

329001

77-1195.

A.P.P.M

EXPLORATION LEASE 20/70

TONGANAH

NORTH-EAST TASMANIA

KAOLIN IN THE SCOTTSDALE DISTRICT

AMG REFERENCE POINTS ADDED

LIST OF PLANS

- SHEET 1 1977 BORES AT STRONACH MINE – M-B103
- SHEET 2 SCOUT BORING – NORTH FORESTER
- SHEET 3 A.P.P.M. LTD. - TONGANAH KAOLIN AREA
- SHEET 4 A.F.H. PTY. LTD. - TACHEOMETRIC SURVEY PLAN OF
KAOLIN PROSPECTING AT TONGANAH
- SHEET 5 A.P.P.M. LTD. – NORTH TONGANAH KAOLIN AREA -
LOCALITY PLAN SHOWING CLAY BEARING AREAS

300

MICROFILMED

BURNIE.

21st April, 1971.

31 MAY 71

KAOLIN IN THE SCOTSDALE DISTRICT

Scottsdale is a prosperous community of some 3,000 people supported by agriculture, food processing and sawmilling. It is situated 39 miles by road and 47 miles by rail north-easterly from Launceston. Deep water shipping facilities are currently being established on the Tamar River 31 geographical miles to the west and there is sheltered water at Anderson's Bay 12 miles to the north near the fishing village of Bridport.

Earlier investigations into the prospects of developing paper-making clay in North Eastern Tasmania recorded a deposit of weathered granite at the "White Cutting" on the Government railway five miles south-easterly from Scottsdale and another area at the Stronach mine five miles north-easterly from Scottsdale. Some work was carried out at each locality and it was concluded that the quality was satisfactory for filler clay but that the quantity, being of the order of 50,000 tons of crude clay in each case, was too small to be of more than temporary interest.

See p. 8.

In the summer of 1969-70 reconnaissance in the district convinced the writer that the potentialities were much greater than had been realized and authority to secure a mining tenement was given. Exploration Licence No. 20/70 was issued in April, 1970, over an area of 31 square miles and covers all deposits located to the present time.

The weathered granite or "saprolite" has no natural outcrops and prospecting has taken the form of probing in geologically favourable areas using an excavator with a depth capacity of twenty one feet and a tractor mounted auger drill to depths of forty six feet. These units both proved satisfactory for locating hidden saprolite but neither provided reliable samples for quantitative evaluation. Laboratory results from this type of exploration are useful indications of general quality but have been disregarded as data for quantity calculations. Churn drill samples only have been used for this purpose.

At the present stage work in three areas is sufficiently advanced to permit some form of evaluation. In four other areas scout prospecting has achieved significant results. Reconnaissance has indicated other areas in which scout drilling could reasonably be carried out. The tested areas in order of importance are:-

1. North Tonganah

The formation we have termed "North Tonganah" lies to the north of the Tasman Highway at 5 road miles easterly from Scottsdale. It is a fossil ridge of granite saprolite trending 20 degrees east of magnetic north and having a north-south extent of 9,000 feet. The width across the ridge has been proved for 1,800 feet in one place but the workable portion in most parts is less than 1,000 feet.

Westerly from the crest of the ridge the formation thins out towards the Forester River, beyond which lies the massive granite of Mount Stronach. To the east it passes under remnants of Tertiary Drift materials before being truncated by an erosional surface along the Black Creek valley.

The useful parts of the deposit occur where the leaching cycle has progressed normally without excessive re-deposition of iron and where the protective drift mantle is not too thick for economic working.

The initial plan of churn drilling was to build up areas by expanding outwards in steps of approximately 100 feet from points of low cover and good colour located by the excavator or auger. Thirty holes were bored on this basis and it was then decided to develop a 400 feet rectangular grid. On the basis of this grid three areas have been evaluated with a reasonable degree of reliability. Favourable intersections have been made outside these areas but the grid has been too coarse to establish any continuity.

By plan reference the northern most of these areas lies between 1200N and 2200N and between 500W and 400E, the central area between 1600S and 800N and between 800W and 400E, and the southern area between 6200S and 4800S and between 800W and 300E.

Calculated quantities are:-

<u>Area</u>	<u>Overburden</u>	<u>Useful Saprolite</u>
North	513,000 c.y.	1,578,000 tons
Central	1,218,000 c.y.	3,980,000 tons
South	458,000 c.y.	1,567,000 tons
Total	<u>2,189,000 c.y.</u>	<u>7,125,000 tons</u>

002

- 3 -

Conversion from cubic yards to tons has been made at the Ballarat figure of 1.3 tons per cubic yard.

In using the term "useful Saprolite" reference is intended to the type of material demonstrated by Mr. T.L. Kesler as being suitable for inclusion in bulk samples. In this context some apparently low grade material would be included if it had to be mined to give access to higher grade material.

One hundred and seventy five samples were processed in Burnie from the boxes on which these calculations are based. Most of the samples are representative of ten or fifteen feet of core but there are some odd lengths up to a maximum of twenty five feet. The samples are not of equal value as regards distribution and some were processed at -20 microns and some at -7 microns. In these circumstances weighting of the samples to calculate a mathematical brightness average would be of doubtful value. Similarly a calculated average yield figure could be misleading but since the samples already sent to the United States would be reasonably representative in this respect the figure of 35% quoted by Mr. A.D. Brookes in his letter of 16th March can be adopted for present purposes.

In the following table the samples are grouped according to brightness. The number of samples making up the average figure is quoted in each case and if this is taken as an indication of the proportional volume a useful representation of the deposit is obtained. -

Area	Brightness Above 80	Brightness 77 to 80	Brightness Below 77
North	32 samples average 82.3	15 samples average 78.7	9 samples average 74.7
Central	63 samples average 82.0	23 samples average 78.2	11 samples average 73.9
South	15 samples average 81.7	5 samples average 78.9	2 samples average 74.2

It will be seen that about 12½% of the samples fall in the below 77 brightness category. If it is desired to exclude this material the calculated tonnage should be reduced accordingly.

Boundaries were considered as straight lines with a vertical cut-off. It is probable that sufficient material would be mined outside these boundaries to compensate for negative irregularities that would be revealed by closer boring.

If further work is to be carried out in the area it could take the form of closer drilling in selected squares to test the validity of the present calculations and of drilling in the vicinity of intersections that have remained isolated in the 400 ft. grid. The southern area could also be extended in a south westerly direction.

2. Tonganah

The Tonganah deposits are reached by a track which leaves the Tasman Highway about $4\frac{1}{2}$ miles easterly from Scottsdale and leads south easterly towards the railway which it meets at the eastern end of the "White Cutting".

The area has been prospected over a south-west to north-west length of 6,000 feet by 150 pits and 96 churn drill holes.

