DEPARTMENT OF MINES
SOUTH AUSTRALIA

RB 51/104

QUARTZITE DEPOSITS,

SECS. 5451 and 5445, HD. YATALA

(L. G. Lyons)

by

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Senior Geologist

MINERAL RESOURCES SECTION

GEOLOGICAL SURVEY

CONTENTS

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Plan No.	Title	Scale
L60-140	Quartzite Deposits, Secs. 5451 and 5445, Hd. Yatala (L. G. Lyons)	100 ft = 1 inch

Rept. Bk. 51/104

G.S. 1852

D.M. 1281/60

9th November, 1960

Department of Mines
South Australia

QUARTZITE DEPOSITS.

SECS. 5451 and 5445, HD. YATALA

(L. G. Lyons)

INTRODUCTION

Following a request for a geological survey of private property situated in Hd. Yatala, Sections 5451 and 5445 to aid in the determination of its quarry potential, a survey was initiated on September 26th and completed on October 19th, 1960. Geological features were mapped on enlarged aerial photographs and the data transferred to a topographic plan prepared by surveyor M. G. Orian.

LOCATION, ACCESS, TOPOGRAPHY

The area mapped is about two miles east of Golden Grove and one mile north of Upper Hermitage. The southern boundary is determined by the Yatala Vale - Upper Hermitage road and the northern one by the Little Para River. From Adelaide the deposit is accessible via Yatala Vale or Tea Tree Gully.

Topography is generally youthful, the hills being steep and the creeks draining northerly into Little Para River having short, steep gradients; the ground surface rises from 717 feet above sea level in the northern part of the area to 1216 feet at Crouch Hill Trig, and to 1241 feet at the highest point near the road.

GEOLOGY

Basement sediments in the area under review comprise the Stonyfell Quartzite and enclosing sediments which have been deformed by folding and faulting. The Eden Fault lies immediately west of the area.

Tertiary sands and laterite mantle the bedrock in the south western corner of the area. Recent alluvium and soil cover parts of the hill tops and the gullies while quartzite scree obscures most of the slopes.

The Stoneyfell Quartzite is here composed of a number of units; six separate sandstone-quartzite beds have been differentiated which are interbedded with soft, poorly outcropping sandstones, slates and siltstones. Cuttings adjacent to the Yatala Vale - Upper Hermitage road reveal argillaceous beds, including thin sandy members which dip easterly at 40^{0}-60^{0}. These are succeeded by more siliceous members, separated by thin bands of slate. The lowermost quartzites are repeated in an anticlinal fold south of the road where its axis is dislocated by faulting. This fault is traceable to the Little Para River, to an area of disruption where quartzite beds are sharply terminated and overthrust at a high angle.

QUARTZITE DEPOSITS

All of the quartzites seen were of fine to medium grain, off-white in colour and generally arkosic. The members are generally massive and occasionally exhibit cross bedding.

The lowermost bed is about 80 feet thick. Several small quarries located on the western limb of the anticlinal fold have yielded freestone. The stone appears to be generally suitable for the production of aggregate but this would require verification by abrasion tests. The western limb affords ready quarry sites; it is readily accessible and the beds dip at a moderate angle.

This bed is separated from the succeeding quartzite (No. 2) by soft sandstones and slates 30 to 50 feet thick. This quartzite is strongly banded and generally massive but being only 10 feet thick will not provide quarry sites. Quartzite No. 3 is about 30 feet in thickness where it outcrops strongly along the western part of the area and is truncated

at the ends by a fault; to the south it is overlapped by Tertiary sediments. On the eastern limb this bed over 100 feet in thickness outcrops on the lower slopes of Crouch Hill and gives rise to steep rock strewn terrain. Providing satisfactory access can be gained this bed will provide large reserves of rock which appears suitable for the production of aggregate. The overlying beds are somewhat softer, thinner and somewhat lenticular, the most important being bed No. 4 which attains 100 feet in thickness.

QUARTZITE RESERVES

To aid in the computation of reserves cross sections were drawn across the deposit at 200 feet intervals; the areas in each section were computed and hence the volume. In each section the area of each quartzite bed measured was taken from a batter at 60° from the high wall side of the limit of the bed to the sloping floor. The volume so obtained is therefore somewhat artificial but is indicative of the quantity of overburden - free material available.

