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SUMMARY STATEMENT OF AUSTRALIAN BAUXITE RESERVES AT 31ST DECEMBER, 1952.

by

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INTRODUCTION

This statement has been prepared as a supplement to Summary Report No. 27 - Aluminium and Bauxite which was issued in 1946.

Since that year testing of deposits in Tasmania has been completed and new discoveries of commercial bauxite have been made in northern New South Wales and the Northern Territory. Further exploration in South Gippsland has resulted in minor additions to the proved reserves of Victoria, and the presence of bauxite has been reported in Papua and New Guinea.

Exploration of deposits of bauxite on the north coast of the Northern Territory is not complete but sufficient accessible reserves have been proved to change the formerly unfavourable outlook for the aluminium industry now being established in Australia.

Re-examination of the formerly known deposits has necessitated recalculation of the stated reserves, and has generally resulted in a reduction of the earlier estimates, but, on the other hand, a substantial increase has been made for the Tamborine Mountain deposits in Queensland. South Gippsland tonnages have been recalculated and expressed as dry ore for the sake of greater accuracy and consistency. Tonnages throughout are long tons (2240 pounds) of dry ore.

In the following tables proved reserves are those which have been systematically tested by pits or bores regularly spaced at intervals of not more than 400 feet, and in many cases only 100 feet. Indicated reserves have been tested by more widely or irregularly spaced holes.

RESERVES

QUEENSLAND

Bauxite occurs on Tamborine Mountain, 35 miles south of Brisbane, and in the vicinity of Toowoomba, notably near Hampton.

Tamborine Mountain. Bauxite which overlies and is derived from Tertiary basalt has been incompletely tested with sampling pits. It is probable that substantial quantities of bauxite lie outside the areas tested.

Hampton. Earthy bauxite developed on basalt occurs at this locality 15 miles north of Toowoomba and is well exposed in a railway cutting. This and similar deposits in the locality are of little importance.

TABLE 1.

Summary of Reserves - Queensland

Locality	Reserves		Average percentage composition			
	Proved	Indicated	SiO_2	Al_2O_3	Fe_2O_3	Soda-soluble Al_2O_3
Tamborine Mountain	473,000	-	7.0	37.3	24.6	-
		1,020,000	4	41	22	39
Hampton		250,000	1.9	37.8	32.7	36.7
Total	473,000	1,270,000	-	-	-	-

NEW SOUTH WALES.

The principal bauxite deposits of New South Wales are in the Inverell (Tingha-Inverell-Emmaville) and the Moss Vale (Bundanoon-Wingello) areas. The deposits, except those at Trundle, have been formed by lateritization of Tertiary basalts and are highly ferruginous.

Details of new deposits discovered and tested in the Inverell area since 1946 are given in Table 2.

TABLE 2.

New Discoveries of Bauxite - Inverell area.

Name of Deposit	Proved Reserves Tons	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	TiO_2 %	Soda-soluble Al_2O_3 %
Champagne	740,000	3.6	38.8	29.5	5.0	34.0
Byron (Parish's)	4,755,000	3.2	38.6	30.1	5.0	33.7
Campbell	650,000	2.9	39.4	29.3	4.4	36.1
Cherrytree Hill	160,000	2.7	40.0	29.0	3.6	36.4
Lockwood's	140,000	3.1	38.5	29.1	5.8	34.9
Burgundy	65,000	2.8	36.9	30.8	5.1	34.2
	6,510,000					

TABLE 3.

Summary of Reserves - New South Wales

Locality	Reserves - Tons Proved	Indicated	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	Soda-Soluble Al_2O_3 %
Inverell area	9,610,000	-	2.7-5.8	36.9-40.8	28.0-31.1	33.1-36.4
		5,960,000	3.6-6.6	35.7-42.9	26.3-31.1	-
Moss Vale area	518,000	-	2.9-7.5	35.3-40.7	29.6-33.3	31.2-33.1
		3,588,000	3.9-7.5	31.0-53.9	5.7-37.4	-
Trundle		40,000	4.9-7.9	43.0-55.0	9.7-19.6	39.7-51.5
	10,128,000	9,588,000	-	-	-	-

VICTORIA

All known bauxite of economic value occurs in the County of Buln Buln, South Gippsland, but ferruginous bauxite and bauxitic clay have been observed on the Mornington Peninsula 35 miles south of Melbourne.

