RB 54/21

DEPARTMENT OF MINES
SOUTH AUSTRALIA

GEOLOGICAL SURVEY

IRON EXPLORATION SECTION

Report on

PEERALILLA HILL IRON DEPOSIT

SEC. 264, HD. GOOLWA, CO. HINDMARSH

by

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IRON EXPLORATION SECTION

CONTENTS

MAP REFERENCES

NO.	TITLE	SCALE
S 2996	Peeralilla Hill Iron Deposit Sec. 264, Hd. Goolwa, Co. Hindmarsh	1" = 4 m. 1" = 200' (approx.)

Rept. Bk. No. 54/21
G.S. No. 2237
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2nd February, 1962.

ABSTRACT

Deposit consists of limonite rich laterite overlying Kanmantoo metasediments.

Reserves are estimated to be 100,000 - 400,000 tons of ore containing 45-50% iron.

Present information indicates that tonnage and grade are too low to warrant exploitation. Results of metallurgical work in progress may suggest further geological work.

1. INTRODUCTION

The Peeralilla Hill Iron Deposit is a limonite-rich laterite occurrence on Sec. 264, Hd. Goolwa. It is about 25 chains northeast of the trig. station on Peeralilla Hill.

Although the occurrence coincides with a laterite outcrop shown on the Milang 1 mile geological sheet, the iron deposit occupies a much smaller area than shown on the map.

The area was visited by the writer on 3rd October, 1961, in company of Dr. R. Horwitz and G. Whitten (Senior Geologist). It was sampled and mapped by Whitten and the writer on 11th October, 1961.

Bulk samples totalling 500 lbs. were delivered to Australian Mineral Development Laboratories for metallurgical testing.

2. PREVIOUS WORK

The deposit has been described by H.Y.L. Brown in "Record of Mines", 1908, page 332, and R.L. Jack in Mining Review 23, page 38 and Geological Survey of South Australia, Bulletin 9, page 26. L.L. Mansfield (Mining Review 86, page 119) comments briefly on the history of the deposit and its potential as a source of road metal.

3. REGIONAL GEOLOGY

The deposit has developed over members of the Inman Arkose Formation (a unit of the Cambrian Kanmantoo Group). This Formation extends for several miles to the west. The peak of Peeralilla Hill itself, although shown on the Milang 1-mile sheet as a laterite capping, consists of brecciated fine grained Kanmantoo metasediments containing abundant quartz-tourmaline mineralisation.

About a quarter of a mile east of the deposit, the Inman Arkose is overlain by another Kanmantoo unit, the Brukunga Formation. This consists of phyllites and greywackes containing irregular beds and lenses of pyrite.

In the Hindmarsh Valley, to the north of Peeralilla Hill, the Cambrian is covered by unconsolidated glacial and fluvioglacial sediments of Permian age.

The deposit itself is a more ferruginous variant of the Tertiary laterites which cap many of the hills and ridges of the Mt. Lofty Ranges. Of the laterite occurrences examined on the Milang and Yankalilla 1-mile military sheets, Peeralilla Hill is the only one warranting further investigation (all the others being too low grade).

Since the period of lateritisation, the area has been uplifted, dissected, and partially covered by Quaternary high level alluvium, talus, dune sands and Recent creek bed alluvium.

4. DETAILED GEOLOGY

Exposures along the north and east sides of the deposit show it to be a capping on top of leached Kanmantoo metasediments. On the west and south sides, however, the laterite terminates against somewhat silicified and oxidised, leached, fine grained Kanmantoo metasediments, which apparently were resistant to lateritisation.

A general section through the hill would show the following, somewhat gradational, units.

(a) Fine grained sandy quartz-felspar-mica metasediments of the Kanmantoo Group. Somewhat decomposed towards the top.

(b) Siliceous and somewhat limonitic leached porous quartz sandstone (probably residual leached Kanmantoo).

(c) Fairly dense and well consolidated limonitic quartz sandstone (medium grained quartz in a limonite matrix). Contains no buckshot gravel. Probably residual, but may be impregnated alluvium.

(d) Earthy or "ochre" ore. Fine grained clayey limonite containing quartz sand and scattered "buckshot gravel". This horizon is best developed

on the northwest flank of the hill.

(e) Dense, compact, vitreous limonite "buckshot gravel", up to ¼" diameter, in limonite rich matrix. Quartz sand is a minor constituent. Many fragments show cherry-red colouration.

