic cost of oil-drilling ore delivered to Quorn is between \$9.00 and \$10.00 per tonne. In the past South Australian Barytes has paid very little attention to the quality of ore delivered, and as a result annual recovery figures, after beneficiation, have been between 60% and 70%. This raises the cost of recovered barite to between \$13.00 and \$17.00 per tonne. This is not the correct approach.

Assume a base figure of \$9.50 per tonne delivered in Quorn. This should be paid only for ore containing more than 80% BaSO_4 . This would give a price for recovered ore of \$12.00 per tonne. For ore which needed no beneficiation a price of \$12.00 per tonne could be paid, saving the costs of beneficiation.

It is considered that flat rates of this nature would ensure the exploitation of the majority of reserves tabulated above, the small deposits and partially worked deposits close to Quorn becoming economic due to the increased value per unit compared with the large deposits in more remote areas. At an annual production rate of 20,000 tonnes this would give five years reserves, allowing tests to be carried out on the beneficiation of the Yannyarrie deposit, 30 miles from Quorn, as a long-term source of ore. This 70% BaSO_4 ore could be delivered to Quorn for approximately \$5.00 per tonne, including a \$0.50c royalty to the lease or holders.

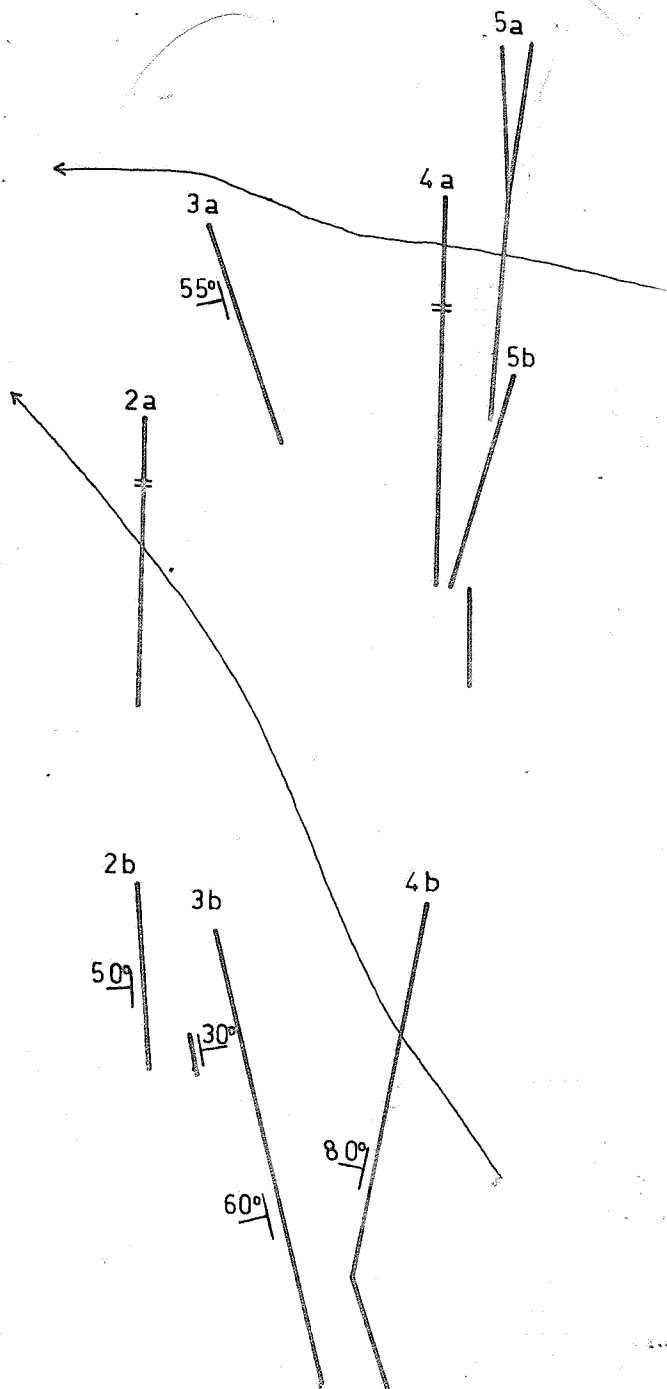
The above is most relevant to the mill at Quorn. In assessing the potential of a mill in Adelaide, the fact that Streetley Minerals control the deposit most easily worked to obtain a direct milling ore for oil-drilling grade barite must be considered. If, however, the milling of barite were to be undertaken in Adelaide, the deposits at Weekeroo (No 33) and Mt. Mulga (No 35) could be considered as alternative long-term deposits to that at Yannyarrie, with distances of 240 miles and 260 miles from Adelaide as against 200 miles in the case of Yannyarrie.

The author recommends an operation based in Quorn rather than Adelaide for the following reasons:-

1. An established mill with fewer labour and enviromental problems than Adelaide.
2. The ability to beneficiate ore contaminated during mining, (both oil-drilling and industrial).
3. Shorter road haulage.

R.B. Reid

22/1/1974



AVERAGE WIDTHS

2a 1'6"	b 3'
3a 5'	b 3'6"
4a 3'	b 4'6"
5a 5'	b 4'6"

SOUTH AUSTRALIAN BARYTES LIMITED

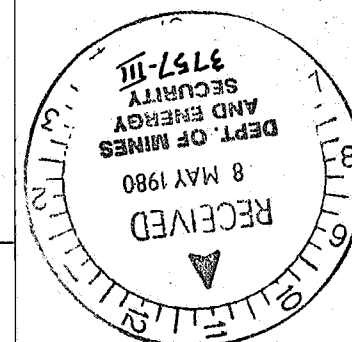
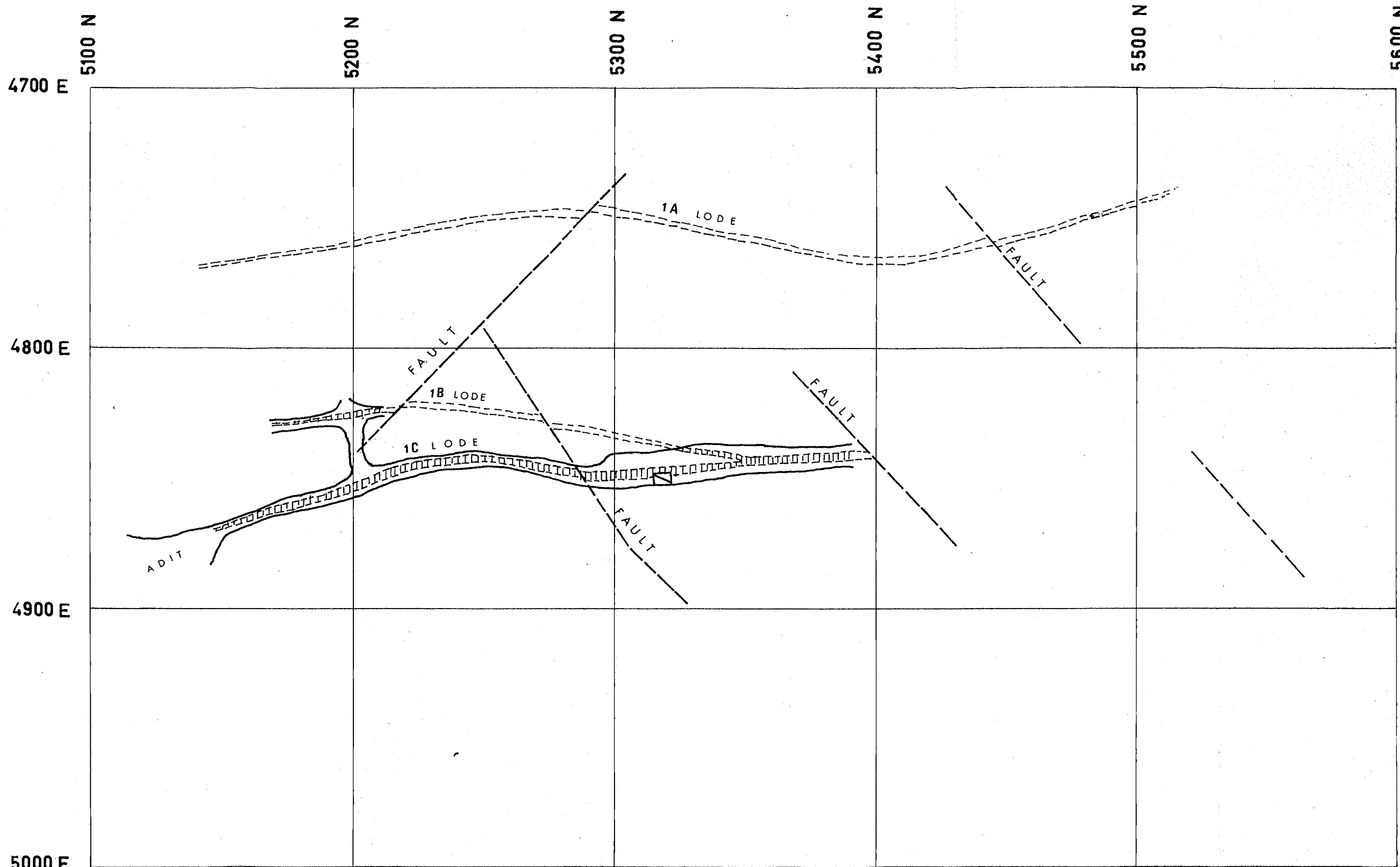
BOWERING LODGES

CHAIN & COMPASS SURVEY

Scale: 1in = 80 ft

R.B. REID. 1972.

ENV 3757 III



ORAPARINNA BARYTES MINE

No. 1 LEVEL PLAN

30.6.75

40

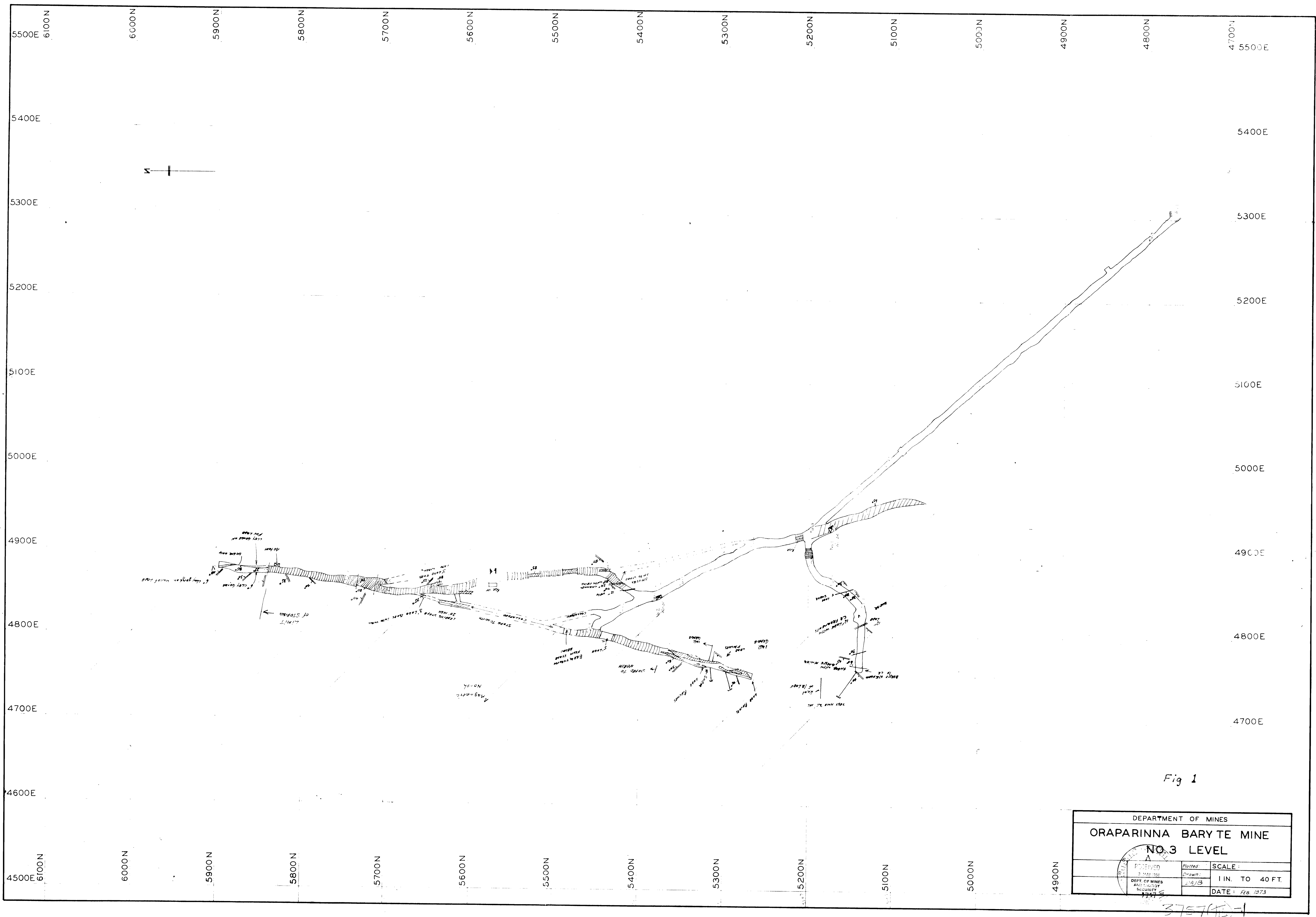


Fig 1

DEPARTMENT OF MINES			
ORAPARINNA BARYTE MINE			
NO. 3 LEVEL			
	Plotted:	3 MAY 1950	SCALE:
	Drawn:	2/4/53	1 IN. TO 40 FT.
	DATE: FEB. 1973		