By reference to the 200 ft. and 40 chain plans it can be seen that this deposit flanks the south eastern side of a major valley between granite masses rising more than a thousand feet on each side. The North Tonganah deposit is on the other side of the same valley and both formations slope towards the central part of the valley and are cut off by steep erosional surfaces under Drift materials exceeding 100 feet in thickness.

The Tonganah deposit occurs as an attenuated remnant protected on its south easterly side by hard granite. Evaluation in units suitable for mining has been attempted but some of the assumptions made may be disproved by closer drilling.

The most attractive section is that delineated by a heavy line between 1400NE and 2600NE on the 200 ft. plan. This is estimated to contain 1,100,000 tons of saprolite at 1.3 tons per cubic yard under 215,000 cubic yards of overburden. Sampling was generally in 5 ft. intervals and there were 64 samples in the +80 group averaging 81.6 brightness. In the 77 to 80 group 50 samples averaged 78.3 and in the below 77 group 25 samples averaged 74.4.

004

In the section between 2800NE and 6000NE there is an estimated 900,000 tons represented by 59 samples in the +80 brightness group with an average of 82.5. In the 77 to 80 group 51 samples averaged 78.3 and in the below 77 group 27 samples averaged 74.8. Overburden was calculated at 274,000 cubic yards. Although very attenuated most of this deposit would have advantages in ease of stripping and drainage.

A third deposit is the White Cutting area itself. This is separated from the other areas by a granite ridge. On the south west side of this ridge a number of pits and boxes have intersected good quality saprolite but only in limited thicknesses.

The area delineated on the plan by the heavy broken line was hand bored on a grid system some years ago. It was estimated to contain 50,000 tons. This figure can safely be doubled to include material not allowed for but no fresh calculations have been made.

In the present state of our knowledge it is reasonable to assess the Tonganah area at 2 million tons of useful saprolite. There are intersections outside the delineated areas and the formation, with erosional breaks, probably continues north easterly to link up with either the Black Creek or the Maryvale area.

If production were contemplated a first step would be to eliminate the weaknesses in the cross-sections between 1400NE and 2400NE. A small number of additional drill holes in this area would provide data for a reliable calculation.

3. Stronach

The Stronach area is situated 5 miles north easterly from Scottsdale and extends from 2 miles to 3 miles due north of the northern end of the North Tonganah deposit. It is reached by a bush track which heads northerly from Jensens Road at co-ordinates 931,900 yards N 547,400 yards E. The area has not yet been surveyed.

White saprolite can be seen in the many years abandoned workings of Cowlands Mine, the Stronach Mine and the Drift Face. Good quality samples can be obtained in these old tin leads and 90 brightness material is reported to have been washed from the Stronach Mine.

In the present investigation 95 pits were put down with the excavator and good samples were obtained from 28 of them. Some valley side areas where it was desired to dig proved too steep for the machine. Access benches were then cut by bulldozer but the work was suspended before these were used.

One of the churn drills was moved to the area for a short period but only 5 of 22 bores intersected a useful thickness of reasonable quality material.

White saprolite occurs over a fairly wide area in the locality but to date we have failed to isolate any substantial volumes. This is due to the sharp nature of the saprolite ridges and the deeply incised valleys. The deposits are residuals of a terrace system that suffered vigorous erosion probably promoted by changes of relative sea level. It lies on the seaward side of a hard granite barrier that slowed the cutting rate of the Forester River and preserved the saprolite at North Tonganah from more vigorous attack. A similar explanation probably accounts for the accumulation of worth while quantities of cassiterite in torrent gravels north of the barrier whereas with the lesser erosion on the south side the mines have been practically worthless.

It is probable that somewhere under the Drift mantle, in an area shielded from erosion by granite or hard pan, saprolite occurs in workable quantities. The locality was temporarily abandoned, not because prospects were exhausted, but because there was immediately productive work available for the equipment elsewhere.

4. North Forester

The North Forester prospect is situated midway between the West Forester and Stronach areas. It crosses Jensens Road in the vicinity of co-ordinates 931,700 yards N 545,500 yards E.

Nine auger holes, all within a few hundred feet of the road, intersected apparently reasonable quality material. The 12 samples from these bores averaged 80.2 brightness and 28% yield. Three other holes on rising ground encountered bad colour,

006

Depth of cover is not accurately measureable with the auger but seemed to be of the order of 10 to 15 feet and all holes exceeded 40 feet in depth without reaching the bottom.

The deposit is unusual in that it is about 100 feet higher than those on either side of it. The significance of this is not yet clear but it may mean that there is a second horizon to be considered in the search for fresh areas of saprolite.

5. West Forester

This area lies immediately across the Forester River from the northern end of the North Tonganah deposit and extends in a north westerly direction.

The auger drill was in the area for one day only and located reasonable looking material in four holes. These gave disappointing results in the laboratory but there is scope for further prospecting and, in view of its situation, the area should not be neglected.

6. Black Creek

The crown of the ridge between Black Creek and Parr's Rivulet crosses the Tasman Highway at six and a quarter miles easterly from Scottsdale.

Auger holes have penetrated saprolite under a cover of Drift gravels in the area north of the Highway. Potential reserves here would be small but there are indications, yet to be proved, that the formation also occurs on the south side of the Highway and continues in a south westerly direction towards the Tonganah deposit.

7. Maryvale

Saprolite of reasonable quality outcrops in a road cutting on the Tasman Highway about half a mile beyond the Black Creek ridge. This is clearly the eastern side of the major valley referred to in the Tonganah section and remnants of a saprolite terrace may occur over a considerable area in a northerly direction where the topography is favourable. Four "wild cat" holes were drilled with the auger and all intersected reasonable quality material. The area definitely merits further work but at present must be regarded as a practically untested prospect.

007

Summary

The estimated quantity of useful saprolite at the two major areas, North Tonganah and Tonganah, approximates to 9 million tons. This quantity cannot be regarded as proved but exposures outside the areas of calculation are such that it almost certainly can be proved and the means of doing this have been indicated.