(f) 2" - 6" thick sub-horizontal sheets of "buckshot gravel" in quartz-limonite matrix. Abundant ¼" - ½" cavities give this rock a vesicular appearance.

The tabulated figures below (from Record of Mines 1908, Bulletin 9 and an unpublished Departmental assay) show the high alumina, water and moderate silica contents characteristic of laterite deposits.

	Record Mines	Bulletin 9	School Mines 402, 1946 Record Book 5/62
Fe	45.9%	49.1%	55.4%
Al_2O_3	10.0%	6.4%	-
SiO_2	12.0%	6.6%	(2.9% insol.)
H_2O	12.0%	15.3%	14.7%

The third assay probably represents the glassy, high grade, material, while the first two are more characteristic of the average quarried material.

5. DEVELOPMENT & RESERVES

Jack (in Bulletin 9) estimates that 8-10,000 tons of ore had been quarried for flux before the first World War.

Since then, Mansfield (Mining Review 86) estimates that 4,000 tons have been extracted for use as road metal (to the end of 1947).

All this material was extracted from less than 8' high cuts, into the north side of the hill.

Although local government bodies and the Highways Department have shown some interest, there has been no recent systematic exploitation of the deposit.

Two shafts have been sunk in the body. The northwest one (see plan S 2996) was recorded by Jack (Bulletin 9) and was sunk to a depth of 20'. It is covered with branches at present.

The southeast shaft was first noted by Mansfield (Mining Review 86) and was originally 10' deep. It has since been filled with debris.

A well has been sunk into weathered Kanmantoo metasediments, adjacent to a spring off the northeast edge of the deposit. The well did not intersect ferruginous laterite.

The deposit is 700' long by 250' wide. The lowest point (northeast end, see plan) is 50' below the peak of the hill.

The calculation of reserves is complicated by the unknown but presumably irregular thickness of the body, which varies from as much as 20 or 30 feet at the north end to 0 ft. at the southwest corner.

The tonnage available probably lies in the range 100,000 - 400,000 tons.

6. CONCLUSIONS & RECOMMENDATIONS

The Peeralilla Hill deposit is a lateritic mass containing 100,000 - 400,000 tons of ore assaying 45-50% iron.

It is likely that the small tonnage of ore available, the grade (too low for direct shipping ore) and the technical difficulties associated with beneficiation will make this deposit an uneconomic proposition at present.

Further geological testing is not recommended at this stage. However, favourable results from the metallurgical testing now in progress may justify more detailed geological work at a later stage.

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IRON EXPLORATION SECTION

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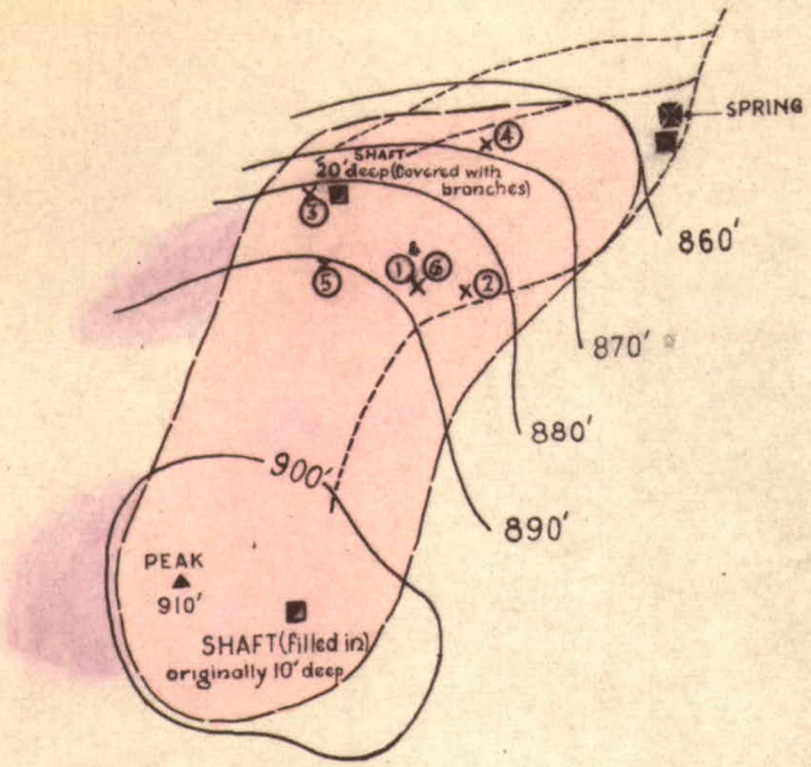


Sketch surface geological plan

Scale : 1 inch = 200 ft

N (Approx.)