3757(II)-1

4400 E

4500 E

4600 E

4700 E

4800 E

4900 E

5000 N

5000 E

5100 N

5200 N

5300 N

5400 N

5500 N

5600 N

5700 N

5800 N

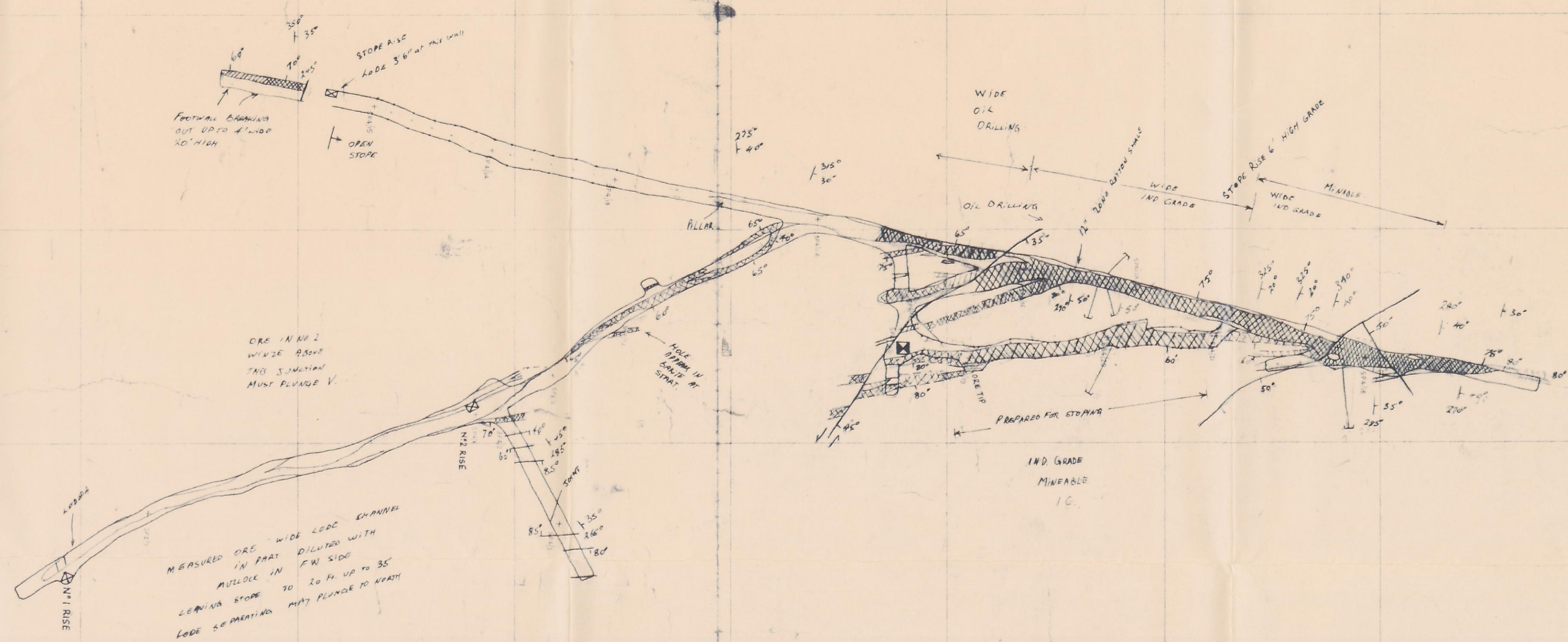
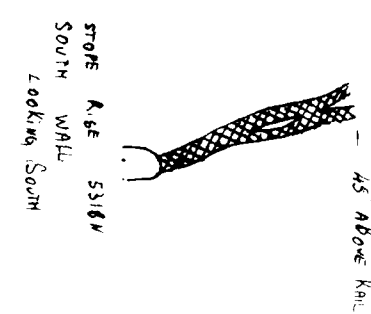
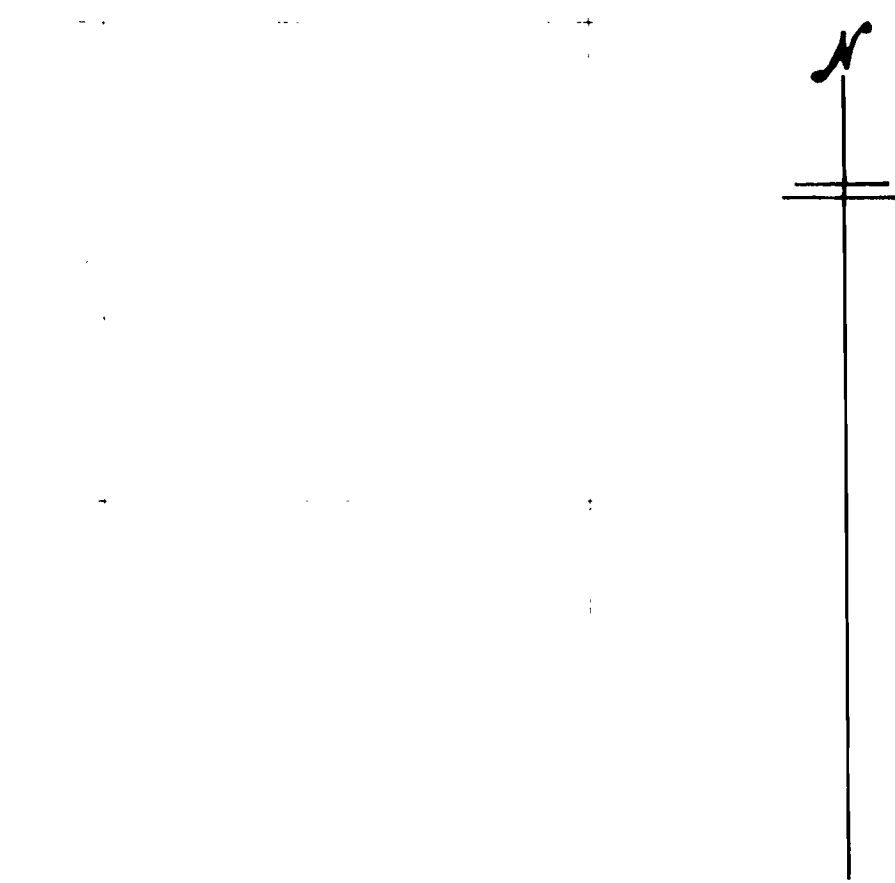


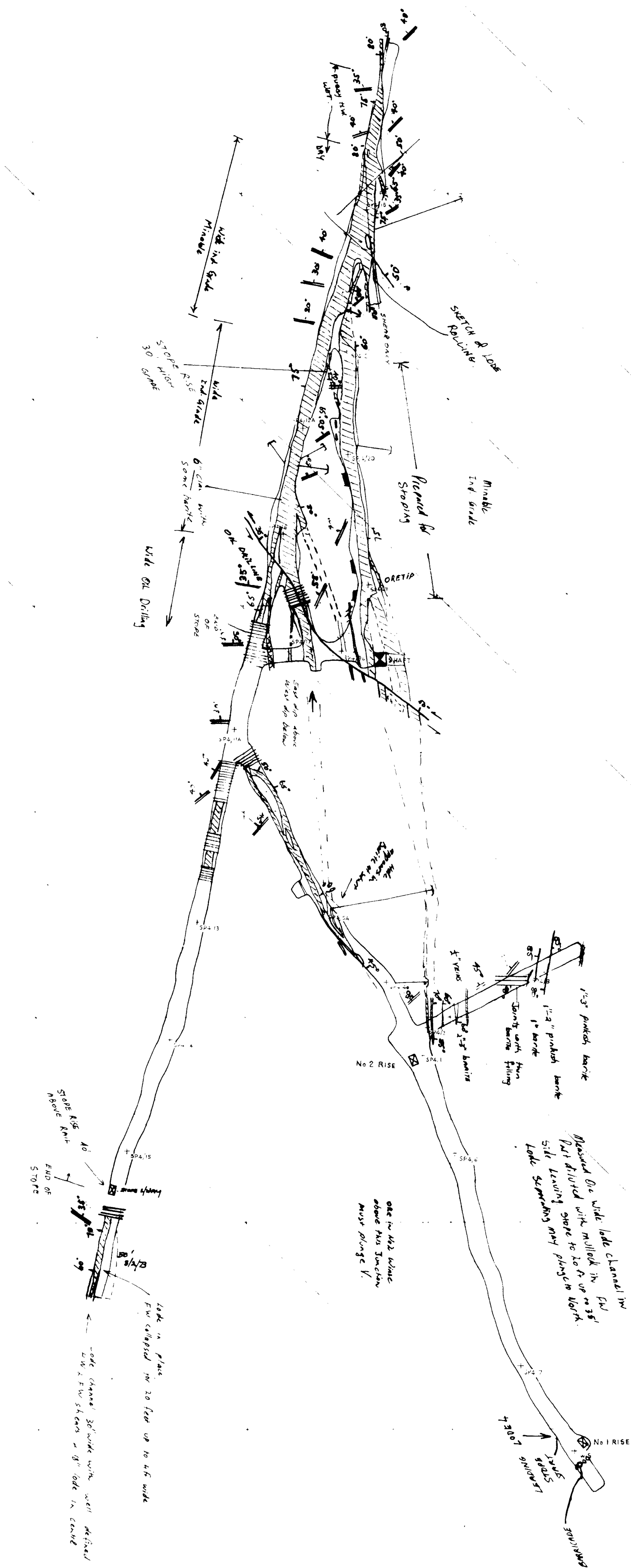
Fig. 2.

DEPARTMENT OF MINES — SOUTH AUSTRALIA			
ORAPARINNA BARITE MINE			
SABAR		4 LEVEL / First Draft	
M. N. H.	RECEIVED	Drn.	SCALE:
J. G. O.	8 MAY 1980	Fcd.	1 inch = 40 feet
	DEPT. OF MINES AND ENERGY	Ckd.	
	SECURITY	Exd.	DATE 197
3757-III			
Director of Mines			

3757(III)-2



Magnetic North



6000 N

5900 N

5800 N

5700 N

5600 N

5500 N

5400 N

5300 N

5200 N

5100 N

5000 N

4300 E

4400 E

4500 E

4600 E

4700 E

4800 E

4900 E

5000 E

5100 E

5200 E

5300 E

5400 E

5500 E

Fig. 3.

DEPARTMENT OF MINES			
ORAPARINNA BARYTE MINE			
NO. 4 LEVEL Second Draft.			
M. N. H. J. G. O.	RECEIVED 8 MAY 1960 DEPT. OF MINES AND GEOLOGY 3757-10	Plotted: DAJB	SCALE: 1 IN. TO 40 FT. DATE: FEB. 1973

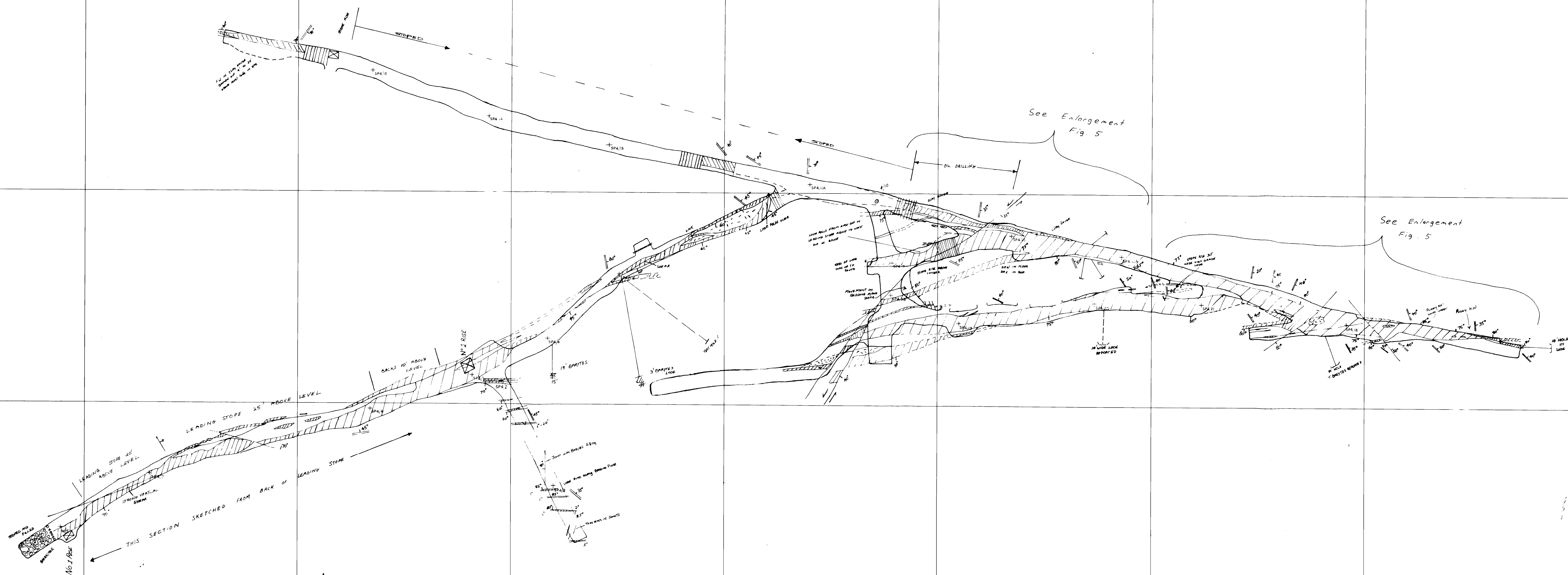
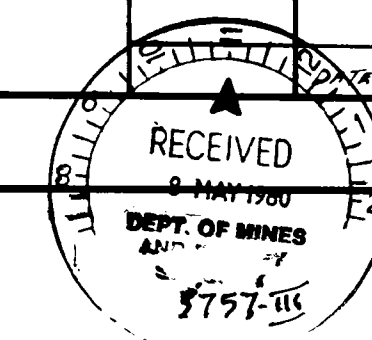
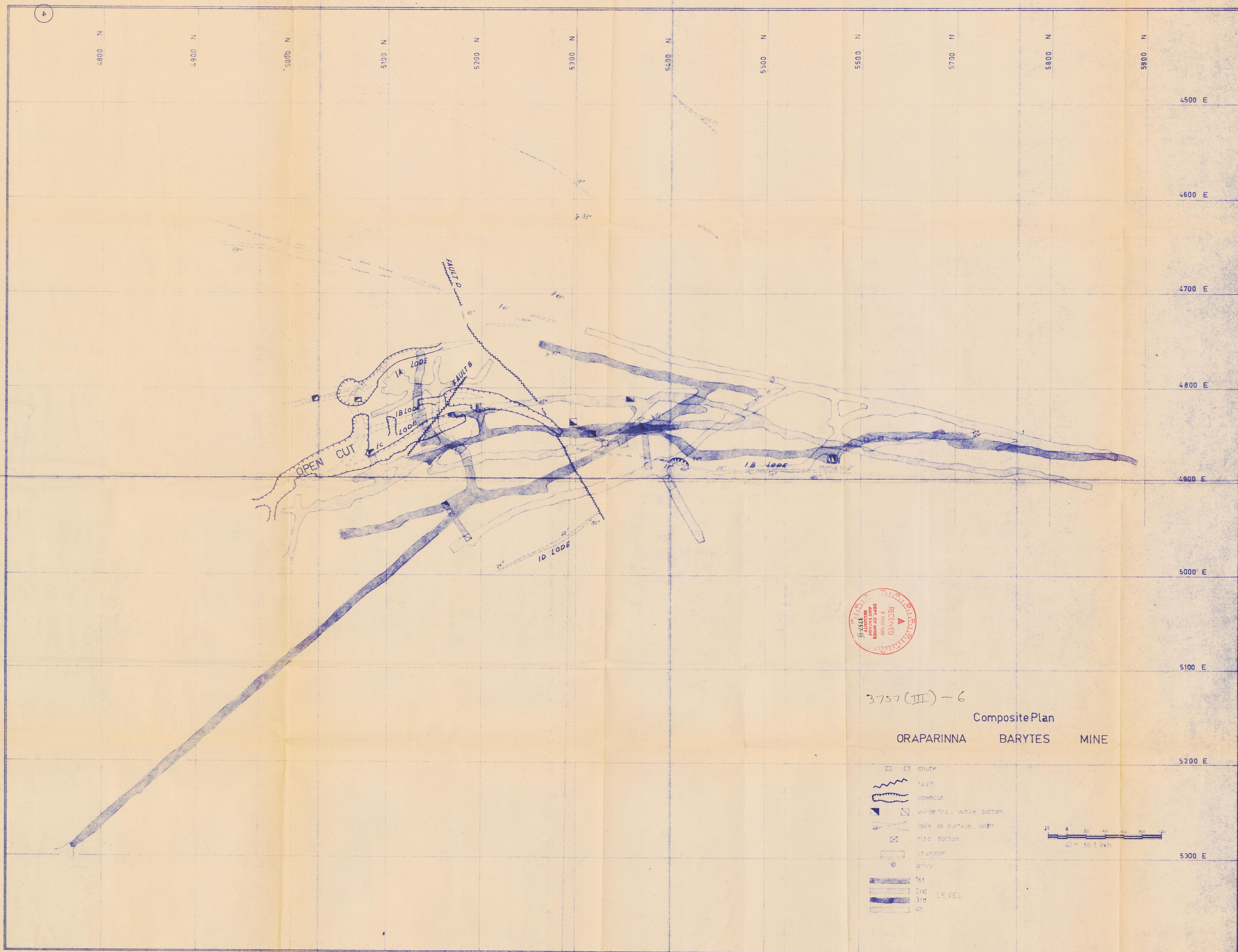
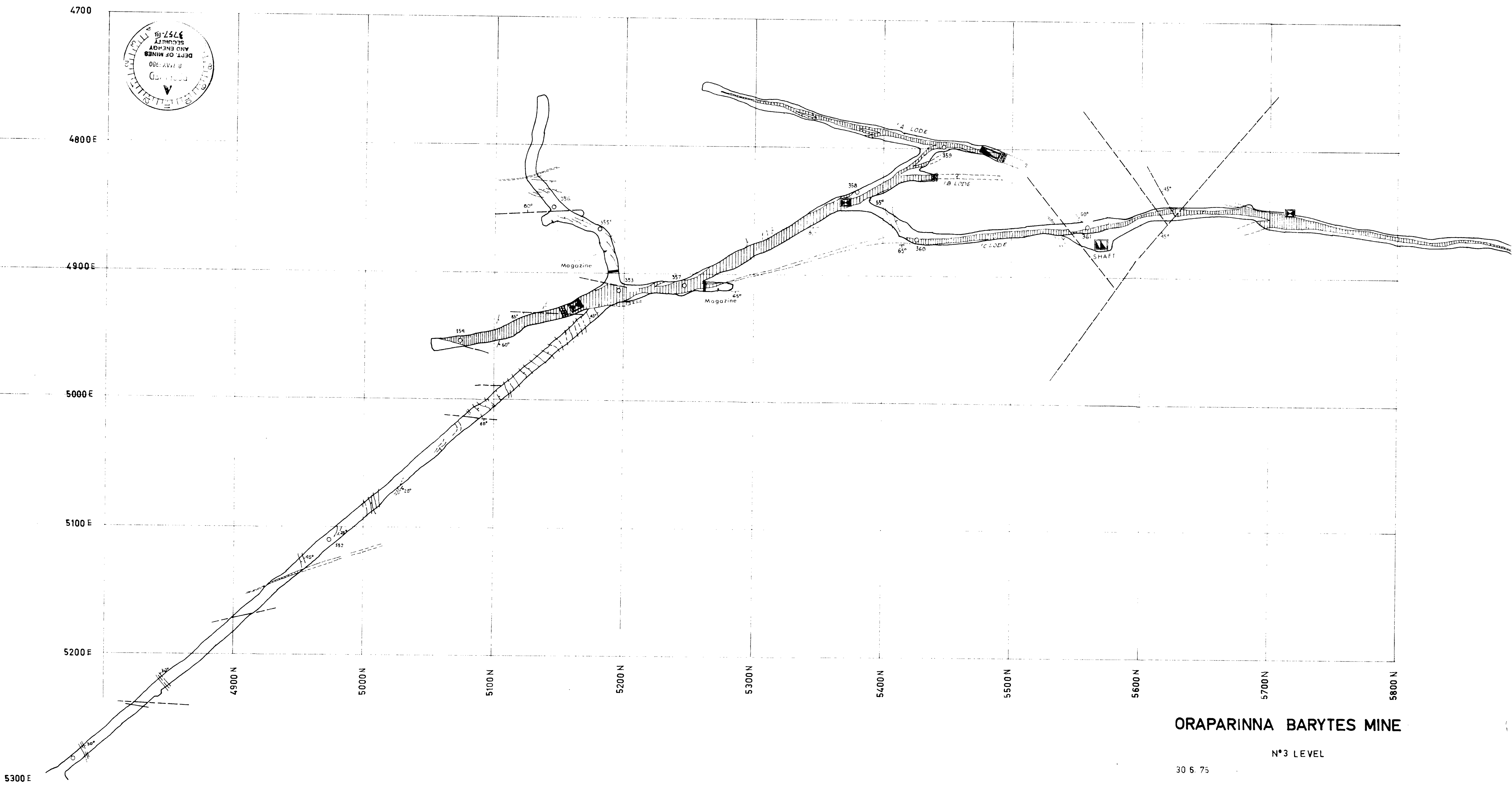
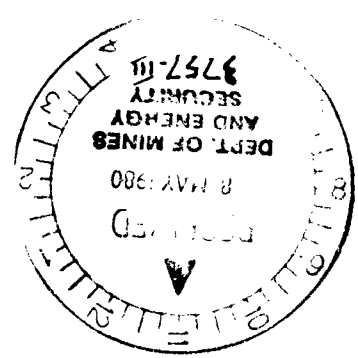


