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RECORD 1947/82

AUSTRALIAN ALUMINIUM PRODUCTION COMMISSION

by

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AUSTRALIAN ALUMINIUM PRODUCTION COMMISSION

VICTORIA: Preliminary Report
 on P.L. Twelve

1. GENERAL

An area of about 190 acres lying within the boundaries of Allotment 26D, Ph. . Budgerie, County of Buln Buln was taken up for prospecting purposes on 21st May, 1947. The land is owned by Martin Walker and is bounded on the west by a dry weather road known as the Mill Track, and on the north-east by Whitelaw's Track, a good road connecting Yinnar with the Midland Highway.

The distance by road from Yinnar railway station to No. 1 Bauxite area on this lease is $5\frac{1}{2}$ miles, and to No. 3 area about $\frac{1}{2}$ mile further. The bauxite in Allotment 26D was discovered by Mr. P. V. Currie, of Yinnar.

2. TOPOGRAPHY & GENERAL GEOLOGY - (See sketch map Fig. 1.)

- (a) The lease is triangular in shape with the apex towards the north-west. Whitelaw's Track, forming the north-east boundary, runs on a ridge which rises from 650 feet above sea level near the northern lease peg to 850 feet at the eastern peg. A deep V-shaped valley which has been cut by a branch of Sassafras (Belbrook) Creek along the central axis of the lease, forms the principal topographic feature. This creek crosses the south-eastern boundary of the area in a northerly direction and veers to the west passing out of the lease near the north-west corner.
- (b) The usual geological succession is in evidence on the area. The following log of Bore 3, No. 3 Area is given:-

<u>Feet</u>		
<u>From</u>	<u>To</u>	
0	1	Soil
1	- 2	Sand
2	- 4	Sandy Clay
4	- 14	Clay
14	- 46	White Sand
46	- 50	Lignitic Clay
50	- 54	Lignite
54	- 60	Clay
60	- 62	Clay & nodules of bauxite
62	- 68	Weathered basalt

The main creek has cut into the basalt to vertical depths up to 90' and consequently a wide irregular strip of basalt, in places fresh, is exposed in the centre of lease. Unfortunately the official geological parish map is seriously in error in this portion and shows basalt occupying the higher ground and with the valleys filled with Post Volcanic sediments. Had the area been mapped correctly it would have appeared an obvious place to search for bauxite, which undoubtedly would have been found while operations were in hand at P.L. 3 only $1\frac{1}{2}$ miles to the north.

(c) Towards the northern end of the lease, that is at Nos. 1 & 2 areas, the upper surface of the basalt dips at about 14° to the east-north-east. At No. 3 area the dip is substantially similar, but a small detached body of bauxite at the south extremity of No. 3 area lies on a ^{sub-}horizontal surface of basalt. This latter body of bauxite appears to be separated from the main mass of No. 3 area by a fault striking east-west.

3. THE BAUXITE BODIES.(A) No. 1 Area - (See Fig. 2.)

(i) Bauxite outcrops as a narrow, nearly horizontal band for a distance of 330' trending north-westerly. The outcrop is about 70-90' vertically above the creek channel. Below the outcrop the slope down to the watercourse is steep - 4 feet in 7 - but above the rise to the east is only 1 in 6.

Owing to the easterly dip the bauxite passes under a rapidly increasing thickness of cover, with the result that along a line approximately parallel to and 120' east of the outcrop the overburden has increased to 50 odd feet. The body is lenticular in shape with the maximum thickness of 19' developed at the centre of the outcrop. It is semicircular in plan, thinning to nothing on a curved boundary, passing from the north-west end of the outcrop through east to south-east.

(ii) Volume and Grade

Four shafts near the outcrop and one bore encountered bauxite of economic value underlying an area of 3,720 square yards and with an average thickness of 13.4 feet. These figures give a total volume of 16,700 cubic yards, equivalent to 26,000 long tons.

The grade of this bauxite ranges between:-

Shaft or Bore	Feet Thick	SiO ₂ %	Avail. Al ₂ O ₃	Cwt. Na ₂ O loss per ton Al ₂ O ₃
100S/300W	14.5	8.8	40.3	1.07 X
00/200W	18	2.0	42.0	0.36
00/300W	19	4.1	44.3	0.81

X In part estimated.