The volumes within the limits as defined above in the main beds are as below.

Bed No. 1 (Western limb)	- 180,000 cub. yds.
Bed No. 1 (Eastern limb)	- 231,000 cub. yds.
Bed No. 3	- 625,000 cub. yds.
Bed.No. 4	- 347,000 cub. yds.
Total	1,383,000 cub. yds.

The quantity could be further increased by the removal of overburden, by benching at lower levels than those considered here, and by quarrying the thinner beds.

CONCLUSIONS AND RECOMMENDATIONS

In the area under review are a number of quartzite beds which appear to be suitable for the production of general aggregate. The intervening beds consist of slates

and sandstones; some of these sandy members may prove suitable for the production of building sand.

The three main quartzite beds have reserves in excess of 1½ million cubic yards free of overburden, but the overall reserves of quartzite are considerably greater.

The rugged terrain may provide problems of access and quarrying.

It is recommended that samples be cut from the various beds present and submitted for abrasion tests to confirm suitability of the stone.

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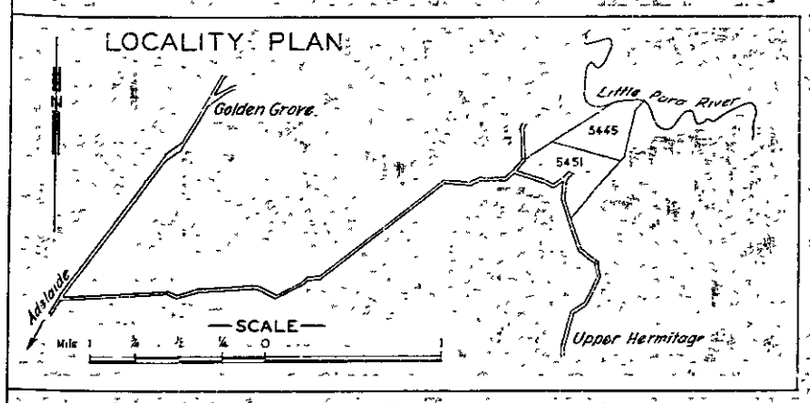
SENIOR GEOLOGIST.

RKJ:CERF
9/11/60

LOCALITY PLAN



LEGEND

Recent — Thin soil cover.

Tertiary — Sand over laterite.

Proterozoic — Stonyfell Quartzite. (Quartzites with interbedded slates, sandstones & quartzite)

Bed nos. (5) (4) (3) (2) (1)

Strike and dip of bedding

Fault

Fence

Survey station (with RL)

Contours (interval 20 ft) Datum Crouchs Hill R.L.

Theodolite survey by M.C Orian

Geology by R.K Johns.

Oct. 1960.

Little Para River

5445

5451

Land slip.

Calculation of reserves based on areas shown thus

ROAD

ROAD

SECTION

A

A'

900'

SCALE IN FEET 0 100 200 300 400 500

F 1

S.A. DEPT. OF MINES

L60 140

Ha5 10-11-60

T 2

QUARTZITE DEPOSITS

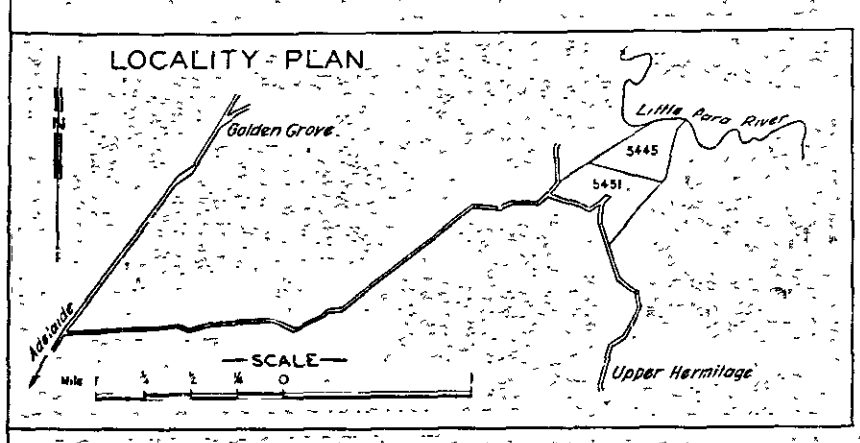
SECS. 5451 & 5445 HD. YATALA

L. G. LYONS

— SCALE —

Feet 100 0 100 200 300 400 500 Feet

LOCALITY PLAN



LEGEND

Recent — Thin soil cover.