Fig 4.

DEPARTMENT OF MINES - SOUTH AUSTRALIA			
ORAPORINNA BARYTES MINE			
N° 4 LEVEL Final Draft.			
INDUSTRIAL MINERALS SECTION	CONVNO.		SCALE 1 INCH = 20 FEET
	JGO MNH		
			1972







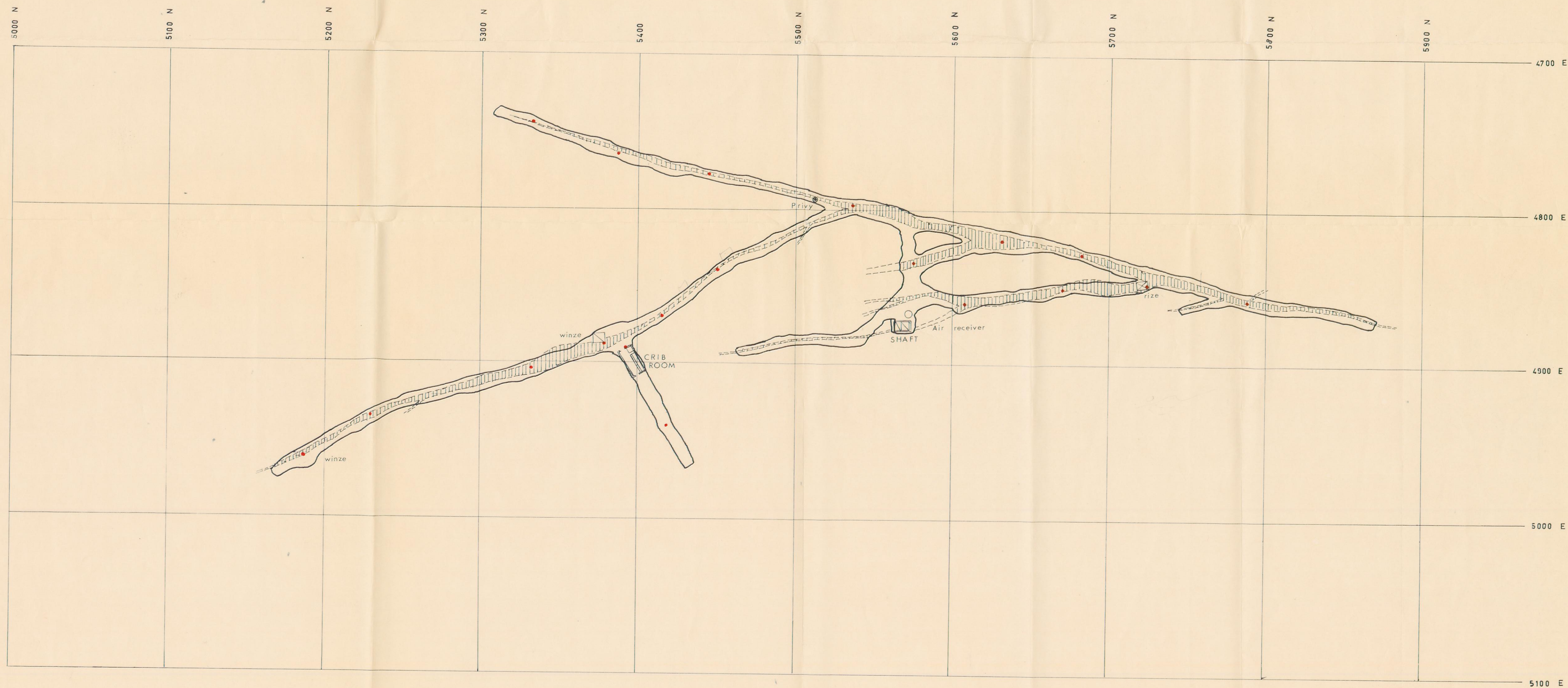
ORAPARINNA BARYTES MINE

N°3 LEVEL

30 6. 75

N°3 LEVEL

3757 (III)-8



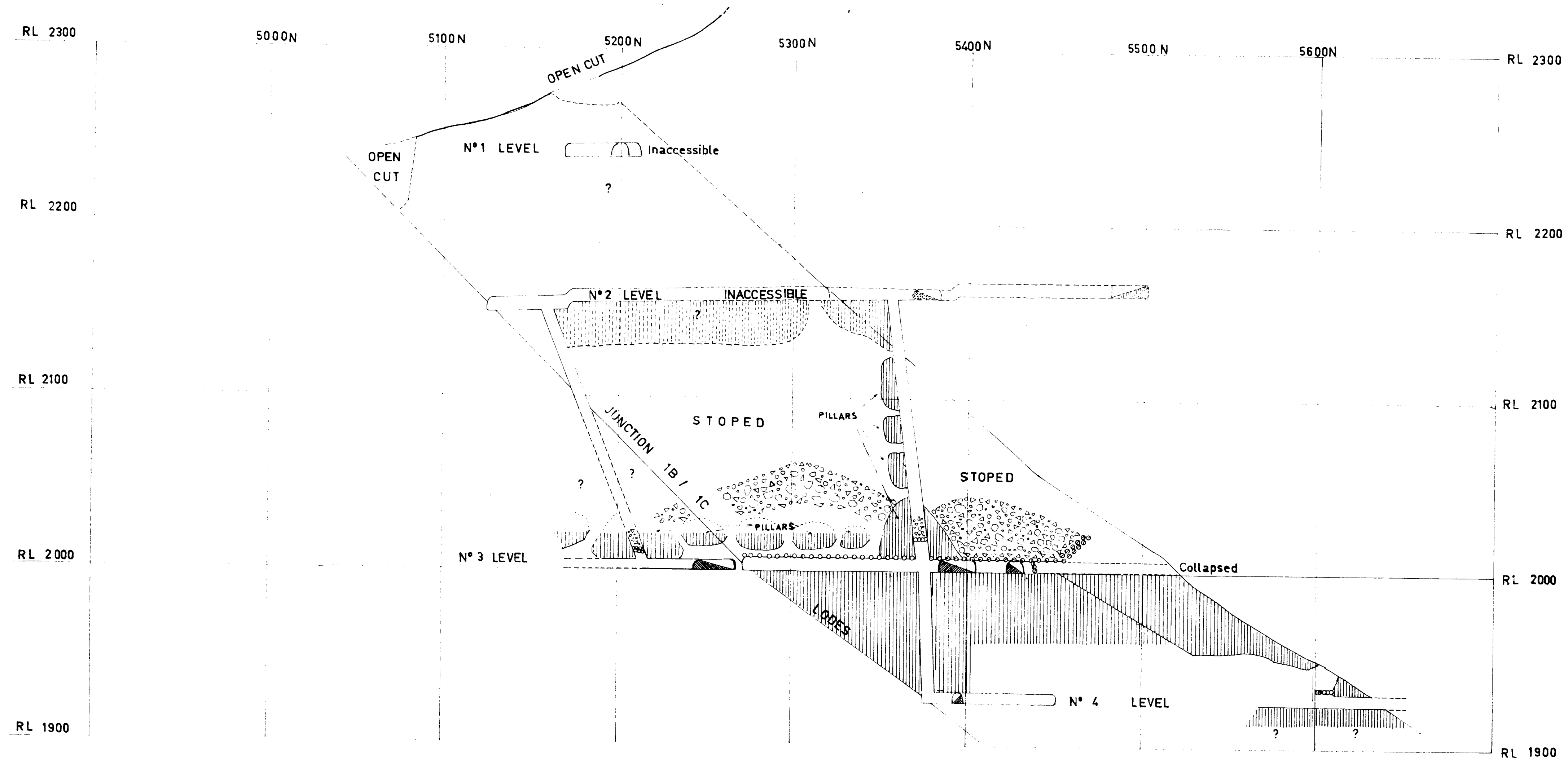
ORAPARINNA BARYTES MINE

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N°4 LEVEL

3757 (III)-9

Vol III

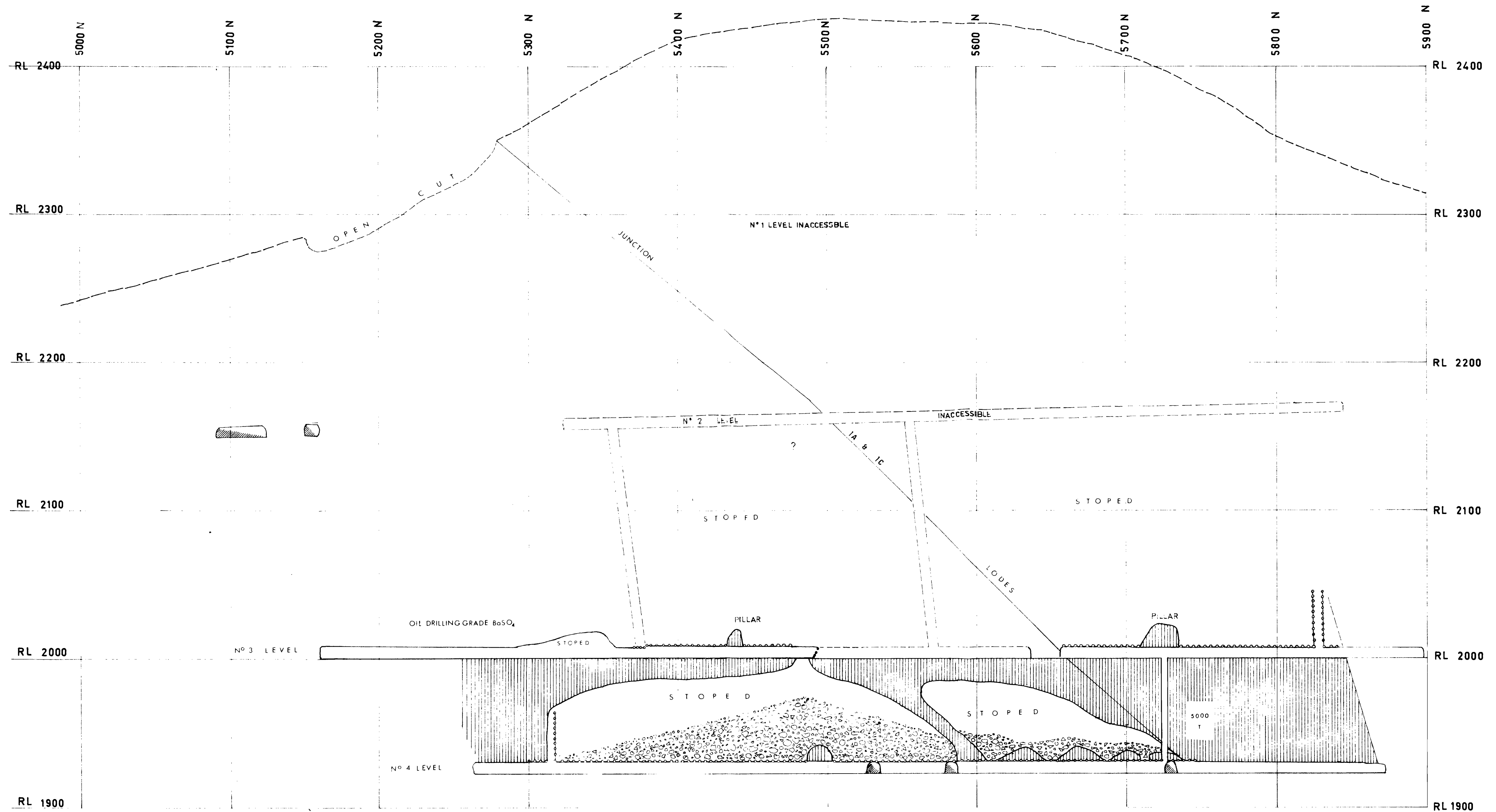