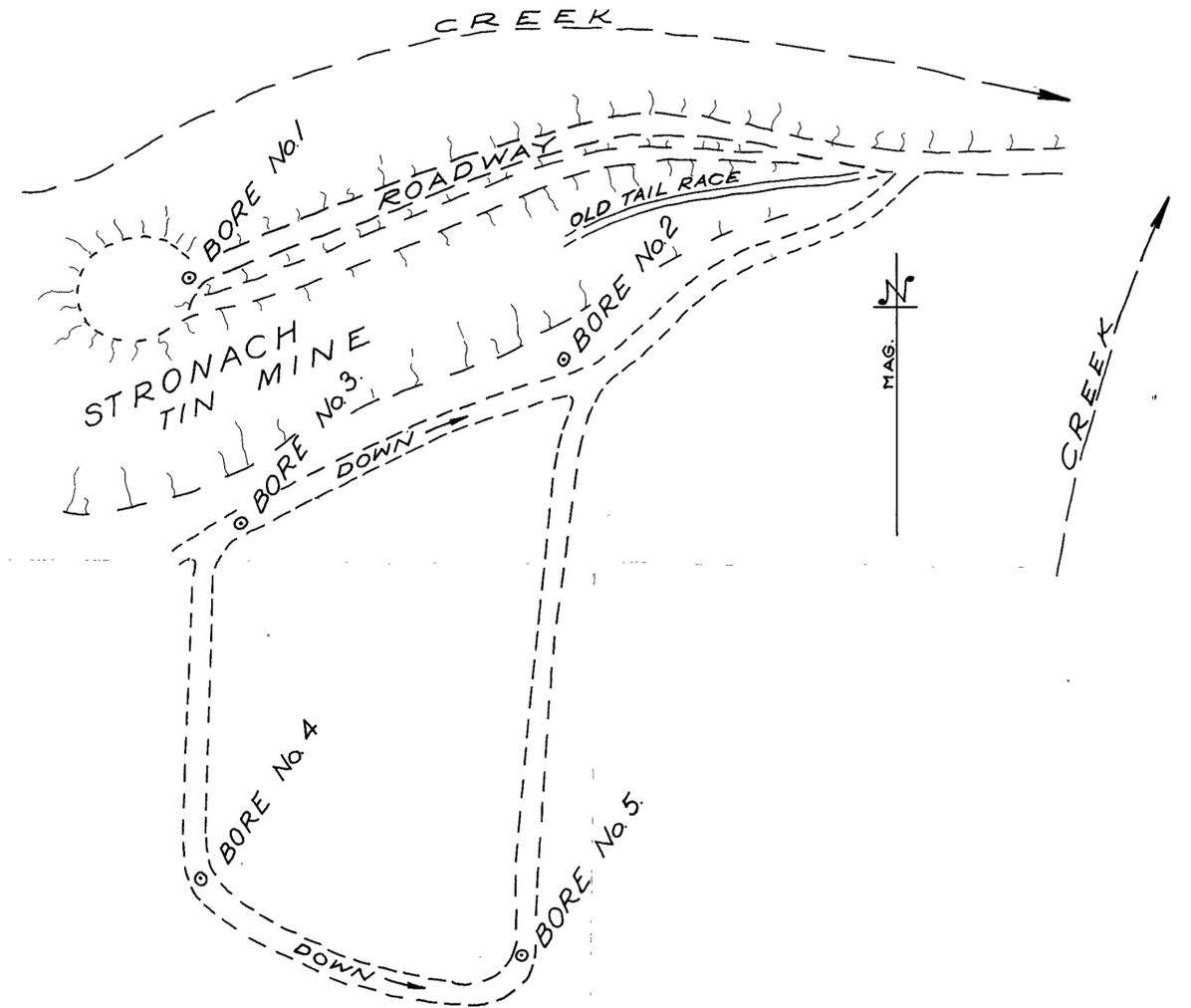
At Stronach, North Forester and Maryvale some production on a commercial basis appears to be practicable. There are other favourably situated areas that have not yet been tested in any way.

RECEIVED	REGISTERED
31 MAY 1971	E & I
DEPT. OF MINES	
10/10	

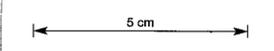
(D.R. Dickinson)

It seems to have slipped DRDS memory that the Department carried out a road drilling programme during the period 1965-6. Mr Dickenson spent a week in the field with me looking at the areas where the best results were obtained and was subsequently given locations and logs of holes with sizing data