And averages -

4.8% SiO₂ 43.6% Av. Al₂O₃ 0.97 Cwt. Na₂O loss

(iii) SUMMARY. No. 1 Area, P.L. 12

Bauxite				Overburden
Cu.Yards	Long Tons	Av. Al_2O_3 %	Cwt. Na_2O per ton Al_2O_3	Vertically above bauxite. Cu. Yards.
16,700	26,000	43.6	0.97	33,000

(B) No. 2 Area

A small but massive outcrop of bauxite occurs on the western side of the creek opposite to No. 1 Area.

Of three bores put down behind the outcrop only one penetrated bauxite. The others encountered basalt at shallow depth.

The bauxite discovered was thin (18^{inches}) and of the following composition :-

SiO_2 21.0%

Av. Al_2O_3 33.5%

Na_2O loss cwt. per ton Al_2O_3 - 2.99

The area was abandoned.

(C) No. 3 AREA (See Fig. 3)

- (i) This area contains three small detached bodies of bauxite totalling about 27,000 long tons.

For convenience the bodies are referred to as the Northern, Central and Southern, and although each is small, together they extend over a length of 1,200 feet by a width a hundred feet and more.

The Southern body is separated from the others by faulting which has reversed the dip.

- (ii)
(2) The Northern deposit lies on a surface of weathered basalt which dips east-north-east at about 17°.

This structural feature brings the bauxite beneath a great thickness of overburden.

Fortunately a substantial thickness of good grade material exists ~~at this point~~; the shaft at 00/100W penetrated 19 feet of bauxite containing 42.8% available Al_2O_3 .

Tonnage of bauxite of economic grade amounts to:-

Bauxite					Overburden vertically above bauxite
Cu. Yds	Long tons	SiO_2 %	Av. Al_2O_3 %	Cwt Na_2O Loss	Cu. yds
9,600	14,400	5.2	42.8	1.07	27,000

- (iii)
(3) The central deposit is smaller, both vertically and in horizontal extent, but has a shallower dip to the east-north-east of about 10° and consequently lies under shallower overburden. The maximum thickness developed is 9.5 feet, the total length 250 feet and width 70-80 feet.

Bauxite					Overburden vertically above bauxite
Cu. Yds	Long tons	SiO_2	Av. Al_2O_3	Cwt Na_2O Loss	Cu. yds
4,870	7,300	6.5	44.8	1.19	8,300

- (4) The Southern body is also small and lies 500 feet south of the Central one. Only one shaft encountered bauxite of economic grade and it is apparent from the results of surrounding shafts and bores that is the body, narrow and lenticular.

But for the favourable dip to the north-west at 5° it is doubtful whether the bauxite would be worth extracting.

Bauxite					Overburden vertically above bauxite
Cu. Yds	Long tons	SiO ₂ %	Av. Al ₂ O ₃ %	Cwt. Na ₂ O loss	Cu. yards
3,700	5,500	3.6	42.7	0.90	7,000

(5) SUMMARY: NO. 3 AREA

Body	Bauxite					o/burden Cu.yds
	Cu.yds	Long Tons	SiO ₂ %	Av. Al ₂ O ₃ %	Cwt Na ₂ O loss	
North	9,600	14,400	5.2	42.8	1.07	27,000
Central	4,870	7,300	6.5	44.8	1.19	8,300
South	3,700	5,500	3.6	42.7	0.90	7,000
TOTAL	18,170	27,200	5.2	43.2	1.07	42,300

- (D) (6) In addition to Areas 1, 2 and 3, other sites on the lease were prospected by hand-boring with negative results. These sites are marked on Fig. 1 by crosses enclosed in circles.

An outcrop of bauxite in the Mill Track near its southern end where it joins Midland Highway was tested with four hand bores, also with negative result.