ORAPARINNA BARYTES MINE

N°4 LEVEL 1B LODE VERTICAL SECTION

30. 6. 75

3757 (III) - 10

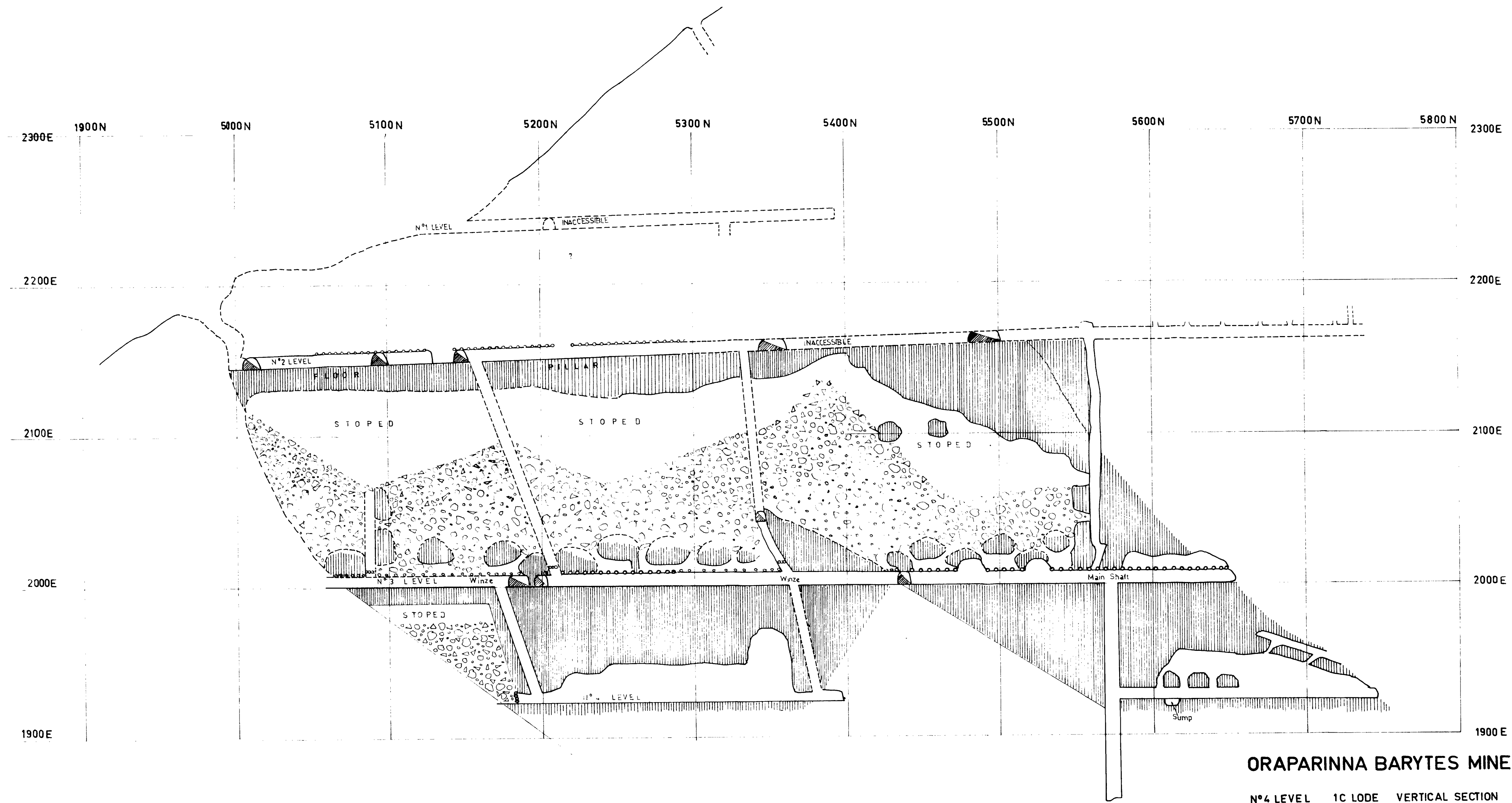


ORAPARINNA BARYTES MINE

N°4 LEVEL 1 A LODE VERTICAL PROJECTION
30. 6. 75

3757 (III) - 11

Vol III

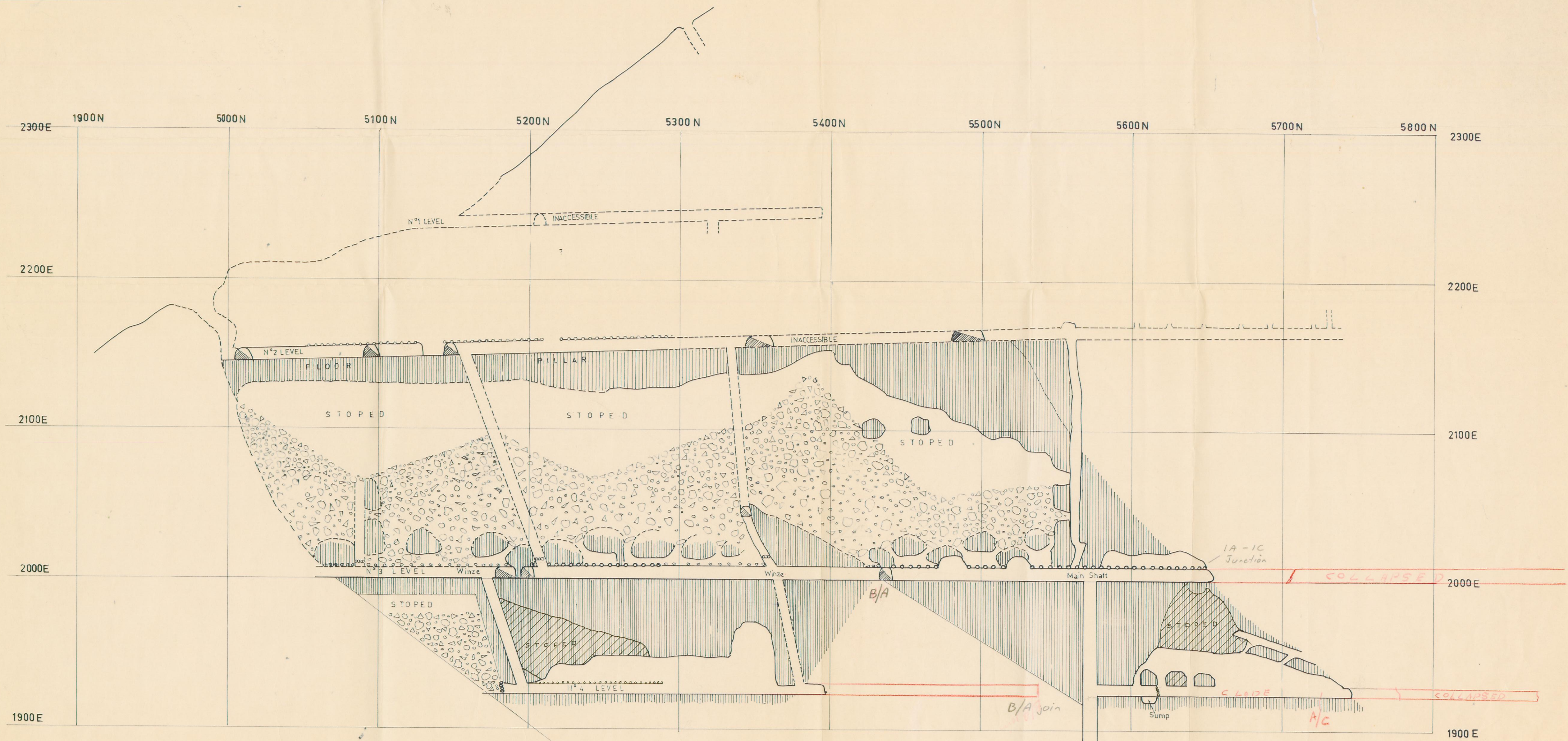


ORAPARINNA BARYTES MINE

N°4 LEVEL 1C LODE VERTICAL SECTION

30. 6. 75

3757 (III)-12

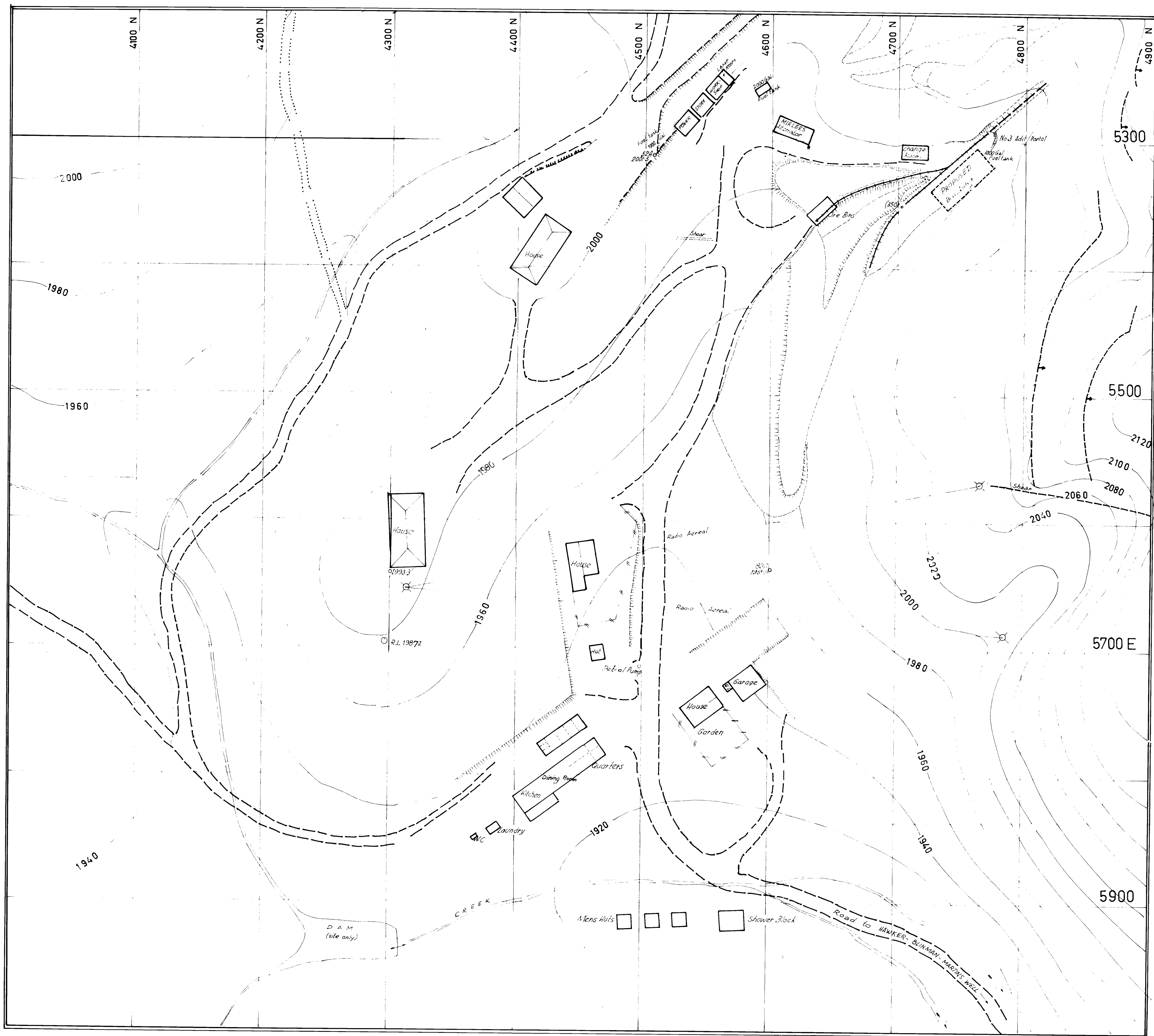


ORAPARINNA BARYTES MINE

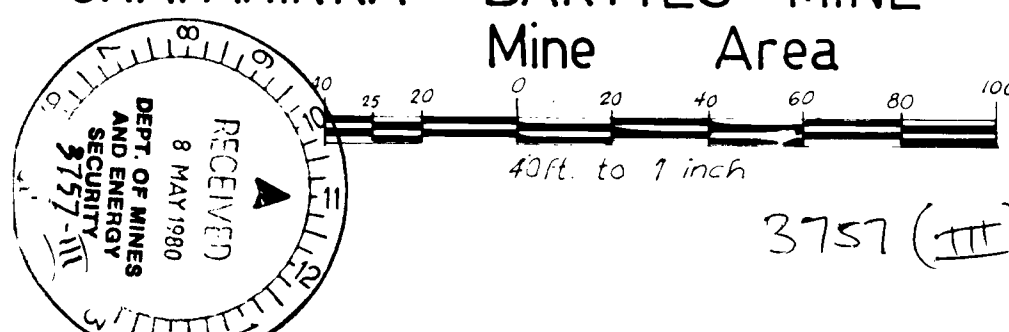
N°4 LEVEL ^{1B+} 1C LODE VERTICAL SECTION
 1