VMT

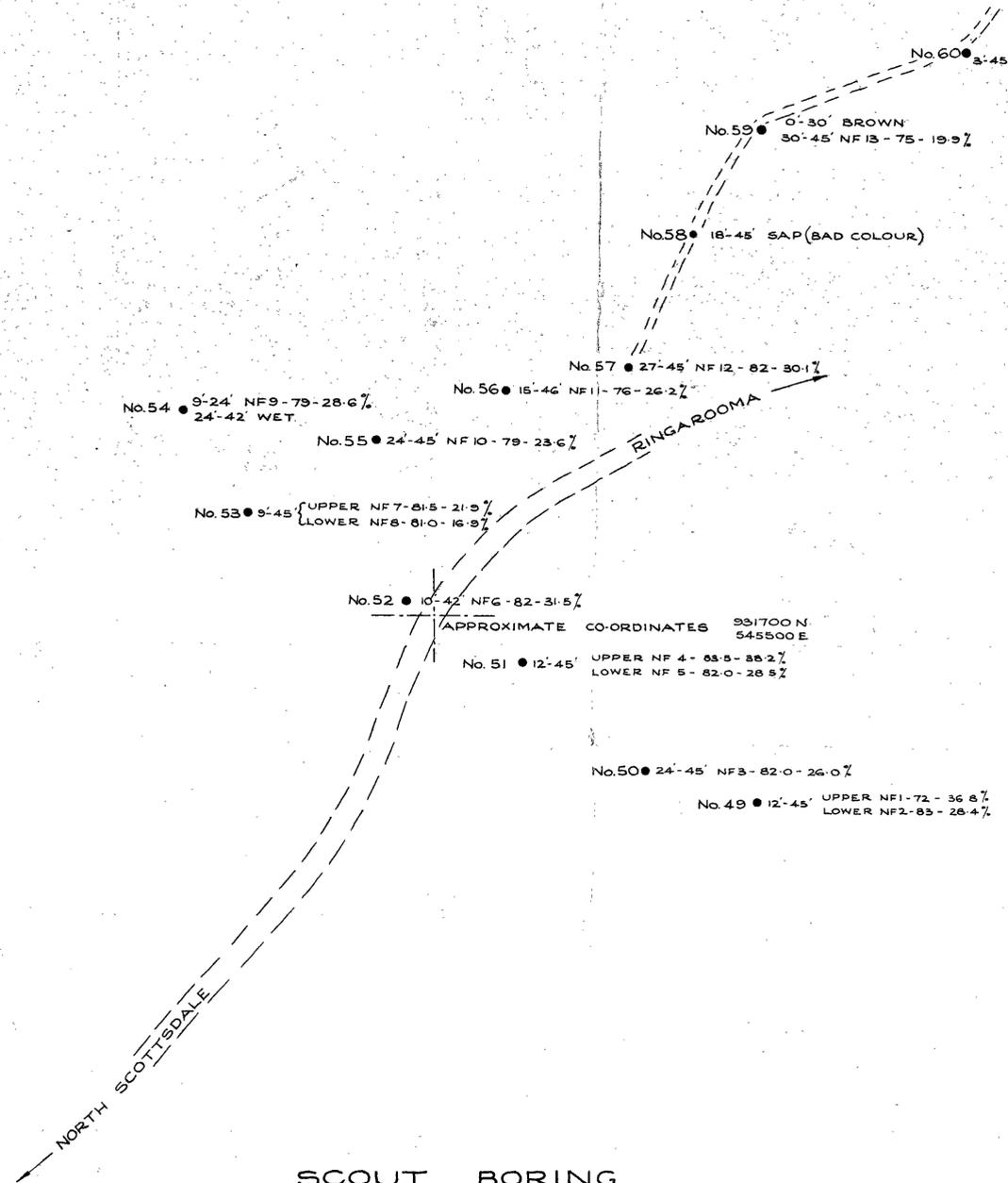


329011



REVISIONS	No	PARTICULARS	MADE BY	DATE
4				
3				
2				
1				

APPROVED		DATE	ASSOCIATED PULP & PAPER MILLS LTD., BURNIE, TASMANIA	DRAWN	DR.D 28/6/77
				TRACED	J.F.B. 28/6/77
				CHECKED	
				C D	
TONGANAH CLAY					SCALE
1977 BORES AT STRONACH MINE.					1:800 approx
LICENCE EL 20/70				M-BIO3	



SCOUT BORING
NORTH FORESTER

1 INCH = 100 FEET



NORTH SCOTTSDALE

RINGAROOMA

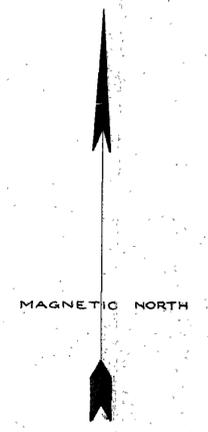
SCOUT BORING
WEST FORESTER

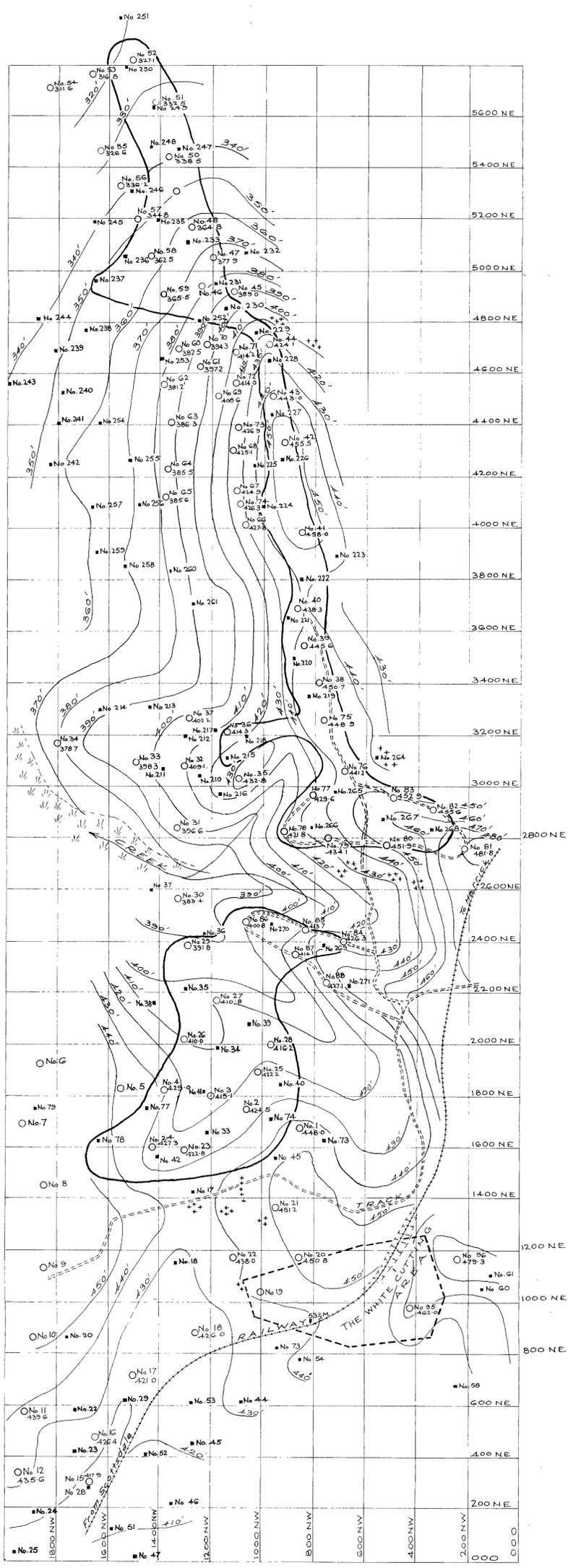
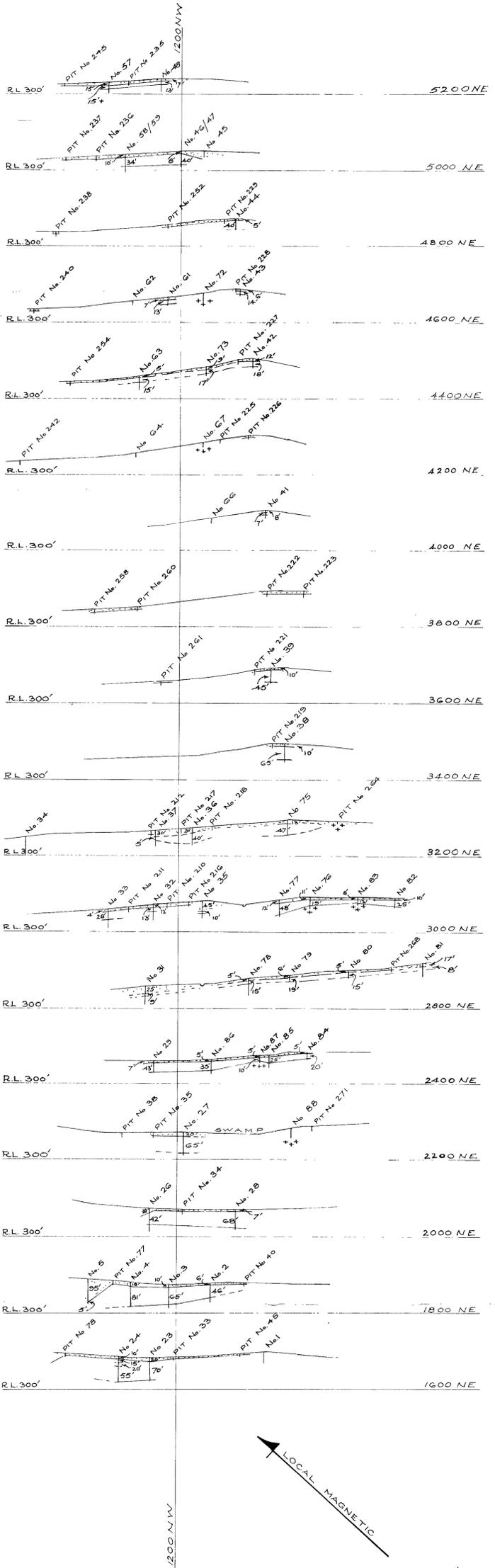
1 INCH = 100 FEET