Tertiary, lateritic, nodular, compact & earthy limonite containing abundant quartz sand grains.

Cambrian Kanmantoo fine grained sandy schists. Somewhat decomposed, leached, limonite stained & silicified.

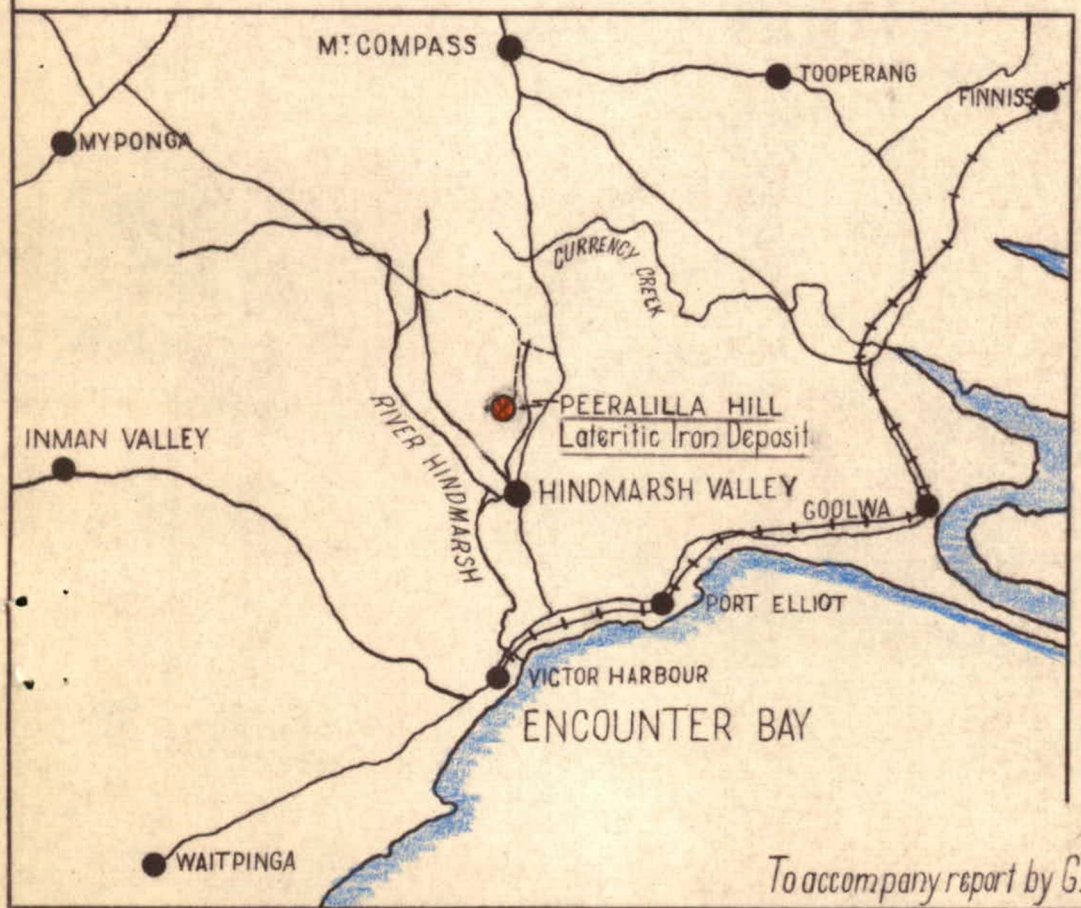
Well

Track

880' Contours (approx. height above sea level)

Location of bulk samples collected 11-10-1961

Shaft



LOCALITY PLAN

Scale : 1 in. = 4 miles

To accompany report by G.R. Heath

S.A. DEPARTMENT OF MINES

Approved	Passed	Drn.	PEERALILLA HILL	D.M.	Scales: As shown
		Tcd. G.M.	Co. HINDMARSH Hd GOOLWA Sec. 264	Req.	S 2996 Hc 9
		Ckd. R.R.			
Director		Exd.	LATERITE OCCURRENCE		Date 24-1-62

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