30. 6. 75

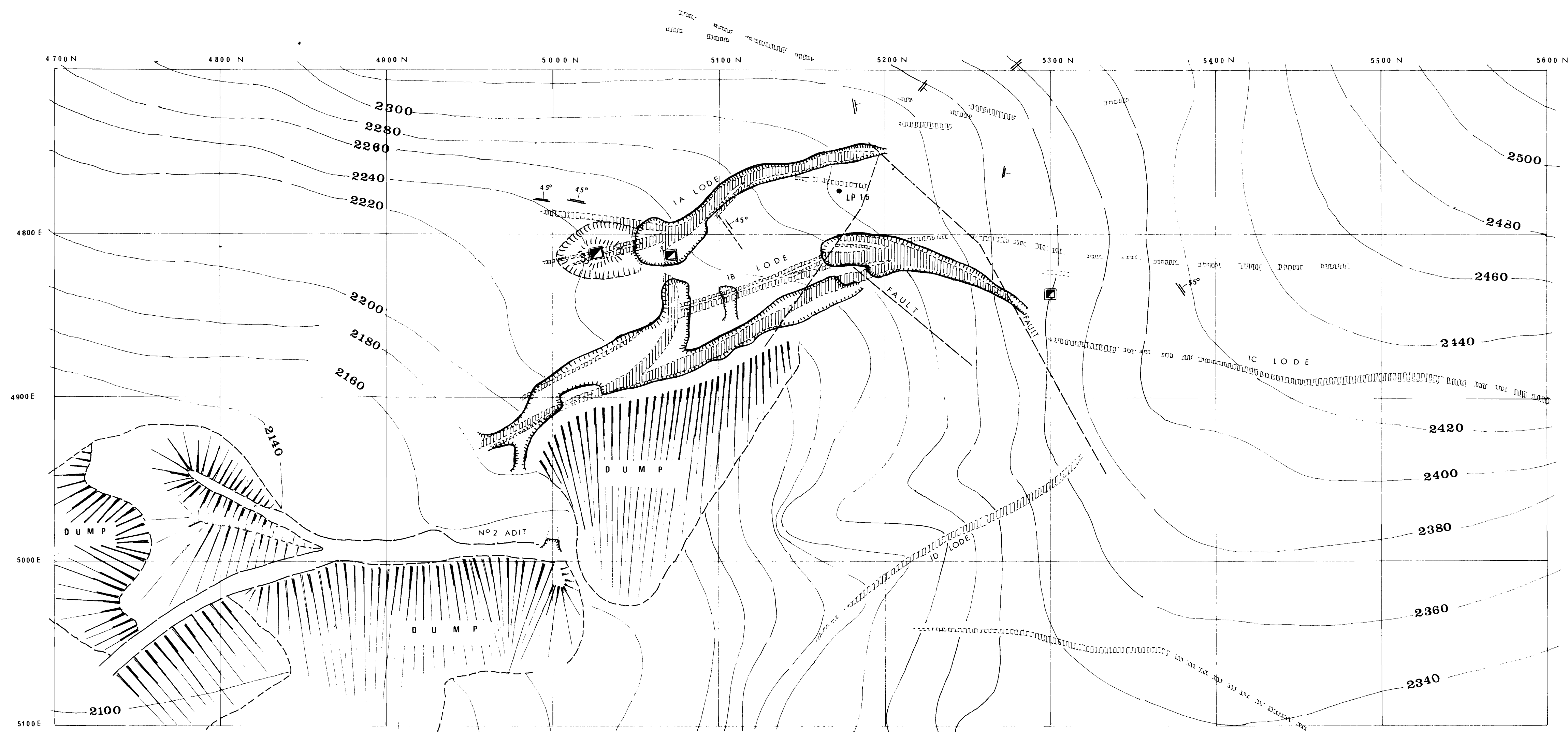
Extra Stopes measured JAN-FEB 1977



ORAPARINNA BARYTES MINE SURFACE PLAN
Mine Area



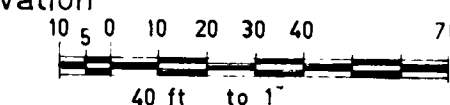
3757 (III)-14



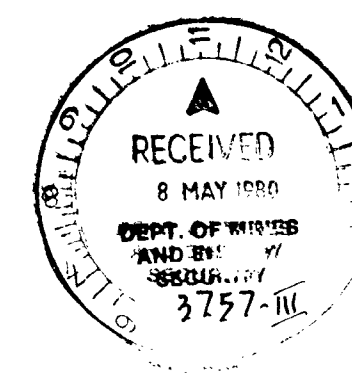
ORAPARINNA BARYTES MINE SURFACE PLAN

- Open cut
- Lode system
- Mullock dump
- Winze

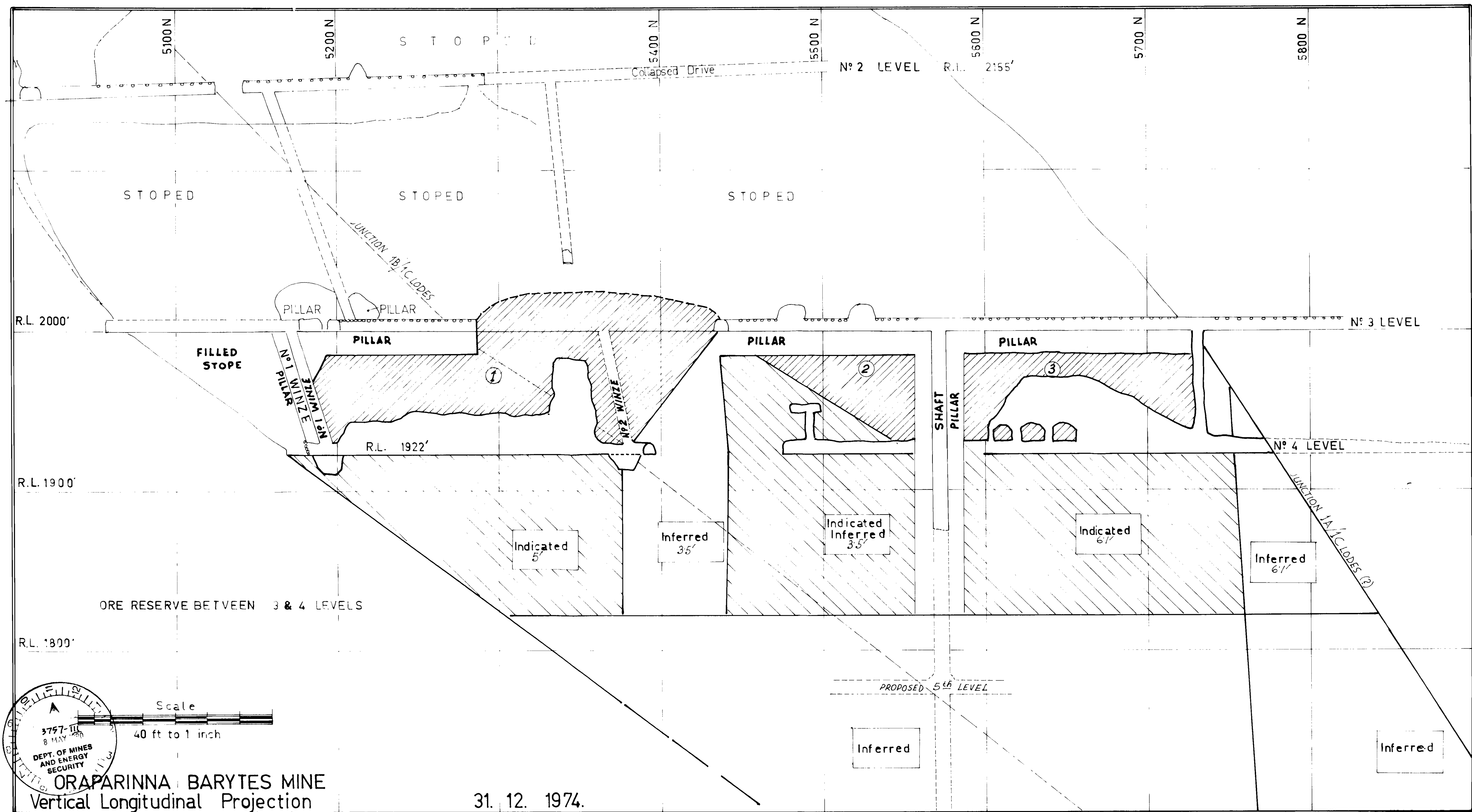
2360 Elevation



30. 6. 75



3757(III)-15



16 Lode 3757(III) - 16

4.

NORTH	SOUTH	EAST	WEST	LATITUDE	DEPARTURE	PLUG R.L.	STATION	METRIC VALUES EASTINGS	METRIC VALUE NORTHINGS
.	.	.	.	4709° 100 N	5357° 700 E	1997° 40	TII	1633.027 ^m E	1435.334 ^m N
90° 908	.	.	.	80° 972	4800° 003 N	5276° 728 E	2005° 59 SP1/3	✓ 1608.347 E	1463.042 N
509° 462	.	.	.	273° 455	5109° 470 N	5003° 273 E	2005° 97 SP2/3	✓ 1524.998 E	1557.366 N
88° 076	.	.	.	77° 578	5197° 546 N	4925° 695 E	2006° 04 SP3/3	✓ 1501.352 E	1584.212 N
.	27° 118	1° 108	.	.	5170° 428 N	4926° 803 E	2015° 67 WI	✓ 1501.690 E	1575.946 N
70° 782	.	.	.	18° 104	5268° 328 N	4907° 591 E	2005° 13 T3/4	✓ 1495.834 E	1605.786 N
83° 295	.	.	.	47° 189	5351° 623 N	4860° 403 E	2007° 92 SP3/5	✓ 1481.451 E	1631.175 N
32° 652	.	.	.	19° 175	5384° 275 N	4841° 228 E	2007° 56 SP3/6	✓ 1475.606 E	1641.127 N
55° 272	.	35° 034	.	.	5439° 347 N	4876° 262 E	2007° 60 SP3/7	✓ 1486.285 E	1657.913 N
117° 574	.	.	.	9° 417	5556° 921 N	4866° 845 E	2007° 88 SP3/8	✓ 1483.414 E	1693.750 N
16° 834	.	.	.	1° 268	5573° 755 N	4865° 577 E	2009° 19 SP SI	✓ 1483.028 E	1698.881 N
16° 512	.	10° 068	.	.	5573° 433 N	4876° 913 E	2026° 70 SP S2	✓ 1486.483 E	1698.782 N
1° 239	.	.	.	40° 761	5198° 735 N	4884° 934 E	2005° 34 SP3/9	✓ 1488.928 E	1584.590 N
.	25° 613	.	.	22° 803	5173° 172 N	4862° 931 E	2005° 78 SP3/10	✓ 1481.947 E	1576.783 N
.	36° 654	.	.	26° 105	5136° 518 N	4835° 926 E	2006° 25 SP3/11	✓ 1473.990 E	1565.611 N
36° 325	.	.	.	14° 793	5421° 200 N	4826° 439 E	2005° 53 SP3/12	✓ 1471.096 E	1652.382 N
28° 959	.	.	.	23° 077	5449° 259 N	4803° 353 E	2006° 12 TP3/13	✓ 1464.062 E	1660.934 N
.	82° 364	.	.	23° 425	5366° 835 N	4779° 928 E	2007° 01 TP3/14	✓ 1456.922 E	1635.830 N
30° 902	.	.	.	+ 716	5587° 823 N	4862° 129 E	2007° 13 TP3/16	✓ 1481.977 E	1703.168 N
38° 459	.	.	.	10° 246	5626° 282 N	4851° 663 E	2006° 11 TP3/17	✓ 1478.854 E	1714.891 N
69° 079	.	.	.	1° 707	5695° 361 N	4850° 176 E	2006° 88 TP3/18	✓ 1478.334 E	1735.946 N
51° 267	.	12° 674	.	.	5746° 628 N	4862° 850 E	2006° 13 TP3/19	✓ 1482.197 E	1751.572 N
96° 473	.	10° 568	.	.	5943° 101 N	4875° 413 E	2006° 14 TP3/20	✓ 1485.418 E	1780.977 N

OUTSIDE.. WORK SHOP.

* S.P. spike in rock
T.P. spike in timber

} Magazine

} Past Gallapagos

SURVEY CALCULATIONS

LOCATION ORAPARINNA BARYTES 4 LEVEL

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TH	SOUTH	EAST	WEST	LATITUDE N	DEPARTURE E	PLUG R.L.	STATION	METRIC VALUES EASTINGS	METRIC VALUES NORTHINGS	
938	.	37° 566	.	5381° 507 N	4886° 351 E	1931° 46	SP 4/1	1489° 360 ^m E	1640° 283 N	Removed
829	.	2° 629	.	5395° 336 N	4888° 980 E	1931° 22	SP 4/2	1490° 161 E	1644° 498 N	
107	.	4° 541	.	5420° 443 N	4938° 521 E	1930° 73	SP 4/3	1505° 261 E	1652° 151 N	
070	.	.	.	17° 338 5417° 577 N	4869° 013 E	1930° 26	SP 4/4	1484° 075 E	1651° 277 N	
434	.	.	.	30° 575 5451° 011 N	4838° 438 E	1931° 66	SP 4/5	1474° 756 E	1661° 468 N	
.	17° 511	16° 131	.	5333° 996 N	4902° 422 E	1935° 13	SP 4/6	1494° 277 E	1625° 802 N	Stopped
273	.	.	.	42° 608 5540° 281 N	4795° 830 E	1929° 13	TP 4/11 ^A	1461° 769 E	1688° 679 N	
.	93° 929	.	.	18° 114 5446° 355 N	4777° 716 E	1930° 26	SP 4/13	1456° 248 E	1660° 049 N	Beyond collapse
.	57° 106	.	.	13° 233 5339° 249 N	4764° 478 E	1930° 11	SP 4/14	1452° 213 E	1642° 643 N	"
.	54° 108	.	.	21° 082 5335° 141 N	4743° 336 E	1930° 57	SP 4/15	1445° 787 E	1626° 151 N	"
207	.	.	.	42° 605 5540° 308 N	4795° 833 E	1929° 13	SP 4/11 ^A	1461° 770 E	1688° 686 N	Stopped
183	.	23° 662	.	5634° 491 N	4819° 495 E	1930° 64	SP 4/16	1468° 982 E	1717° 393 N	Stopped
743	.	9° 730	.	5686° 234 N	4829° 225 E	1929° 32	SP 4/12 ^A	1471° 948 E	1733° 164 N	Stopped
.	55° 643	13° 240	.	5578° 848 N	4832° 835 E	1929° 12	SP 4/17	1473° 048 E	1700° 433 N	removed
699	.	31° 312	.	5791° 923 N	4860° 537 E	1929° 59	SP 4/18	1481° 492 E	1765° 378 N	Stopped
.
.	0° 773	15° 010	.	5578° 075 N	4847° 815 E	1928° 46	SP 4/9 ^B	1477° 623 E	1700° 197 N	
302	.	12° 915	.	5610° 067 N	4860° 760 E	1929° 07	SP 4/19	1481° 560 E	1709° 948 N	Stopped
608	.	.	.	9° 547 5673° 675 N	4851° 213 E	1930° 69	SP 4/20	1478° 650 E	1729° 336 N	Stopped
733	.	0° 504	.	5723° 408 N	4851° 717 E	1928° 89	SP 4/21	1478° 803 E	1744° 495 N	Back filled
253	.	.	.	25° 400 5230° 446 N	4933° 730 E	1939° 34	SP 4/7	1503° 801 E	1594° 240 N	Stopped
526	.	.	.	31° 251 5333° 972 N	4902° 479 E	1938° 18	SP 4/6	1494° 276 E	1625° 795 N	Stopped

LEVEL No. 3

SURVEY CALCULATIONS

LOCATION

3

DATE	LINE	BEARING	QUADRANT	DISTANCE	NORTH	SOUTH	EAST	WEST	LATITUDE	DEPARTURE	PLUG R.L.	CALCS. BY	CH'KD. BY	REMARKS
	T11								4709.100 N	5357.700 E	1997.40			Rel. level same.
✓	T11 SP1/3	318 18 30	41 41 30	4	121.74	90.908			30.972 4800.008 N	5276.728 E	2005.59			
✓	SP1/3 SP2/3	318 32 05			412.97	309.462			273.455 5109.470 N	5003.273 E	2005.97			
✓	SP2/3 SP3/3	318 37 35			117.37	88.076			77.578 5197.546 N	4925.695 E	2006.04			
✓	SP3/3 W/1	177 39 40			27.141		27.118	1.108	5170.428 N	4926.803 E	2015.67			
✓	SP3/3 T3/4	345 39 10			73.061	70.782			18.104 5268.328 N	4907.591 E	2005.13	6.2	1998.83	
✓	T3/4 SP3/5	330 28 05			95.733	83.295			47.183 5351.623 N	4860.403 E	2007.92	8.75	1999.17	
✓	SP3/5 SP3/6	329 34 35			37.866	32.652			19.175 5384.275 N	4841.228 E	2007.56	8.35	1999.21	
✓	SP3/6 SP3/7	32 27 45			65.271	55.072		35.034	5433.347 N	4876.262 E	2007.60	8.5	1999.10	
✓	SP3/7 SP3/8	355 25 15			117.950	117.574			9.417 5556.921 N	4866.845 E	2007.88	8.2	1999.08	
✓	SP3/8 SP3/1	355 41 35			16.892	16.834			1.268 5573.755 N	4865.577 E	2009.19	9.4	1999.79	
✓	SP3/8 SP3/2	31 22 20			10.330	16.512		10.068	5573.433 N	4876.913 E	2026.70			
✓	SP3/3 SP3/9	271 44 30			40.78	1.239			40.761 5198.785 N	4834.031 E	2005.34	7.1	1998.24	
✓	SP3/9 SP3/10	221 48 10			34.36		25.613		22.803 5173.172 N	4862.031 E	2005.78	7.4	1998.33	
✓	SP3/10 SP3/11	215 27 30			45.00		36.654		26.105 5136.518 N	4835.926 E	2006.25			
✓	SP3/6 TP3/2	338 09 40			39.78	36.925			14.798 5421.200 N	4826.430 E	2005.58	6.2	1999.33	
✓	TP3/2 TP3/3	220 33 55			36.33	28.059			23.077 5440.259 N	4803.353 E	2006.12	6.7	1999.42	
✓	TP3/3 TP3/4	195 52 35			85.63		82.364		23.425 5366.895 N	4779.928 E	2007.01	7.6	1999.41	
✓	SP3/8 TP3/16	351 19 20			31.26	30.902			4.716 5587.823 N	4862.129 E	2007.13	7.2	1999.93	
✓	TP3/16 TP3/17	345 04 55			39.80	38.459			10.246 5626.282 N	4851.883 E	2006.11	5.7	2000.41	
✓	TP3/17 TP3/18	358 35 05			69.10	69.079			1.707 5695.361 N	4850.176 E	2006.88	5.6	2001.28	
✓	TP3/18 TP3/19	13 53 10			52.81	51.267		12.674	5746.628 N	4862.850 E	2006.13	5.9	2000.23	
✓	TP3/19 TP3/20	6 15 05			97.05	96.473		10.568	5843.101 N	4873.418 E	2006.14	6.5	1999.64	

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LEVEL No. 4

THE ZINC CORPORATION LIMITED

SURVEY CALCULATIONS

ZC 4 "M"

LOCATION.....