GULLY

FORESTER RIVER

OLD BRIDGE
APPROXIMATE COORDINATES 929400 N
546200 E





PIT No	O' BURDEN	B' TNESS	YIELD
18	5	88	62%
19	7	82.3	43
23	4	82	58
24	8	81.7	45
25	10	82.0	45
26	10	81.9	50
28	10	81	42
29	8	80.7	32
33	8	82.5	47
34	8	82.8	37
35	11	83.8	38
39	10	79.5	32
40	5	79.9	32
41	7	85.8	46
42	10	81.5	43
45	12	76.5	47
46	18	80.7	36
48	7	81.8	42
49	6	80.8	36
52	10	82.0	29
53	6	77.2	44
57	3	78	42
58	9	82	32
59	5	72	41
60	12	74	41
61	5	71	44
71	4	82	47
74	4	80	48
77	11	85.3	57
78	9	84	38
79	15	80.1	44
210	12	83.9	22
211	10	81.7	23
212	16	77.0	20
215	5	87.3	50
217	18	83.7	28
218	5	85.3	43
219	12	81.0	39
220	10	83.3	25
221	8	79.0	27
222	10	77.5	33
223	11	78.0	20
224	8	82.0	19
226	8	86.5	36
227	6	83.5	31
228	4	83.5	21
229	6	81.0	80
230	9	87.5	25
231	10	78.5	23
233	6	84.7	28
234	20	82.5	4.4
235	12	84.5	4.4
236	10	81.5	46
237	7	80.0	16
239	5	79.8	20
240	12	77.0	27
243	10	72.9	22
245	8	74.0	28
248	5	76.0	33
249	12	83.3	25
250	12	79.5	21
251	12	81.0	30
252	10	78.5	37
253	12	75.0	32
254	12	79.9	34
255	10	83.0	37
256	10	82.5	42
258	12	80.3	25
260	12	81.4	30
258	8	85.0	35

BORE No	O' BURDEN	USEFUL SAF	AV B' TNESS	AV YIELD
2	6 FEET	46 FEET	78.0	26.0%
3	12	68	80.2	27.8
4	19	81	80.0	32.8
15	21	15	77.7	30.0
16	15	2.0	78.2	24.2
17	15	1.0	80.8	23.5
18	7	30	75.4	29.0
19	9	15	82.3	33.7
20	10	10	79.0	35.5
23	20	70	81.2	28.7
24	10	70	78.4	26.0
25	10	50	78.5	21.7
26	23	42	79.8	21.2
27	20	65	80.7	21.4
28	7	68	77.0	18.0
29	7	43	79.4	23.3
31	25	9	77.3	22.5
32	12	13	80.3	24.5
33	12	78	79.8	17.0
35	45	10	80.2	21.5
36	20	40	84.2	28.0
37	30	5	81.6	39.0
38	10	65	82.1	33.0
39	10	45	79.1	28.2
40	10	15	76.5	28.7
41	10	15	83.2	37.0
42	12	18	75.7	35.7
43	6	14	80.4	24.3
44	5	40	78.5	26.4
46	7	28	75.3	34.0
47	10	45	79.7	26.8
48	7	13	82.0	41.0
49	12	18	78.4	32.2
50	10	15	79.0	29.3
51	10	15	79.9	29.3
52	14	43	77.3	23.8
53	10	35	73.1	19.0
54	7	13	72.0	21.0
55	6	34	72.0	18.0
56	7	38	74.0	23.0
57	15	15+	80.3	28.0
58	7	47	75.6	24.0
59	13	22	80.0	29.0
60	10	15	78.7	32.0
61	7	13	78.7	32.0
62	2	15	79.0	33.0
63	2	15	79.0	33.0
64-74	ALL	BAD	COLOUR	
75	13	47	79.8	35.0
76	11	19	77.7	33.3
77	12	48	77.7	25.0
78	5	15	78.8	34.3
79	6	19	81.8	29.0
80	5	15	82.3	30.9
81	17	8	73.2	44.5
82	10	25	78.8	34.2
83	8	12	78.8	34.0
84	5	20	79.1	34.8
85	5	25	75.8	22.5
86	5	35	81.4	26.4
87	5	10	80.5	23.0
92	25	20	78.8	34.0
95	5	30	78.8	33.5
96	18	37	78.9	32.0

A.P.P.M. LTD.
 TONGANAH KAOLIN AREA
 1 INCH = 200 FEET H. & V.

D.R. DICKINSON
 26-4-71
 329013

A.F.H. PTY. LTD.

TACHEOMETRIC SURVEY PLAN OF KAOLIN

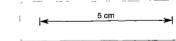
PROSPECTING AT TONGANAH.