New discoveries in South Gippsland since 1943 are relatively small and total 138,000 tons.

The bauxite is derived from basaltic tuff and basalt of probable Eocene age, and is overlain by clay, lignite and sand. The ratio of overburden to bauxite averages approximately 4 : 1.

TABLE 4.

Summary of Proved Reserves - Victoria.
County of Buln Buln.

Deposit	Reserves Tons	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	TiO_2 %	Soda-Soluble Al_2O_3 %
Napier's No. 1	188,000	5.0	55.0	5.2	5.4(d)	-
		6.0	50.0	10.0	6.0	
Greenwood's	43,400	7.3	50.0	8.8	6.0	-
Watkin's (a)	206,900	10.1	51.6	5.4	5.3	-
Napier's No. 2	17,000	10.0	50.8	7.6	4.8	-
Sulphates	46,000	5.0	53.0	6.5	4.5	-
Orgill's	47,100	5.0	52.5	6.5	4.5	-
Payne's (west)	54,000	8.0	52.8	5.5	6.1	-
" (east(a))	44,000	9.1	52.1	6.0	5.4(d)	-
Wallace's	27,000	5.7	50.2	14.2	5.0	47.4
Walker's	47,000(b)	6.0	46.6	16.1	5.8	43.4
Peel's	36,000	11.5	43.8	15.1	4.9	36.0
Jeeralang	28,000(c)	7.7	51.5	6.5	6.0	44.8
	785,000	7.6	50.7	8.5	5.5	-

Notes (a) Data incomplete
(b) Four separate bodies
(c) Two separate bodies
(d) Average composition of ore quarried by Sulphates Ltd.

In addition to the deposits listed in Table 4 nine other deposits of little significance have been partly tested. Of these, one known as Nahoo deposit contains about 50,000 tons of siliceous white bauxite.

TASMANIA.

Testing of bauxite deposits throughout Tasmania was completed by the end of 1946 and showed that only two accessible areas, Ouse and St. Leonards respectively, have reserves sufficient in quantity and grade to be regarded as sources of aluminium. Basaltic bauxite occurs at Myalla but the quantity of good material is small. One deposit of perhaps 70,000 tons underlies a residential area in the suburbs of Launceston.

Bauxite at Ouse, St. Leonards, Launceston, Swansea and numerous other localities throughout eastern Tasmania has been formed by lateritic alteration of Mesozoic (Jurassic?) dolerite, and at the first two localities mentioned is partly overlain by Tertiary (Eocene?) fresh water beds containing thin seams of lignite.

TABLE 5.

Summary of Reserves - Tasmania.

Locality	Reserves - Tons Proved	Indicated	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	Soda-Soluble Al_2O_3 %
Ouse	(425,000	-	5.9	40.4	27.5	36.3
	(202,000	-	5.6	38.4	30.0	34.6
St. Leonards	142,000	-	5.6-7.1	40.9-41.7	25.7-27.4	36.5-37.7
			Soda-Soluble			
Myalla	-	10,000	2.0	-	-	46
	-	180,000	1.4-8.0	-	-	29.9-46.7
Total	769,000	190,000	-	-	-	-

SOUTH AUSTRALIA

No bauxite has been reported in this State.

WESTERN AUSTRALIA.

Laterite covers large portions of the south-western fringe of the Darling Plateau, and extends for more than 200 miles in a northerly direction from near Greenbushes with a width of about 30 miles eastwards from the western edge of the plateau. Sampling of outcrops and shallow exposures in gravel pits and cuttings has revealed the presence of aluminous laterite containing up to 50 per cent of alumina.

No systematic sampling by which reserves of bauxite could be estimated has been conducted.

Most of the known localities are within 50 miles of Perth but more distant occurrences have been observed. Bauxite containing more than 35 per cent alumina soluble in caustic soda solution has been reported at the following localities: Wongan Hills, Bindoon, Toodyay and vicinity; along the eastern railway between Midland Junction and Northam; at Bickley, Walliston, Dwellingup, Quindanning; between Roelands and Collie; at Boyup Brook and near Qualeup.