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DATE	LINE	BEARING	QUADRANT	DISTANCE	NORTH	SOUTH	EAST	WEST	LATITUDE	DEPARTURE	PLUG R.L.	CALCS. BY	CH'KD. BY	REMARKS
	W/F SP4/1	63 14 45	X	42.07	18.938	.	37.566	.	5381.507 N	4886.351 E	1931.46	9.0		Platform.
	SP4/1 SP4/2	10 45 51	X	14.077	13.829	.	2.629	.	5395.336 N	4888.980 E	1931.22			
	SP4/2 SP4/3	63 07 31	X	55.540	25.107	.	49.541	.	5420.443 N	4938.521 E	1930.73			
	SP4/1 SP4/4	334 19 41	X	40.020	36.070	.	.	.	17.338 5417.577 N	4869.013 E	1930.26			
	SP4/4 SP4/5A	317 33 26	X	45.306	33.434	.	.	.	30.575 5451.011 N	4838.438 E	1931.66			
	SP4/1 SP4/6	161 14 46	X	50.175	.	47.511	16.131	.	5333.996 N	4902.482 E	1935.13			
	SP4/5A TP4/1A	334 29 10	X	98.92	89.273	.	.	.	42.608 5540.284 N	4795.820 E	1929.13	7.6	1921.53	
	TP4/1A TP4/13	190 54 55	X	95.66	.	93.929	.	.	18.114 5446.355 N	4777.716 E	1930.26	6.6	1923.66	
	TP4/13 TP4/14	193 03 05	X	58.62	.	57.106	.	.	13.238 5389.249 N	4764.478 E	1930.11	6.6	1923.51	
	TP4/14 TP4/15	201 17 15	X	58.07	.	54.108	.	.	21.082 5335.141 N	4743.396 E	1930.57	6.9	1923.67	
	SP4/5A SP4/11A	334 29 36	X	98.94	89.207	.	.	.	42.605 5540.308 N	4795.833 E	1929.13	7.6	1921.53	6.6 value.
	SP4/11A SP4/16	14 06 10	X	97.11	94.183	.	23.662	.	5634.491 N	4819.495 E	1930.64	9.4	1921.24	
	SP4/16 SP4/2A	10 39 00	X	52.65	51.743	.	9.730	.	5686.234 N	4820.225 E	1929.32	8.0	1921.32	
	SP4/16 SP4/17	166 31 05	X	57.22	.	55.643	13.340	.	5578.348 N	4832.335 E	1929.12			
	SP4/2A SP4/18	16 39 10	X	110.23	105.689	.	31.312	.	5791.923 N	4860.357 E	1929.59	7.3	1922.29	
	REMOVED → SP4/17 SP4/2A	92 57 25	X	15.04			
	SP4/17 SP4/2B	92 56 55	X	15.03	.	0.773	15.010	.	5578.075 N	4847.845 E	1926.46	7.3	1921.16	
	SP4/2B SP4/19	21 59 00	X	34.50	31.902	.	12.915	.	5610.067 N	4860.760 E	1929.07	7.7	1921.37	
	SP4/19 SP4/20	351 27 50	X	64.32	63.608	.	.	.	9.547 5673.675 N	4851.213 E	1930.69	9.2	1921.49	
	SP4/20 SP4/21	0 34 10		50.735	50.733	.	0.504	.	5723.408 N	4851.717 E	1928.89	6.9	1922.19	
	W/5 SP4/7	328 22 55	X	48.45	41.258	.	.	.	25.400 5230.446 N	4933.730 E	1930.34			
	SP4/7 SP4/6	343 12 10	X	108.14	103.526	.	.	.	31.251 5333.972 N	4902.479 E	1938.18			

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SURVEY CALCULATIONS

LOCATION.....

c

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SURVEY ADJUSTMENT - LEAST SQUARES VARIATION OF COORDINATES ON THE SPHEROID

PBS SPECIALORT

SECTION PBS EX

AUSTRALIAN GEODETIC DATUM

A= 6378160.00 MS 1/F= 298.250

STATION	SERIAL	SOUTH LATITUDE	EAST LONGITUDE	ZONE	EASTING	MS	NORTHING	CONVERGENCE	HEIGHT MS
FIXED POINTS									
	10	31 19 20.9000	138 50 8.2000	54	294049.481	6532624.327	- 1 7 32.03		

ADJUSTED POINTS

	ADJ	LATS	ADJ	LONGS		AMC	COORDS	HOLDING	STATION	10	AS	138° 50' 08.2" by scaling
1	31 19 11.2557	138 50 51.3594	54	295184.704	6532943.692	- 1 7 9.26						
3	31 18 49.6821	138 50 42.6190	54	294940.629	6533603.568	- 1 7 13.11						
4	31 19 27.5222	138 50 27.4266	54	294561.781	6532430.360	- 1 7 22.23						
5	31 19 16.3084	138 50 21.4739	54	294397.636	6532772.621	- 1 7 24.97						
6	31 18 59.2841	138 50 24.5708	54	294469.233	6533298.515	- 1 7 22.81						
7	31 19 49.5703	138 50 6.0501	54	294009.997	6531740.261	- 1 7 34.07						
8	31 19 27.9885	138 50 16.1212	54	294263.183	6532410.139	- 1 7 28.13						
9	31 19 21.4316	138 50 2.6532	54	293903.158	6532605.074	- 1 7 34.93						
11	31 19 23.8410	138 50 12.3095	54	294159.905	6532535.889	- 1 7 29.98						
13	31 19 14.5966	138 50 2.8043	54	293903.014	6532815.647	- 1 7 34.63						

ADJ COORDS
CONVERSION OF ABOVE METRES TO FEET

1	968	453.7	21	433	542.3
3	967	652.9	21	435	707.2
4	966	410.0	21	431	858.1
5	965	871.5	21	432	581.0
6	966	106.4	21	434	706.4
7	964	599.7	21	429	594.0
8	965	430.4	21	431	791.8
9	964	249.2	21	432	431.3
11	965	091.6	21	432	204.4
13	964	248.7	21	433	122.2
10	964	729.3	21	432	494.5

CONVERSION OF AMC FEET COORDS TO LOCAL COORD SYSTEM
8719.8 12 Hold 10 AS E 4995.42 N 4999.15

1	8719.8	6047.0
3	7919.0	8211.9
4	6676.1	4362.8
5	6137.6	5985.7
6	6372.5	7211.1
7	4865.8	2098.7
8	5696.5	4296.5
9	4515.3	4936.0
10	4995.4	4999.2
11	5357.7	4709.1
12	3722.6	10341.0
13	4514.8	5626.9

SECTION PBS EX SERIAL A1 1

SOUTH LATITUDE	EAST LONGITUDE	ZONE	EASTING	NORTHING	CONVERGENCE	HEIGHT
31 19 11.2557	138 50 51.3594	54	295184.704	6532943.692	-1 7 9.26	

GNRS ADJUSTED AZS & LENGTHS AT EACH STATION
HOLDING AZ OF 11-10 AS 309°49' (CALC FROM PREVIOUS COORDS)

TO	SERIAL	ADJ AZIMUTH	OBS	LAPLACE	ADJ LENGTH	OBS	ADJUSTED LENGTHS IN FEET	CONVERSION FACTOR 3.2808
	To No 4	231 37 42.30	-0.10		807.086	.025	2647.9	
	" 5	258 51 23.71	-1.51		805.349	.021	2642.2	
	" 6	297 29 50.27	-0.07		798.528	.042	2619.8	
	" 3	340 49 14.51	1.69		703.486	.014	2308.0	

SECTION PBS EX SERIAL 3

SOUTH LATITUDE EAST LONGITUDE ZONE EASTING NORTHING CONVERGENCE HEIGHT
 31 18 49.6821 138 50 42.6190 54 294940.629 6533603.568 -1 7 13.11

TO	SERIAL	ADJ AZIMUTH	OBS	LAPLACE	ADJ LENGTH	OBS	ADJ LENGTHS IN FEET
	1	160 49 19.05	-1.31		703.486	.014	2208.0
	4	199 0 59.72	2.02		1232.712	.052	4044.3
	6	238 12 44.46	-72		561.424	.009	1841.9

SECTION PBS EX SERIAL 4

SOUTH LATITUDE EAST LONGITUDE ZONE EASTING NORTHING CONVERGENCE HEIGHT
 31 19 27.5222 138 50 27.4266 54 294561.781 6532430.360 -1 7 22.23

TO	SERIAL	ADJ AZIMUTH	OBS	LAPLACE	ADJ LENGTH	OBS	ADJ LENGTHS IN FEET
	7	219 46 4.10	.91		883.466	-.031	2898.5
	8	267 14 54.67	-3.66		299.246	.010	981.8
	11	285 50 9.20	5.82		415.450	.032	1363.0
	9	285 58 46.41	2.60		681.319	-.015	2235.3
	10	291 51 37.52	-8.50		547.725	-.005	1797.0
	13	301 26 40.05	-1.03		763.071	-.023	2503.5
	5	335 30 2.94	.07		379.540	.018	1245.2
	6	355 2 15.90	3.11		872.968	.037	2864.1
	3	19 1 7.62	-.60		1232.712	.052	4044.3
	1	51 37 54.74	1.27		807.086	.025	2647.9

SECTION PBS EX SERIAL 5

SOUTH LATITUDE EAST LONGITUDE ZONE EASTING NORTHING CONVERGENCE HEIGHT
 31 19 16.3084 138 50 21.4739 54 294397.636 6532772.621 -1 7 24.97

TO	SERIAL	ADJ AZIMUTH	OBS	LAPLACE	ADJ LENGTH	OBS	ADJ LENGTHS IN FEET
	1	78 51 39.25	-.82		805.349	.021	2642.2
	4	155 30 6.04	2.39		379.540	.018	1245.2
	8	201 28 28.80	1.62		386.568	.004	1268.3
	7	201 42 15.61	-3.19		1102.603	-.013	3617.5

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SECTION PBS EX SERIAL 6

SOUTH LATITUDE EAST LONGITUDE ZONE EASTING NORTHING CONVERGENCE HEIGHT
 31 18 59.2841 138 50 24.5708 54 294469.233 6533298.515 -1 7 22.81

TO	SERIAL	ADJ AZIMUTH	OBS	LAPLACE	ADJ LENGTH	OBS
	7	197 32 38.75	-1.18		1624.317	.011
	13	230 39 56.67	-.10		744.062	.046
	3	58 12 53.84	1.73		561.424	.009
	1	117 30 4.19	1.37		798.528	.042
	4	175 2 17.39	-1.82		872.968	.037
	8	194 10 53.07			911.848	

5329.1
 2441.1
 1841.9
 2615.8
 2864.1
 2991.6

SECTION PBS EX SERIAL 7

SOUTH LATITUDE EAST LONGITUDE ZONE EASTING NORTHING CONVERGENCE HEIGHT
 31 19 49.5703 138 50 6.0501 54 294009.997 6531740.261 -1 7 34.07

TO	SERIAL	ADJ AZIMUTH	OBS	LAPLACE	ADJ LENGTH	OBS
	9	354 5 .15	-.72		871.230	-.039
	13	355 26 40.92	.51		1080.561	-.042
	10	3 40 59.50	-2.07		884.838	-.040
	11	11 47 46.63	3.79		809.527	-.048
	6	17 32 48.38	.05		1624.317	.011
	8	21 49 50.00	-2.57		716.040	-.037
	5	21 42 23.63	-1.20		1102.603	-.013
	4	39 46 15.22	2.21		883.466	-.031

2858.5
 3545.1
 2903.0
 2655.9
 5329.1
 2349.2
 3617.5
 2898.5

SECTION PBS EX SERIAL 8

SOUTH LATITUDE EAST LONGITUDE ZONE EASTING NORTHING CONVERGENCE HEIGHT
 31 19 27.9885 138 50 16.1212 54 294263.183 6532410.139 -1 7 28.13

TO	SERIAL	ADJ AZIMUTH	OBS	LAPLACE	ADJ LENGTH	OBS
	7	201 49 44.76	.08		716.040	-.037
	9	299 33 28.12	-1.28		409.361	-.039
	10	316 11 22.35	-7.51		302.528	-.026
	11	321 43 42.06	7.78		162.705	-.030
	6	14 10 57.46	-.62		911.848	.047
	5	21 28 31.58	-.74		386.568	.004
	4	87 15 .55	2.29		299.246	.010

2349.2
 1343.0
 592.5
 533.8
 2991.6
 1268.3
 581.8

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SECTION PBS EX SERIAL 9

SOUTH LATITUDE EAST LONGITUDE ZONE EASTING NORTHING CONVERGENCE HEIGHT
 31 19 21.4316 138 50 2.6532 54 293903.158 6532605.074 -1 7 34.93

TO	SERIAL	ADJ AZIMUTH	OBS	LAPLACE	ADJ LENGTH	OBS
	4	105 58 59.29	.74		481.319	-.015
	8	119 33 35.12	-5.09		409.361	-.039
	7	174 5 1.92	2.12		871.280	-.039
	13	1 5 13.81	2.23		210.547	-.022

2235.3
 1343.0
 2858.5
~~6901.7~~
 690.8

SECTION PBS EX SERIAL 10

SOUTH LATITUDE EAST LONGITUDE ZONE EASTING NORTHING CONVERGENCE HEIGHT
 31 19 20.9000 138 50 8.2000 54 294049.481 6532624.327 -1 7 32.03

TO	SERIAL	ADJ AZIMUTH	OBS	LAPLACE	ADJ LENGTH	OBS
	4	111 51 47.51	-1.42		647.725	-.005
	11	129 48 60.00	10.09	0.	141.457	.187
	8	136 11 26.47	-8.38		302.528	-.026
	7	183 40 58.38	-.29		884.838	-.040

1797.0
 464.1
 992.5
~~2903.0~~

SECTION PBS EX SERIAL 11

SOUTH LATITUDE EAST LONGITUDE ZONE EASTING NORTHING CONVERGENCE HEIGHT
 31 19 23.8410 138 50 12.3095 54 294159.905 6532535.889 -1 7 29.98

TO	SERIAL	ADJ AZIMUTH	OBS	LAPLACE	ADJ LENGTH	OBS
	8	141 43 44.04	.79		162.705	-.030
	7	191 47 43.38	-5.56		309.527	-.048
	4	105 50 17.05	4.77		415.450	.032
	10	309 48 57.86			141.457	

533.8
 2655.9
 1363.0
 464.1

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SECTION PBS EX SERIAL 13

SOUTH LATITUDE EAST LONGITUDE ZONE EASTING NORTHING CONVERGENCE HEIGHT
 31 19 14.5966 138 50 2.8043 54 293903.014 6532815.647 -1 7 34.63

TO	SERIAL	ADJ AZIMUTH	OBS LAPLACE	ADJ LENGTH	OBS
	6	50 40 7.98	1.56	744.062	.046
	4	121 26 52.85	-4.31	763.071	-.023
	7	175 26 42.61	1.93	1080.561	-.042
	9	181 5 13.73	.81	210.547	-.022

2491.1
 2503.5
 3545.1
 690.8

WHOLE ADJUSTMENT AVERAGE 2.37
 MAXIMUM 10.09

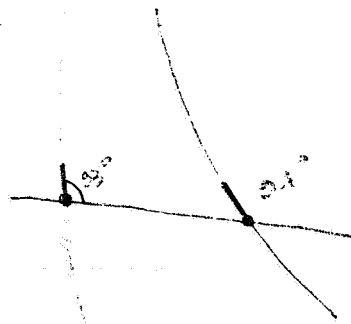
AVERAGE .00
 MAXIMUM .00 AT 10 AND 10.

AVERAGE .030
 MAXIMUM .187 AT 10

ABSOLUTE AVERAGE -.00

AVERAGE 0.00

AVERAGE .001





COMMERCIAL MINERALS LIMITED

(Incorporated in New South Wales)

INDUSTRIAL MINERALS DIVISION

100 EASTERN PARADE, GILLMAN SOUTH AUSTRALIA 5013.

TELEPHONE: (08) 47-5977. TELEX 82290

7th June, 1985

The Director-General,
P.O. Box 151,
EASTWOOD. S.A. 5063

Reference: DME 165/83 JGO/RKJ

Dear Sir,

Oraparinna Barite Mine

Further to your letter dated 27th November, 1984 we have pleasure in enclosing our technical report of activities and plans and sections for the year ended 30th June, 1985.

A comprehensive summary report on operations at Oraparinna was issued in 1982 entitled "Oraparinna Barite Deposits Geological Investigation at the Oraparinna (Bunkers Hill) Mine" by W.S. McCallum as an SADME unpublished report (RB 82/52). Changes to the operations since 1982 are depicted on the accompanying plans and sections and described hereunder. In many cases, no changes have been made and reference is given to the appropriate plan No in RB 82/52. These plans are not resubmitted with this report.

- topography and lease corner posts -

No change during the year - see plan No 80-241

- tracks, roads, buildings

No change during the year - see plan No 80-241

- extent of workings

Work continued on the decline and establishment of Nos 5, 6 and 7 Levels and details are depicted on the accompanying level plans, and longitudinal projections.

2757-W

../2



- geology of orebody and country rock

see report No RB 82/52

- location of samples, drillholes, trenches etc.

No change during the year

TECHNICAL REPORT

- geological logs of drillholes.

No drilling performed

- results of testing of samples

Only quality control testwork was carried out at Quorn mill on daily batches of raw materials and finished products.

- output by product types

All industrial grade barite and no by-products were mined. Quantities of ore produced are detailed in the 6 monthly production returns submitted to the Department.