SCALE: 1 INCH = 200 FEET

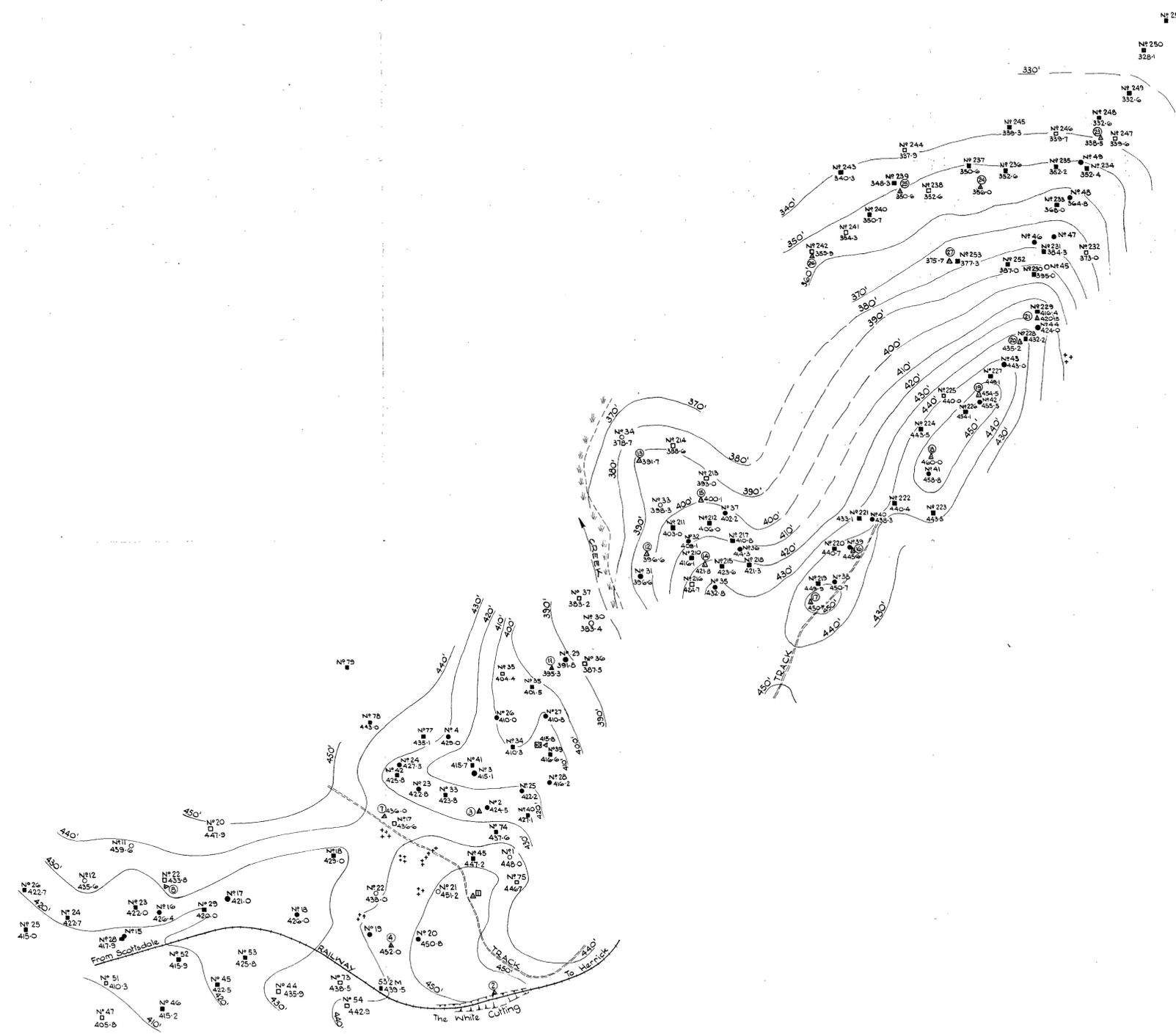
PITS— SAMPLED NOT SAMPLED
 BORES — SAMPLED NOT SAMPLED
 SURVEY STATIONS

LEVELS TO APPROXIMATE STATE DATUM.