Tertiary — Sand over laterite.

Proterozoic — Stonyfell Quartzite. (Quartzites with interbedded slates, sandstones & quartzite)

Strike and dip of bedding

Fault

Fence

Survey station (with RL)

Contours (interval 20 ft)

Theodolite survey by M Orson

Geology by R K John.

Oct. 1960.

Little Para River

5445

5451

N

Land slip.

ROAD

A

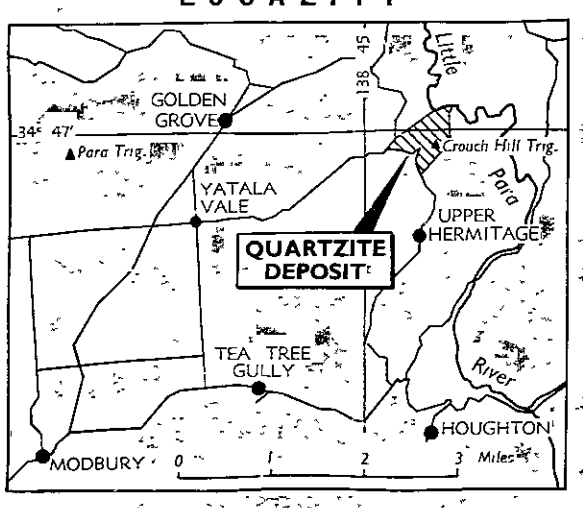
A'

SCALE

0 100 200 300 400 500 600 700 800

FEET

LOCALITY



MN

SCALE IN FEET

SCALE IN METRES

5445

5451

Test quarries

Land Slip

Crouch Hill
R.L. 1216 ft.

Fence

Road

Creek

Calculation of reserves based on areas shown thus _____

SECTION A-A

R.L. 1200
R.L. 1100
R.L. 1000
R.L. 900

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S.A. Department of Mines

L60-140

8

F 2

LEGEND

RECENT
Thin soil cover

TERTIARY
Sand over laterite

PROTEROZOIC
Stonyfell Quartzite (Quartzites with interbedded slates, sandstone and quartzite)

① Bed number

80 Strike and dip of bedding

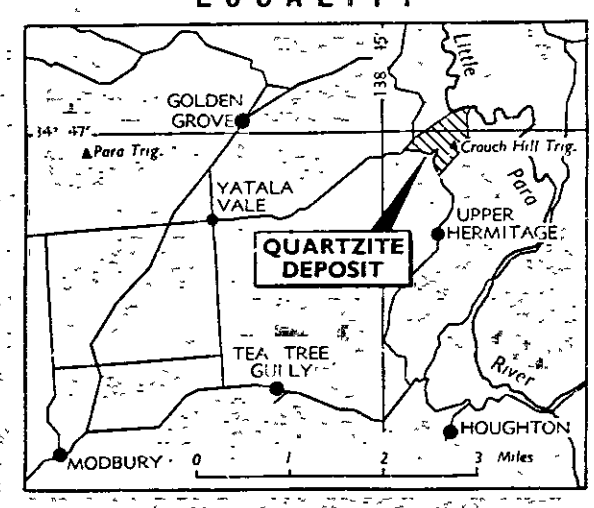
Fault

780 800 820 Contours (Interval 20 ft.)

SCALE

0 100 200 300 400 500 600 700 800
FEET

LOCALITY



SCALE IN METRES 0 50 100 150
SCALE IN FEET 0 100 200 300 400 500

(8)

MN

5445

5451

Little Para River

Creek

Fence

Test quarries

Land Slip

Road

▲Crouch Hill R.L.1216 ft.

A A