TABLE 6

Analyses of some Western Australian bauxites

		1	2	3	4
SiO_2,	total	5.96%	14.72%	16.54%	19.11%
	quartz	-	-	15.10	16.65
Al_2O_3	total	44.66	-	49.95	-
	acid-soluble	-	48.48	49.93	45.78
	soda-soluble	-	45.51	44.86	44.47
Fe_2O_3	total	19.08	9.40	5.85	8.06(a)
TiO_2		3.10	0.89	0.49	0.91
H_2O	combined	26.44	-	22.85	25.12

Localities
1. Wongan Hills, 90 miles north-east of Perth
2. Beechina Hill, 40 miles east of Perth.
3. Werribee, 4 miles north-east of Beechina Hill
4. Sawyer's Valley, 30 miles east of Perth.

Note. (a) Acid-soluble Fe_2O_3.

NORTHERN TERRITORY.

Detailed investigation of the Northern Territory bauxites has reached the stage where field work on Marchinbar Island has been completed and preliminary superficial examination of promising deposits at Melville Harbour (Lat. 12°15'S.: Long. 136° 40'E) have been made.

The bauxite on Marchinbar Island (Lat. 11°15'S.: Long. 136° 40'E) is derived from silty shale of Pre-Cambrian age. The shale is interbedded with more or less argillaceous sandstone and thin beds of massive white quartzite. Within the laterite profile the sandstone has been altered to sandy ferruginous laterite, but the quartzite has not been affected and in one place crops out through laterite and pisolitic bauxite. With minor exception the commercial bauxite is confined to the pisolitic zone which has a maximum thickness of 16.5 feet and overlies tubular laterite with high iron or high silica content. Over limited areas the tubular laterite to a depth of four or five feet contains sufficient alumina to be included in the reserves of bauxite.

Overburden consists of a few inches of wind-blown sand and bauxite rubble.

Sampling of laterites on Cretaceous sediments at Mounts Roe and Bedwell, Cobourg Peninsula in 1949 revealed absence of commercial bauxite in that locality.

TABLE 7

Proved Reserves of Bauxite - Northern Territory

(Marchinbar Island- Wessel group)

Name of Deposit	Tons	Total SiO_2	Al_2O_3	Fe_2O_3	TiO_2	Soda-soluble Al_2O_3	SiO_2 as quartz
		%	%	%	%	%	%
Baker	205,000	8.6	-	-	-	47.8	2.8
Sphinx Head	1,225,000	6.5	48.0	17.0	2.9	43.5	2.5
Able(b)	4,662,000	4.2	51.8	15.0	3.4	47.4	1.14
Dog(c)	1,317,000	4.9	51.7	14.1	3.3	47.6	0.96
Easy	820,000	8.3	-	-	-	45.2	2.2
Red Cliff	1,000,000(d)	Analytical data incomplete					
	9,229,000	(e)5.2	-	-	-	46.3	1.5

(b) Grade computed from analyses representing 4,300,000 tons
(c) " " " " " 850,000 tons
(d) Subject to modification
(e) Average grade for 7,400,000 tons 5.2% SiO_2 1.5% SiO_2 as quartz and 46.3% Soda Soluble Al_2O_3.

Box deposit in the vicinity of Red Cliff has been tested by widely spaced lines of holes which have indicated reserves of approximately 1,500,000 tons. The deposit is 8,000 feet long by a very irregular width. The absence of analytical data, which is not available yet, permits only very approximate estimation of reserves.

PAPUA AND NEW GUINEA

The presence of bauxitic nodules in clay from widely separated localities in the Territory of Papua & New Guinea has been demonstrated by chemical analyses of specimens. Early advice suggests that deposits are small.

AUSTRALIAN RESERVES

The following table summarizes the foregoing statements of bauxite reserves.

TABLE 8

Summary of Australian Bauxite Reserves

Grade	Reserves - Tons	
Soda-soluble Al_2O_3	Proved	Indicated
30 to 40 per cent	11,370,000	10,924,000
over 40 per cent	10,014,000	1,674,000
TOTAL	21,384,000	12,598,000
	33,982,000	