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4. (7) SUMMARY: P.L. Twelve

Reserves of economic bauxite:

No. 1 Area	25,000 tons
No. 2 Area	Nil
No. 3 Area	<u>27,200 tons</u>
	52,200 tons
	=====

Average composition 5.0% SiO_2

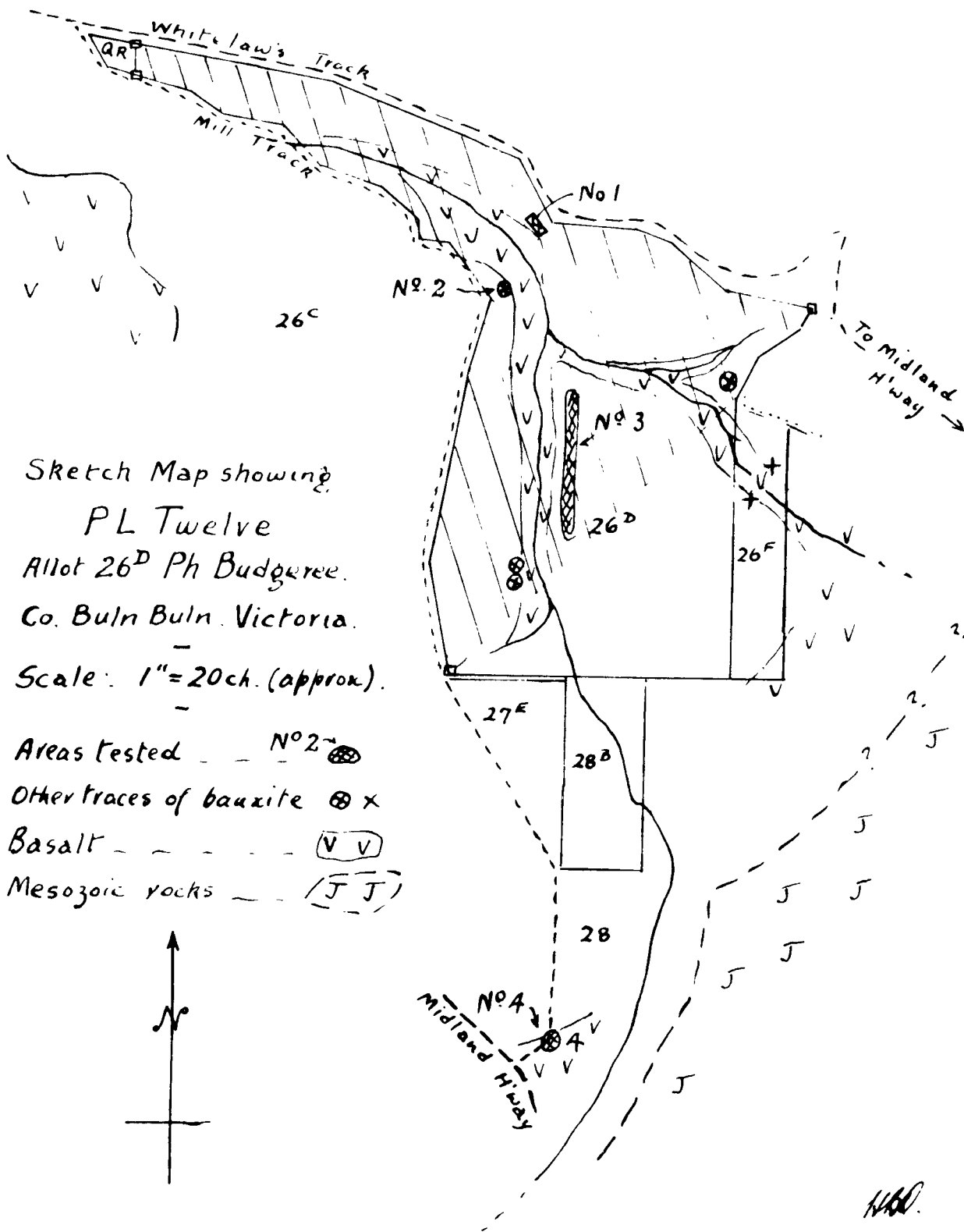
43.4% Av. Al_2O_3

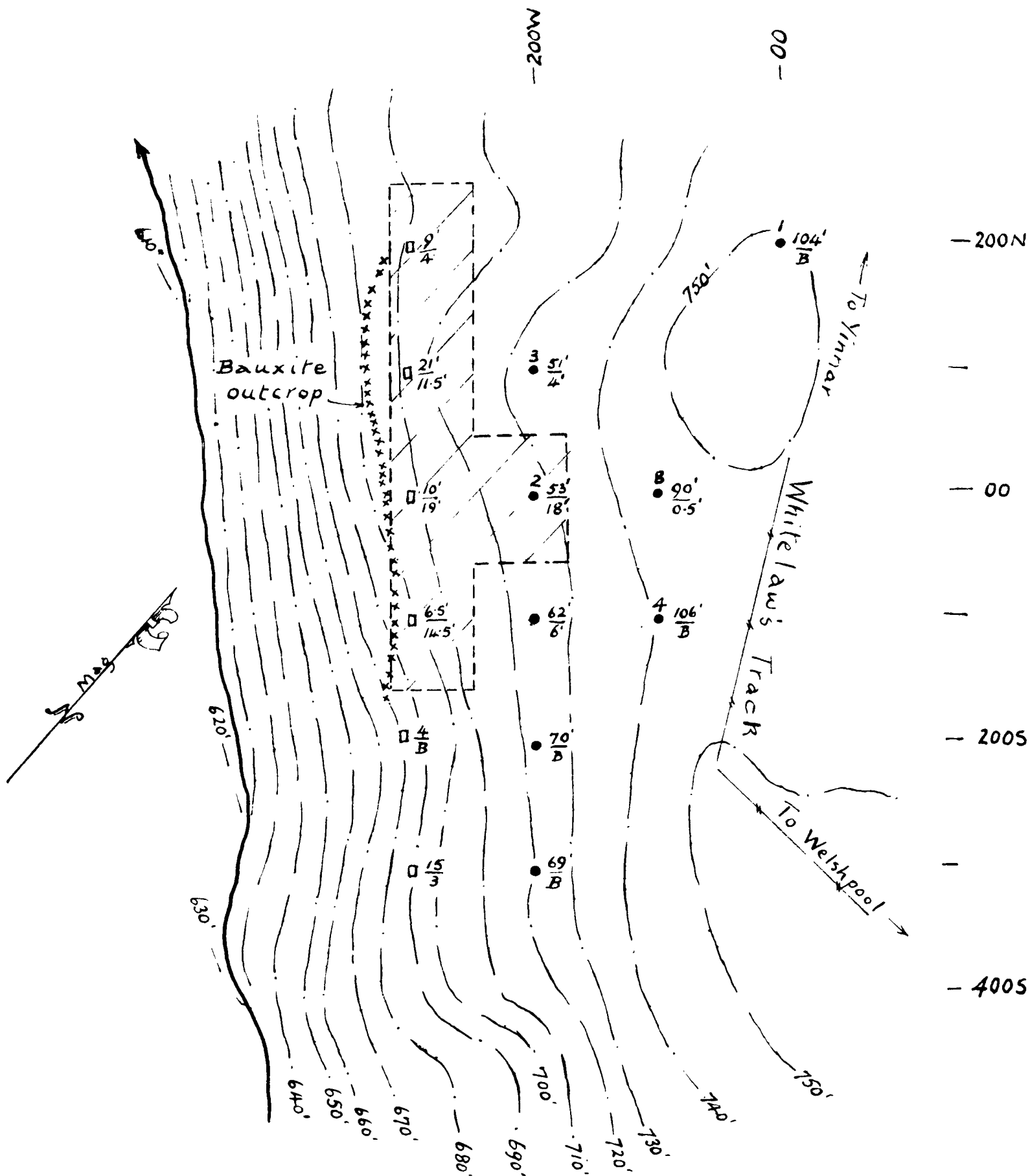
0.94 cwts. Na_2O loss per ton Al_2O_3

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(H. B. OWEN)
GEOLOGIST

28/8/47.





Plan of
N° 1 Area, P.L. Twelve.
Scale: 1" = 100'

Figures to right of bores and shafts denote thickness of overburden and thickness of bauxite, both in feet.

B indicates that hole bottomed in basalt without encountering bauxite.

Handwritten signature
27/8/47

Plan of
N^o. 3 Area, P.L. Twelve.
Scale: 1" = 100'

Figures to right of bores and shafts denote thickness of overburden and thickness of bauxite, both in feet.

B indicates that hole bottomed in basalt without encountering bauxite

D = Shaft : ● = Machine bore : ○ = Hand-bore : V = basalt