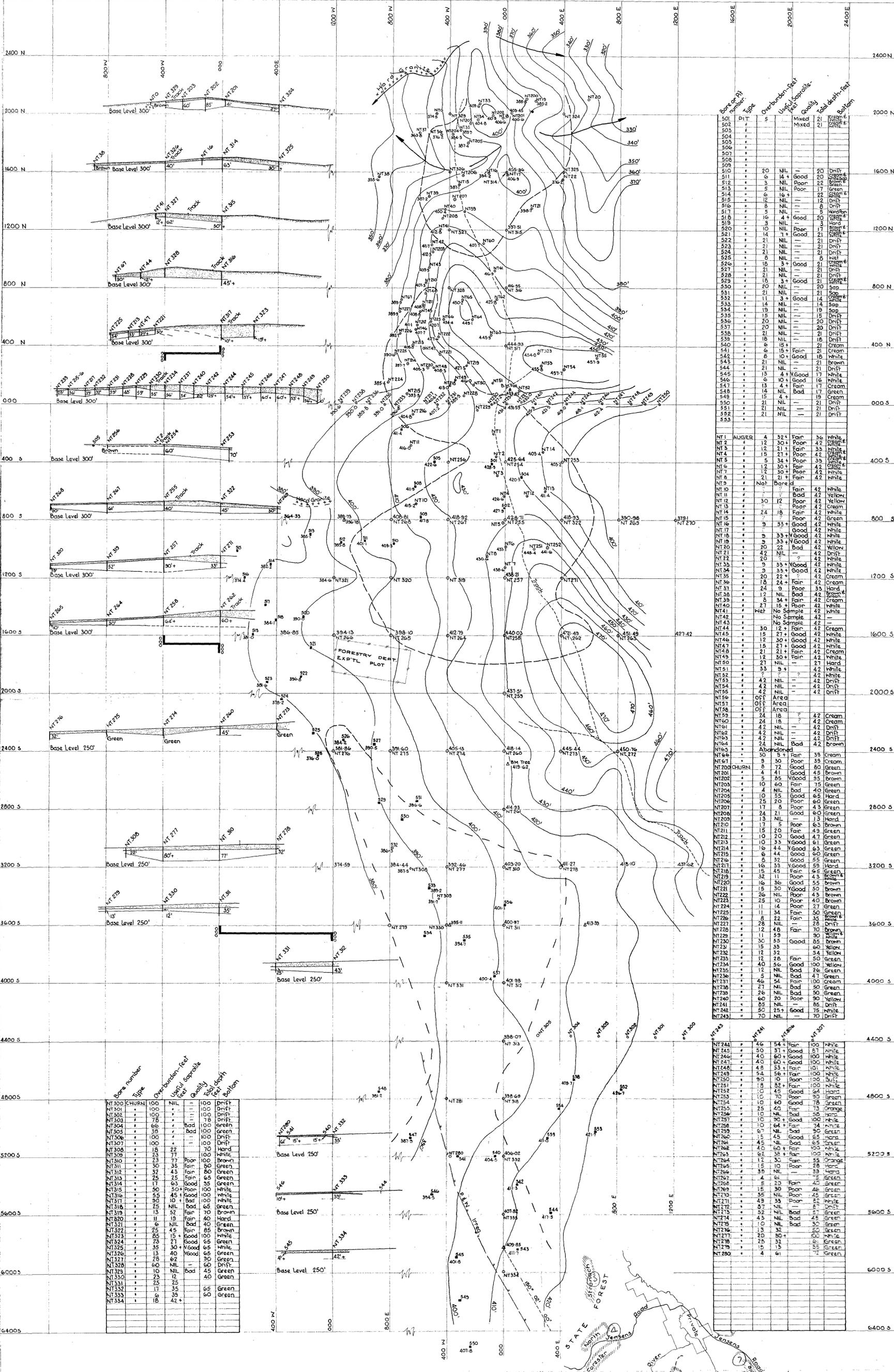
77-1145



LOCAL MAGNETIC



PIT N°	O'BURDEN	BRIGHTNESS	YIELD	BORE N°	O'BURDEN	THICKNESS	AV. B'TNESS	AV. YIELD
18	5'	88	62.2	2	6'	58'	77.6	25.4
19	7'	82.3	43	3	10'	58'	80.8	21.7
23	4'	82	58	4	19'	80'	80.0	32.8
24	8'	81.7	45	15	21'	15'	77.7	30.0
25	10'	82.0	45	16	15'	20'	78.2	24.2
26	10'	81.9	50	17	15'	10'	80.8	23.5
28	10'	81	42	18	7'	30'	75.4	23.0
29	8'	80.7	32	19	9'	15'	82.3	33.7
33	8'	82.5	47	20	10'	10'	79.0	35.5
34	8'	82.8	37	23	20'	70'	81.2	28.7
35	11'	83.8	38	24	10'	60'	78.2	26.0
39	10'	79.5	32	25	10'	50'	78.5	21.7
40	5'	79.9	32	26	18'	35'	80.0	23.4
41	7'	85.8	46	27	20'	60'	80.9	21.6
42	10'	81.5	43	28	7'	70'	77.0	18
45	12'	76.5	42	29	7'	43'	79.4	23.3
46	7'	80.7	36	31	25'	10'	77.2	22.5
48	7'	81.8	42	32	12'	13'	80.3	24.5
49	6'	80.8	36	33	12'	13'	78.8	17.0
52	10'	82.0	29	35	45'	10'	80.2	21.5
53	6'	77.2	44	36	20'	40'	84.2	28.0
57	3'	78	42	37	30'	5'	81.6	39.0
58	9'	62	32	38	10'	55'	84.0	33.0
59	5'	72	41	39	10'	45'	79.1	28.2
60	12'	74	41	40	10'	15'	78.5	28.7
61	5'	71	44	41	8'	7'	83.2	37.0
71	4'	82	47	42	12'	18'	75.7	35.7
74	4'	80	48	43	6'	14'	80.4	24.3
77	11'	85.3	57	44	5'	40'	78.5	26.4
78	9'	84	38	46	7'	34'	75.8	33.5
79	15'	80.1	44	47	10'	45'	79.7	26.8
210	12'	83.8	22	48	7'	13'	82.0	41.0
211	10'	81.7	23	49	12'	20'	80.8	32.2
212	16'	77.0	20					
215	5'	82.3	50					
217	18'	83.7	28					
218	5'	85.3	43					
219	12'	81.0	39					
220	10'	83.3	25					
221	8'	79.0	27					
222	10'	77.5	33					
223	11'	78.0	20					
224	6'	82.0	19					
226	8'	86.5	36					
227	6'	83.5	31					
228	4'	83.5	21					
229	6'	81.0	30					
230	9'	87.5	25					
231	10'	78.5	23					
232	6'	84.7	28					
234	20'	82.5	44					
235	12'	84.5	44					
236	10'	81.5	46					
237	7'	80.0	16					
239	5'	79.8	20					
240	12'	77.0	27					
243	10'	72.9	22					
245	8'	74.0	28					
248	5'	76.0	33					
249	12'	83.3	25					
250	12'	79.5	21					
251	12'	81.0	30					
252	10'	79.5	27					
253	12'	75.0	37					



Bore or Pit No.	Type	Overburden Feet	Useful Saprolite	Quality	Total Depth - Feet	Bottom
501	DIT	5	Mixed	21	26	Drift
502	"	"	"	"	"	"
503	"	"	"	"	"	"
504	"	"	"	"	"	"
505	"	"	"	"	"	"
506	"	"	"	"	"	"
507	"	"	"	"	"	"
508	"	"	"	"	"	"
509	"	"	"	"	"	"
510	"	20	14+	20	34	Drift
511	"	6	14	20	26	Drift
512	"	3	NIL	22	25	Drift
513	"	5	"	17	22	Drift
514	"	6	16	22	28	Drift
515	"	12	NIL	12	24	Drift
516	"	8	NIL	8	16	Drift
517	"	5	"	5	10	Drift
518	"	16	4+	20	36	Drift
519	"	3	NIL	3	6	Drift
520	"	10	NIL	17	27	Drift
521	"	14	1+	21	35	Drift
522	"	2	"	2	4	Drift
523	"	2	"	2	4	Drift
524	"	21	NIL	21	42	Drift
525	"	8	NIL	8	16	Drift
526	"	21	3+	21	42	Drift
527	"	16	3+	21	37	Drift
528	"	21	NIL	21	42	Drift
529	"	16	3+	21	37	Drift
530	"	20	NIL	20	40	Drift
531	"	21	NIL	21	42	Drift
532	"	11	3+	14	25	Drift
533	"	11	3+	14	25	Drift
534	"	19	NIL	19	38	Drift
535	"	15	NIL	15	30	Drift
536	"	20	NIL	20	40	Drift
537	"	20	NIL	20	40	Drift
538	"	21	NIL	21	42	Drift
539	"	16	NIL	16	32	Drift
540	"	6	15+	21	27	Drift
541	"	6	15+	21	27	Drift
542	"	8	10+	18	26	Drift
543	"	21	NIL	21	42	Drift
544	"	21	NIL	21	42	Drift
545	"	15	4+	17	32	Drift
546	"	16	10+	16	32	Drift
547	"	14	NIL	14	28	Drift
548	"	14	NIL	14	28	Drift
549	"	15	4+	19	34	Drift
550	"	21	NIL	21	42	Drift
551	"	21	NIL	21	42	Drift
552	"	21	NIL	21	42	Drift
553	"	21	NIL	21	42	Drift