- ore reserve statement

It is planned to compile and present an ore reserves statement for Oraparinna once driving operations have been completed on Nos 5,6 and 7 Levels. This work should be completed by end 1986 and an interim statement based on, present driving is considered premature.

- details of changes to on-site treatment.

No changes during the year

ATTACHMENTS

2 Copies of draft working plans for each of Nos 5,6 and 7 Levels. These working plans are held at Gillman Office and updated versions are available to the Department on request.

2 Copies of draft vertical horizontal projections for each of 1A, 1B, Link and 1C Lodes.

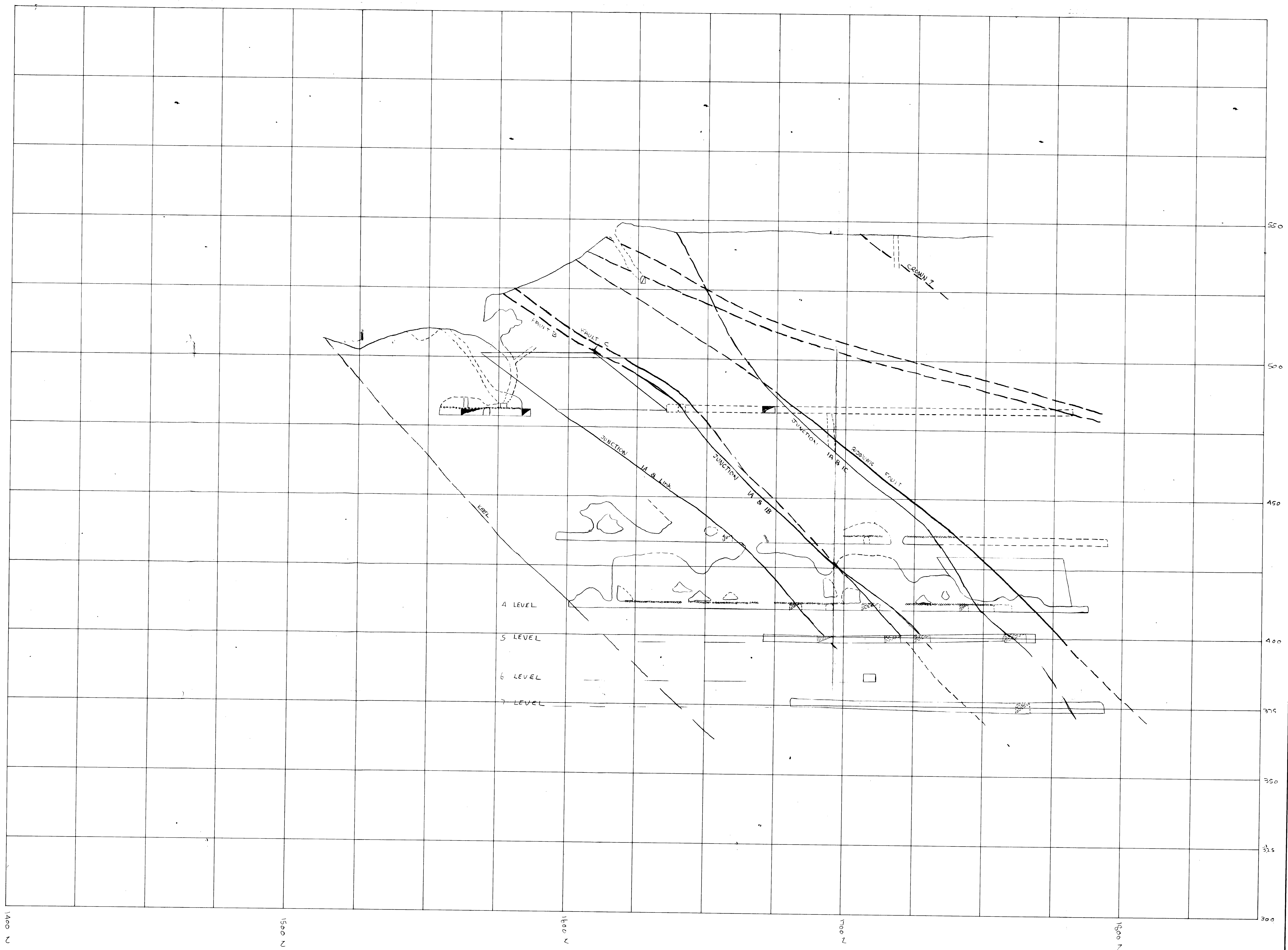
We would be happy to provide any additional information you may require.

Yours faithfully,
for COMMERCIAL MINERALS LIMITED

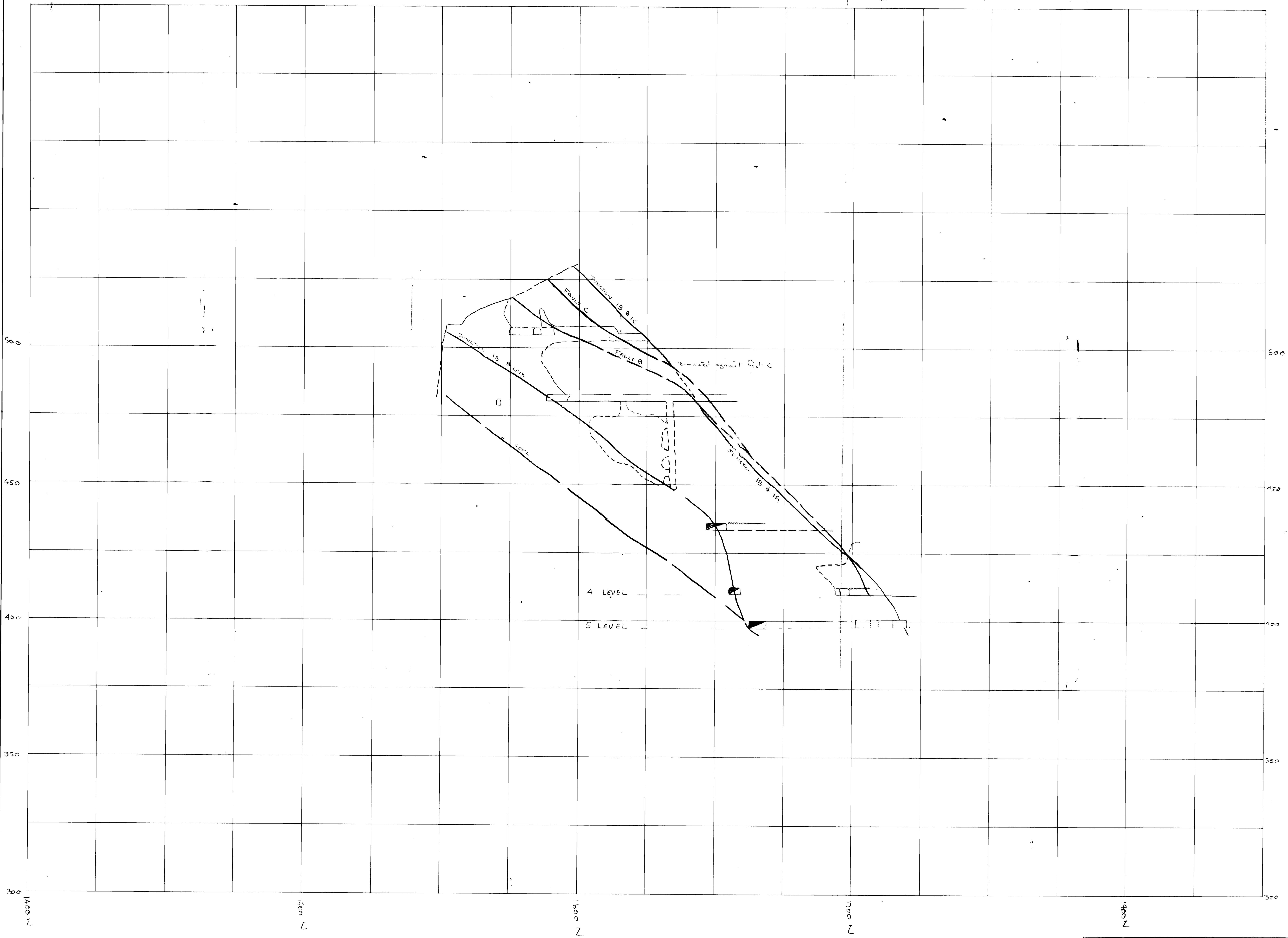
R. Nichol

11.7.85

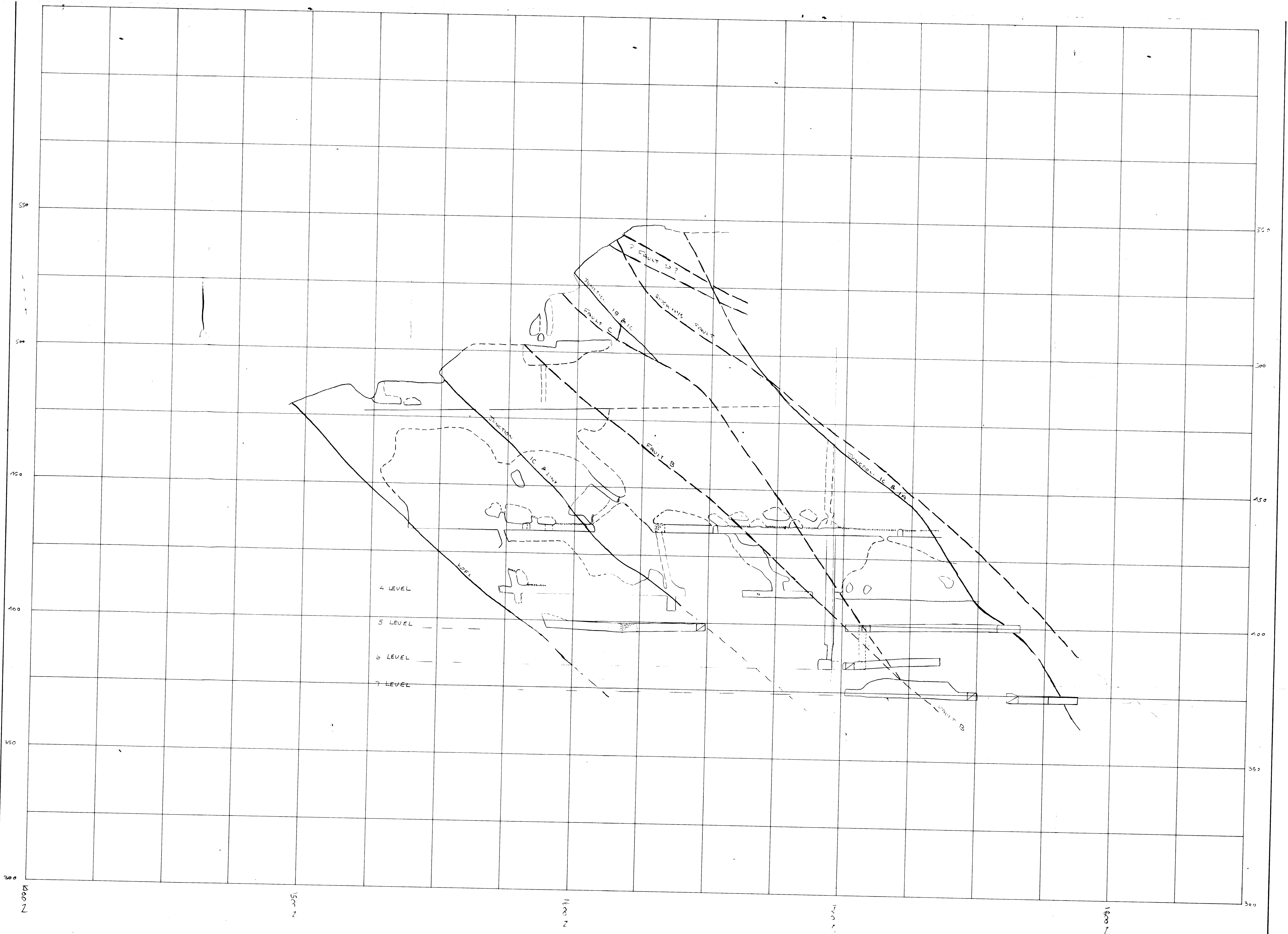
Doug Nichol,
GEOLOGIST



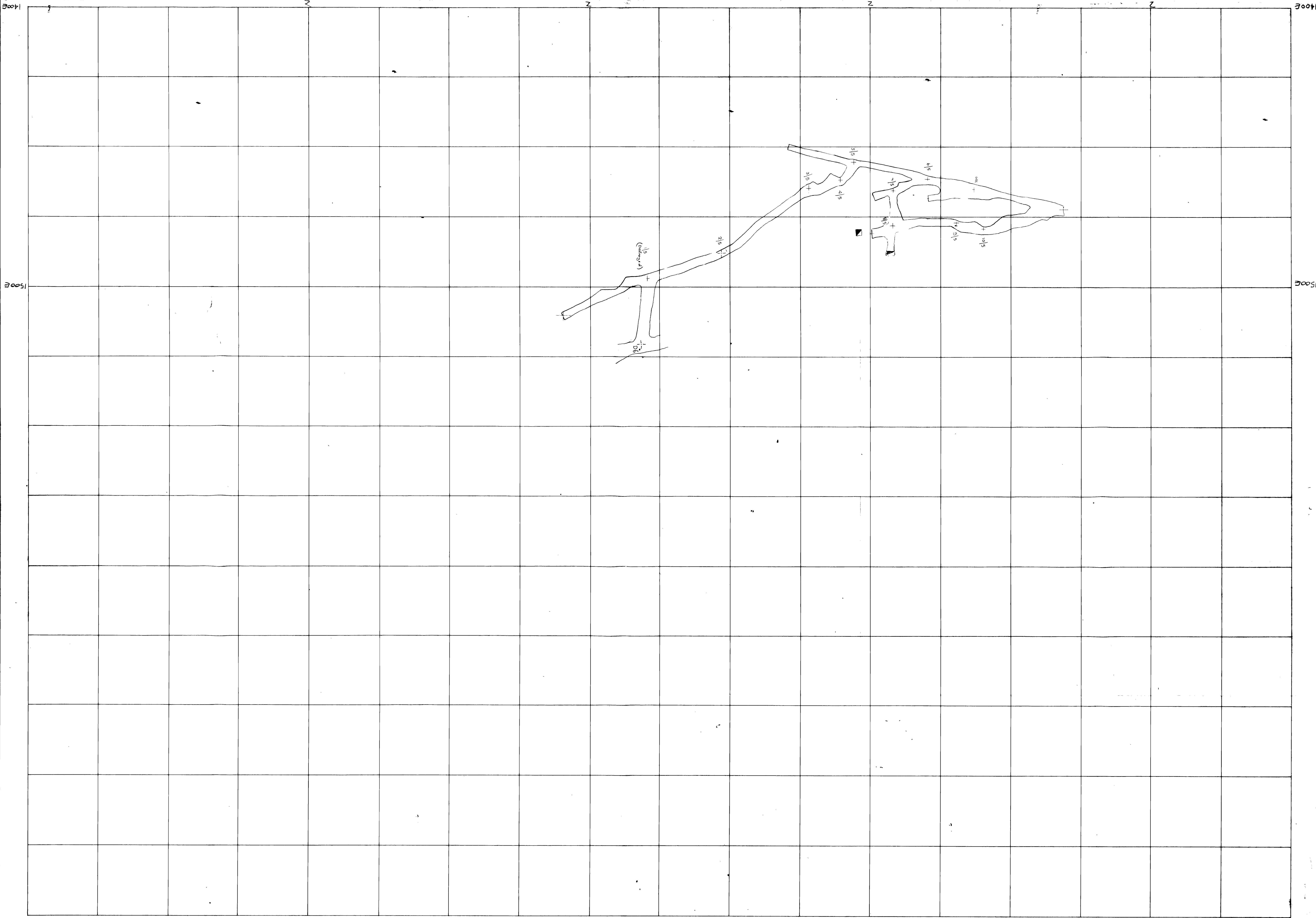
STEETLEY INDUSTRIES LTD.	
1 A LODE	
VERTICAL LONGITUDINAL PROJECTION	
ORAPARINNA MINE	
15/5/85	3757(11)-1