Bore or Pit No.	Type	Overburden Feet	Useful Saprolite	Quality	Total Depth - Feet	Bottom
NT 1	AUGER	4	32+	Fair	36	White
NT 2	"	12	30+	Poor	42	White
NT 3	"	12	21+	Fair	33	White
NT 4	"	15	21+	Poor	42	White
NT 5	"	12	30+	Fair	36	White
NT 6	"	12	30+	Fair	36	White
NT 7	"	12	30+	Poor	42	White
NT 8	"	12	30+	Fair	36	White
NT 9	"	21	NIL	21	42	White
NT 10	"	12	30+	Fair	36	White
NT 11	"	12	30+	Bad	42	Yellow
NT 12	"	30	12	Poor	42	Yellow
NT 13	"	24	18	Fair	42	White
NT 14	"	24	18	Fair	42	White
NT 15	"	33	33	Good	66	White
NT 16	"	9	33	Good	42	White
NT 17	"	9	33	Good	42	White
NT 18	"	9	33	Good	42	White
NT 19	"	9	33	Good	42	White
NT 20	"	22	22	Bad	42	Yellow
NT 21	"	42	NIL	42	84	Drift
NT 22	"	42	NIL	42	84	Drift
NT 23	"	9	33	Wood	42	White
NT 24	"	9	33	Good	42	White
NT 25	"	18	24	Fair	42	White
NT 26	"	24	9	Poor	33	White
NT 27	"	12	NIL	Bad	42	Green
NT 28	"	6	34	Good	42	White
NT 29	"	27	15	Poor	42	White
NT 30	"	15	27	Good	42	White
NT 31	"	12	30	Fair	36	White
NT 32	"	12	30	Fair	36	White
NT 33	"	12	30	Fair	36	White
NT 34	"	12	30	Fair	36	White
NT 35	"	12	30	Fair	36	White
NT 36	"	12	30	Fair	36	White
NT 37	"	12	30	Fair	36	White
NT 38	"	12	30	Fair	36	White
NT 39	"	12	30	Fair	36	White
NT 40	"	12	30	Fair	36	White
NT 41	"	12	30	Fair	36	White
NT 42	"	12	30	Fair	36	White
NT 43	"	12	30	Fair	36	White
NT 44	"	12	30	Fair	36	White
NT 45	"	12	30	Fair	36	White
NT 46	"	12	30	Fair	36	White
NT 47	"	12	30	Fair	36	White
NT 48	"	12	30	Fair	36	White
NT 49	"	12	30	Fair	36	White
NT 50	"	12	30	Fair	36	White
NT 51	"	12	30	Fair	36	White
NT 52	"	12	30	Fair	36	White
NT 53	"	12	30	Fair	36	White
NT 54	"	12	30	Fair	36	White
NT 55	"	12	30	Fair	36	White
NT 56	"	12	30	Fair	36	White
NT 57	"	12	30	Fair	36	White
NT 58	"	12	30	Fair	36	White
NT 59	"	12	30	Fair	36	White
NT 60	"	12	30	Fair	36	White
NT 61	"	12	30	Fair	36	White
NT 62	"	12	30	Fair	36	White
NT 63	"	12	30	Fair	36	White
NT 64	"	12	30	Fair	36	White
NT 65	"	12	30	Fair	36	White
NT 66	"	12	30	Fair	36	White
NT 67	"	12	30	Fair	36	White
NT 68	"	12	30	Fair	36	White
NT 69	"	12	30	Fair	36	White
NT 70	"	12	30	Fair	36	White
NT 71	"	12	30	Fair	36	White
NT 72	"	12	30	Fair	36	White
NT 73	"	12	30	Fair	36	White
NT 74	"	12	30	Fair	36	White
NT 75	"	12	30	Fair	36	White
NT 76	"	12	30	Fair	36	White
NT 77	"	12	30	Fair	36	White
NT 78	"	12	30	Fair	36	White
NT 79	"	12	30	Fair	36	White
NT 80	"	12	30	Fair	36	White
NT 81	"	12	30	Fair	36	White
NT 82	"	12	30	Fair	36	White
NT 83	"	12	30	Fair	36	White
NT 84	"	12	30	Fair	36	White
NT 85	"	12	30	Fair	36	White
NT 86	"	12	30	Fair	36	White
NT 87	"	12	30	Fair	36	White
NT 88	"	12	30	Fair	36	White
NT 89	"	12	30	Fair	36	White
NT 90	"	12	30	Fair	36	White
NT 91	"	12	30	Fair	36	White
NT 92	"	12	30	Fair	36	White
NT 93	"	12	30	Fair	36	White
NT 94	"	12	30	Fair	36	White
NT 95	"	12	30	Fair	36	White
NT 96	"	12	30	Fair	36	White
NT 97	"	12	30	Fair	36	White
NT 98	"	12	30	Fair	36	White
NT 99	"	12	30	Fair	36	White
NT 100	"	12	30	Fair	36	White

Bore Number	Type	Overburden - Feet	Useful Saprolite	Quality	Total Depth - Feet	Bottom
NT 300	CHURN	100	NIL	100	100	Drift
NT 301	"	100	"	100	100	Drift
NT 302	"	100	"	100	100	Drift
NT 303	"	75	"	100	75	Drift
NT 304	"	66	"	100	66	Drift
NT 305	"	38	"	100	38	Drift
NT 306	"	55	"	100	55	Drift
NT 307	"	100	"	100	100	Drift
NT 308	"	18	22	70	110	Drift
NT 309	"	23	77	100	140	Drift
NT 310	"	25	75	100	120	Drift
NT 311	"	30	35	60	105	Drift
NT 312	"	37	45	60	112	Drift
NT 313	"	25	25	60	110	Drift
NT 314	"	17	63	60	100	Drift
NT 315	"	20	50	60	130	Drift
NT 316	"	25	45	60	130	Drift
NT 317	"	30	10	60	100	Drift
NT 318	"	25	NIL	60	85	Drift
NT 319	"	15	52	70	100	Drift
NT 320	"	11	19	40	70	Drift
NT 321	"	6	NIL	40	46	Drift
NT 322	"	25	45	60	130	Drift
NT 323	"	15	15	60	90	Drift
NT 324	"	25	27	60	112	Drift
NT 325	"	35	30	60	125	Drift
NT 326	"	18	40	60	118	Drift
NT 327	"	25	62	60	147	Drift
NT 328	"	60	NIL	60	120	Drift
NT 329	"	10	NIL	45	55	Drift
NT 330	"	25	25	60	110	Drift
NT 331	"	25	25	60	110	Drift
NT 332	"	17	35	60	112	Drift
NT 333	"	6	38	60	104	Drift
NT 334	"	18	42	60	120	Drift

A.P.P.M. LTD.
NORTH TONGANAH KAOLIN AREA

1 INCH = 200 FEET H & V

LEVELS: ARE REFERRED TO RAIL LEVEL AT 5 1/2 MILES CORRESPONDING TO APPROXIMATE STATE DATUM.

CLASSIFICATION: DESCRIPTIONS ARE TENTATIVE PENDING ESTABLISHMENT OF STANDARDS.

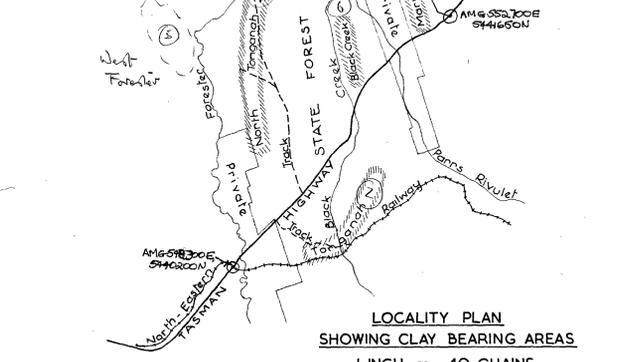
BOUNDARIES: INFERRED MARGINS OF AREAS IN WHICH USEFUL GRANITE SAPROLITE TO OVERBURDEN RATIO EXCEEDS 2 TO 1 SHOWN MARGINS WHERE CONTROL IS INCOMPLETE SHOWN



D. R. DICKINSON
8 MARCH 71

77-1195

AMG REFERENCE POINTS ADDED



LOCALITY PLAN
SHOWING CLAY BEARING AREAS
1 INCH = 40 CHAINS