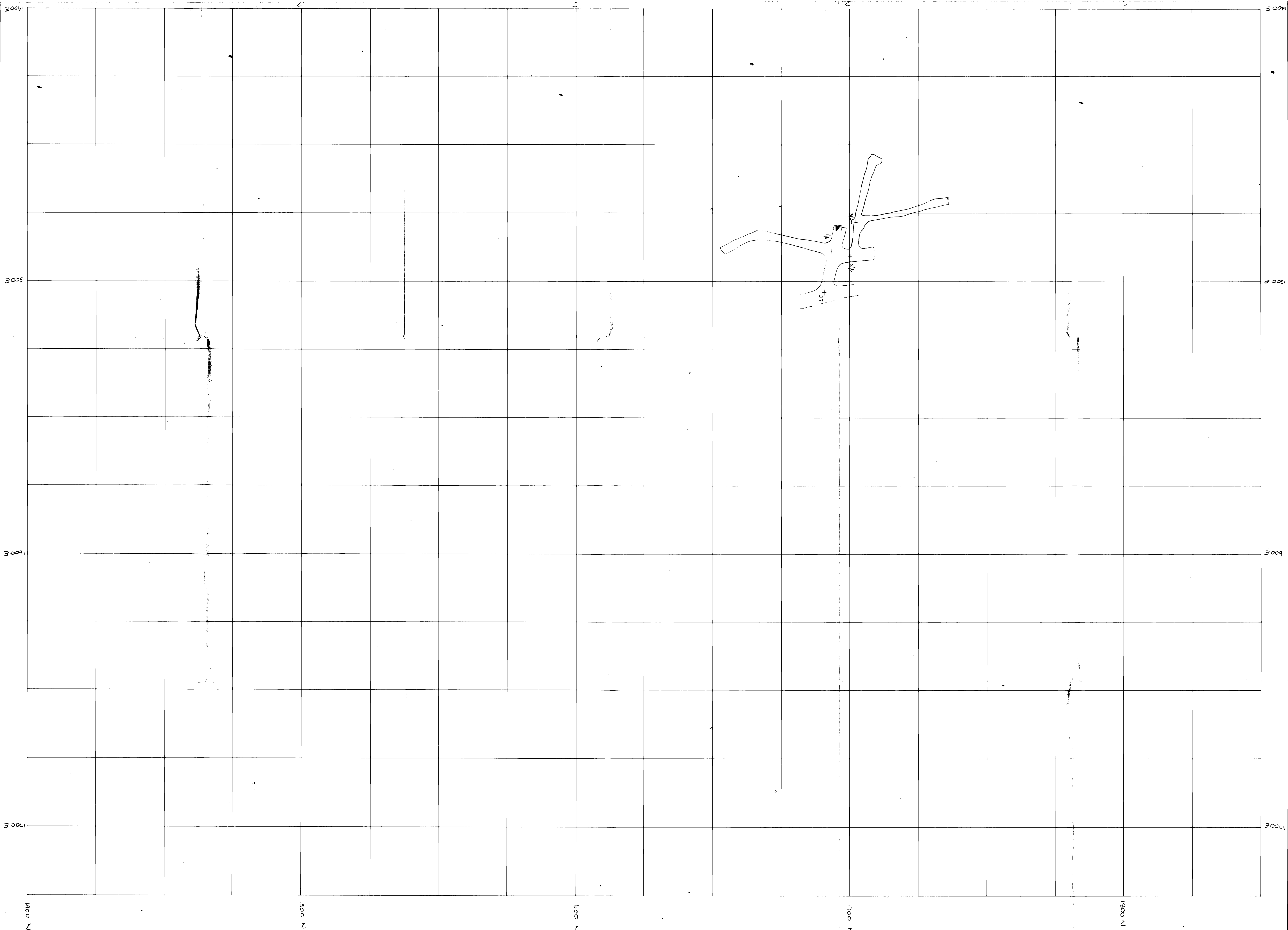
STEETLEY INDUSTRIES LTD.		
1 B LODE		
VERTICAL LONGITUDINAL PROJECTION		
ORAPARINNA MINE		
	15 / 5 / 85	3157(1V)-2



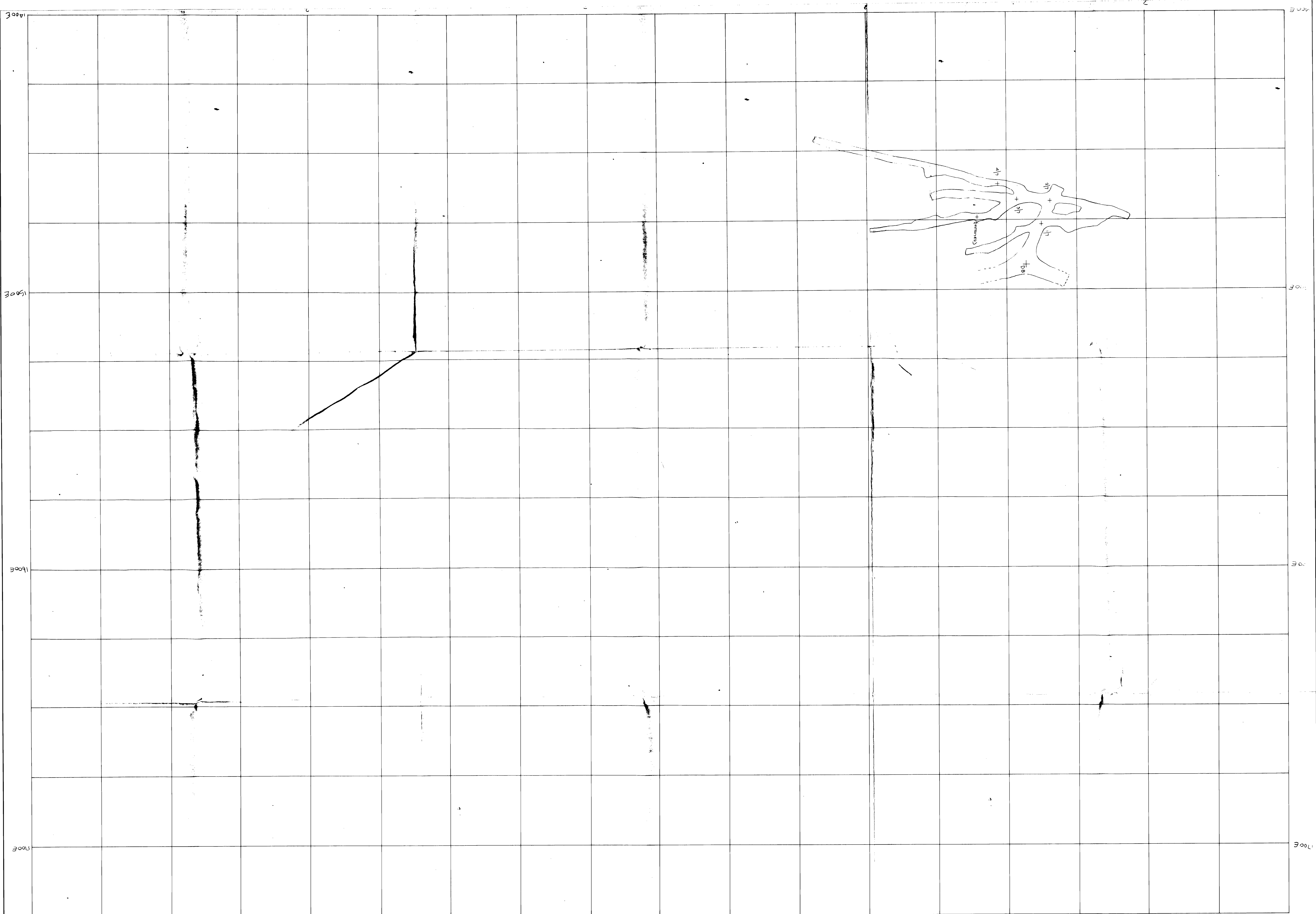
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VERTICAL LONGITUDINAL PROJECTION		
ORAPARINNA MINE		
	15/5/85	3757(IV)-3



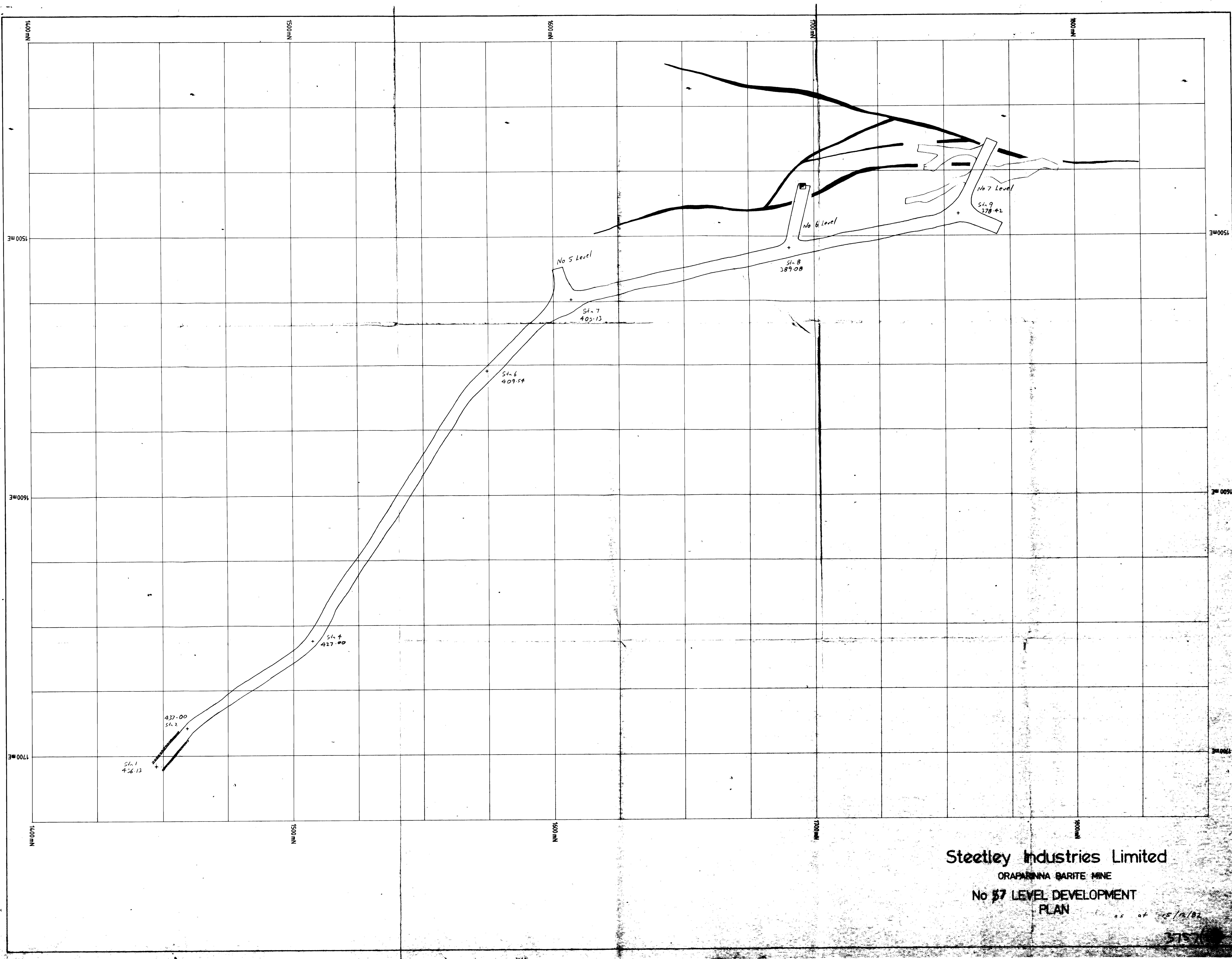
STEETLEY INDUSTRIES LTD.			
No 5 LEVEL			
ORAPARINNA MINE			
SOUTH AUSTRALIAN MINERALS GROUP		SCALE	PLAN NUMBER
DRN	DATE 15/5/85		3757(11)

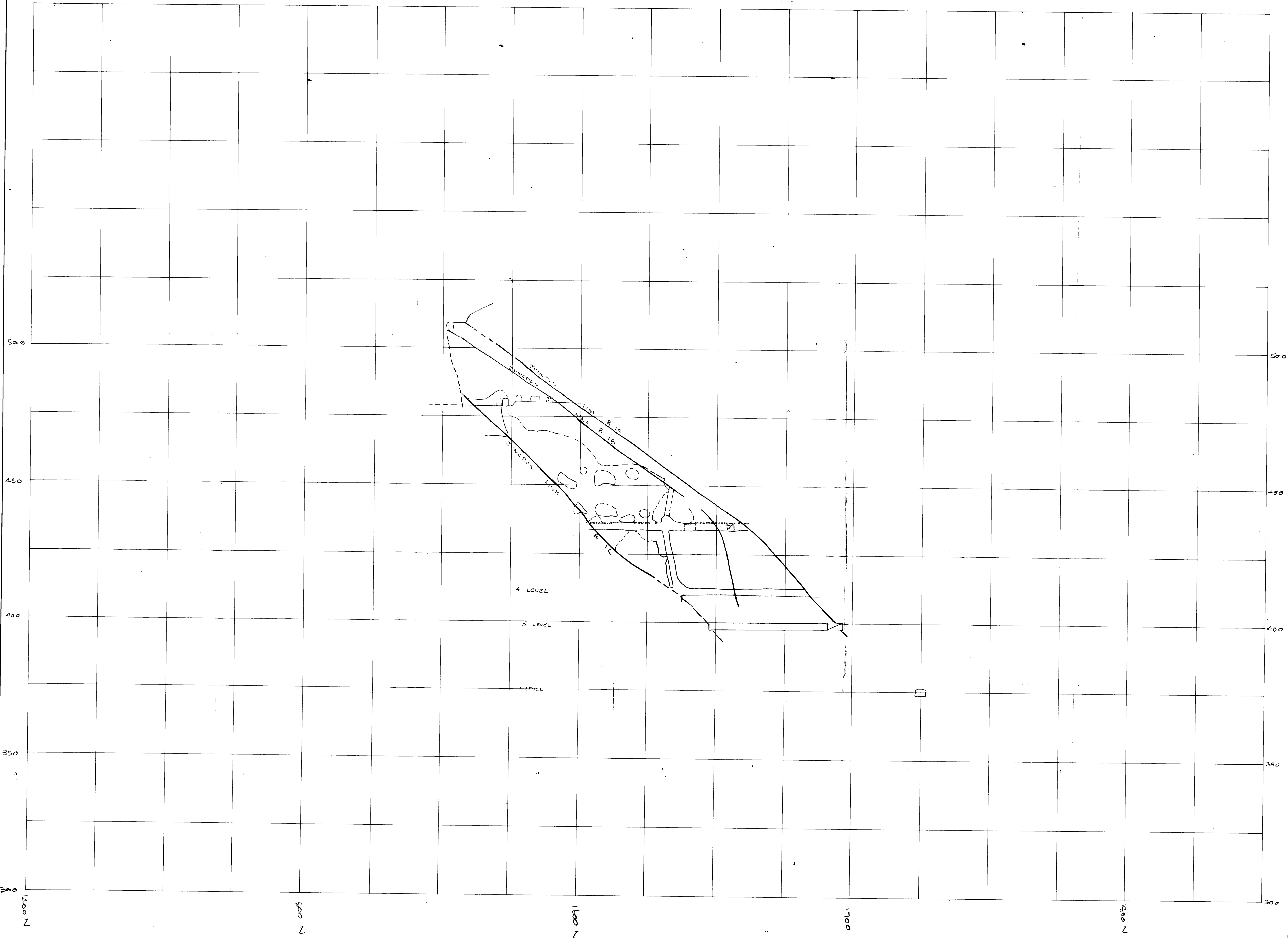


STEETLEY INDUSTRIES LTD.	
No. 6 LEVEL	
ORAPARINNA MINE	
	3757(1V)-5
15/5/85	



STEETLEY INDUSTRIES LTD.	
No. 7 LEVEL	
ORAPARINNA MINE	
15/5/85.	3757(11)-6





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LINK LODGE		
VERTICAL LONGITUDINAL PROJECTION		
ORAPARINNA MINE		
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