DEPARTMENT OF MINES
SOUTH AUSTRALIA

Report on

"NEWLANDS" BARYTES DEPOSIT

Sections 162 and 201, Hundred Julia Creek

(R. Christianos and A.E. Linke)

by

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Student Geologist
GEOLOGICAL SURVEY
NON METALLIC MINERALS SECTION

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Plan No.	Title	Scale
64-114	"Newlands" Barytes Deposit Sections 162 and 201, Hundred Julia Creek	1 inch = 100 ft.

Rept. Bk. No. 60/3
G.S. No. 3052
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4th January, 1965

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ABSTRACT

A geological and topographical survey has been carried out on a number of lenticular barytes bodies which crosscut schists and dolomites. Open cut mining of the bodies has been abandoned. Underground mining to follow the lode appears to be the only feasible method for further recovery, but the deposits are unlikely to prove of economic value.

INTRODUCTION

The barytes deposits are situated on sections 162 and 201, Hundred of Julia Creek, on "Newlands" station, about 13 miles from Kapunda, 65 miles by road from Adelaide, and about 2¾ miles west of Hamsborough Railway Siding (see locality map, plan No. 64-1114).

On 9th April, 1964, accompanied by Messrs. A.E. Linke and R. Christianes, L. Mansfield (Inspector of Mines and Quarries) made a preliminary inspection of a number of the barytes deposits, and in particular, of an open cut at the top of a hill rising about 100 feet above the drainage system. He proposed that the claimholders use a bulldozer to expose the lode, and recommended that a geological survey be undertaken with a view to siting diamond drill locations. With the assistance of G. Samuel (Surveyor), a geological and topographical survey of the area around the open cut was made by the writer on 8-9th December, 1964, and a brief inspection of several other nearby workings was made. The recommendations of Mansfield for trenching by bulldozing have not been carried out.

REGIONAL GEOLOGY

The deposits occur as discontinuous lenses in Upper Proterozoic rocks which have been mapped on the Truro Sheet (Geological Atlas - 1 Mile Series) as part of the Upper Glacial Sequence of the Sturtian Series.

The rocks in the area under review include a sequence of schists, dolomitic siltstones and slates, and dolomites. Although outcrop in the area is poor in most places, a general picture of the geology could be gained. The rocks are, in general, free from major structural complications, and strike approximately north-south, dipping west at about 70°.

The lowermost unit mapped consists of brownish grey sandy schists which crop out more strongly than the succeeding rocks. This unit grades upward into grey silty schists with sandy, and dolomitic intervals, characterised by a notable content of magnetite disseminated as fine octahedral crystals through the rock; they are quite shaley and outcrop very poorly. These grade upward into dolomitic siltstones of greenish or grey colour. Cleavage and jointing are prominent, and weathering is well advanced so that outcrop is usually poor. Above the dolomitic siltstones are buff coloured dolomites with shaley and schistose intervals. The uppermost unit mapped comprises dark greenish-grey siltstones and schists containing disseminated magnetite.

THE BARYTES DEPOSITS

The main workings consist of a number of open cut diggings which extend for about 200 feet along the strike of the lode. The largest of four cuts, and the only one which appears to have yielded useful quantities of barytes, is the most northern one and this extends for about 75 feet along the strike of the lode. It is generally about 10 feet wide, and 6 to 10 feet deep. Recovery of barytes 'down dip' has resulted in undercutting of the hanging wall.

Difficulty was experienced in determining the width of the lode in the cuts, either because the barytes has been mined out or, elsewhere, because rubbish has been dumped into the excavations. The main cut has been partially filled with rubble and scrap iron, and this prevented access to an adit which has been driven into a north facing wall of the cut, and probably inclined 5 to 10 degrees below horizontal.

Despite these difficulties, a number of conclusions about the barytes occurrences were drawn. In all places where the lode is exposed, the contacts with the country rock are irregular, with brecciated country rock very often being mixed with the marginal zones of barytes. The lode is about 15 in. thick in the most southern cut, and about 2 ft. 6 in. thick in the adjoining two cuts. At the southern end of the main cut the lode is only 6 in., but it thickens in a northward direction to the maximum observed, 4 ft. The lode appears to lense out completely between the two southernmost cuts and the same may apply between the two more northerly pits.

A costean about 100 ft. NNE of the open cut exposed several small irregular barytes veins a fraction of an inch to a few inches in thickness and, as shown on the enlargement on the accompanying plan, appear to be on strike with the main lode; the enlargement also shows the approximate limits of the main lode related to observed barytes.

A comparison of the strike of the lode (about 010°) with that of the country rock (170-180°) suggests that the lode is probably not confined to a stratigraphic horizon and is in fact crosscutting. Thus the main workings are in dolomitic siltstones and shales, and the costean mentioned above is in the unit mapped as grey silty schists. In addition, the lode appears to dip at about 40 to 50°W whereas the country rock dips at about 70°W.

The wall rocks are well cleared and jointed and, commonly, small barytes veins from the lode follow these into the

country rock. It may be significant that one set of major joints strikes about 010° and dips 40-50°W. The writer considers therefore, that these joints provide the major structural control of the barytes body (or bodies). Possibly barytes has been secreted from the country rock into such joint spaces. The joints are often slickensided with lineation plunging almost down dip. The fault shown on the plan may be related to the dissappearance of the lode at the northern end of the main cut. However, the fault could not be traced this far and only had a displacement of about one foot.

Two shallow costeans to the east and south of the main workings were examined but no barytes was exposed. Two other lodes were examined to the north-east and east of, and about 600 feet from the main cut. They both appear to offer less potential than the main lode.

GRADE AND RESERVES

A selected sample of barytes submitted to Australian Mineral Development Laboratories by L. Mansfield assayed 98.0% $BaSO_4$. The lode which is exposed in the main workings is composed of white, medium to coarsely grained (0.5 mm to 5 mm.) barytes, appears to be of high purity and would probably assay greater than 95% $BaSO_4$. However, the lode is contaminated at its margins by brecciated country rock, and may occur as not one continuous vein, but a swarm of smaller ones. There are insufficient exposures to estimate grade and reserves of barytes remaining. As the lodes are lenticular in plan it is considered likely that they have a similar form in section. It is estimated that about 50 cu. yds. or about 150 tons have been removed from the main open cut.

CONCLUSIONS AND RECOMMENDATIONS

The barytes deposits occur as a number of crosscutting lenticular bodies in schists and dolomitic siltstones. All easily accessible barytes has been removed resulting in undercutting of the hanging wall face of the open cut. Further mining would involve underground workings or removal of an increasing amount of overburden. Structural control is probably to a large extent provided by a well developed joint system, but the lode is lenticular in plan and probably in section, and the thickness and grade of barytes remaining is unknown.

Diamond drilling, because of the limited nature of the deposit, is not recommended, and underground mining to follow the lode would seem to be the only feasible method of proving, and at the same time recovering barytes. The reserves appear to be limited and the deposits are unlikely to prove of economic value.

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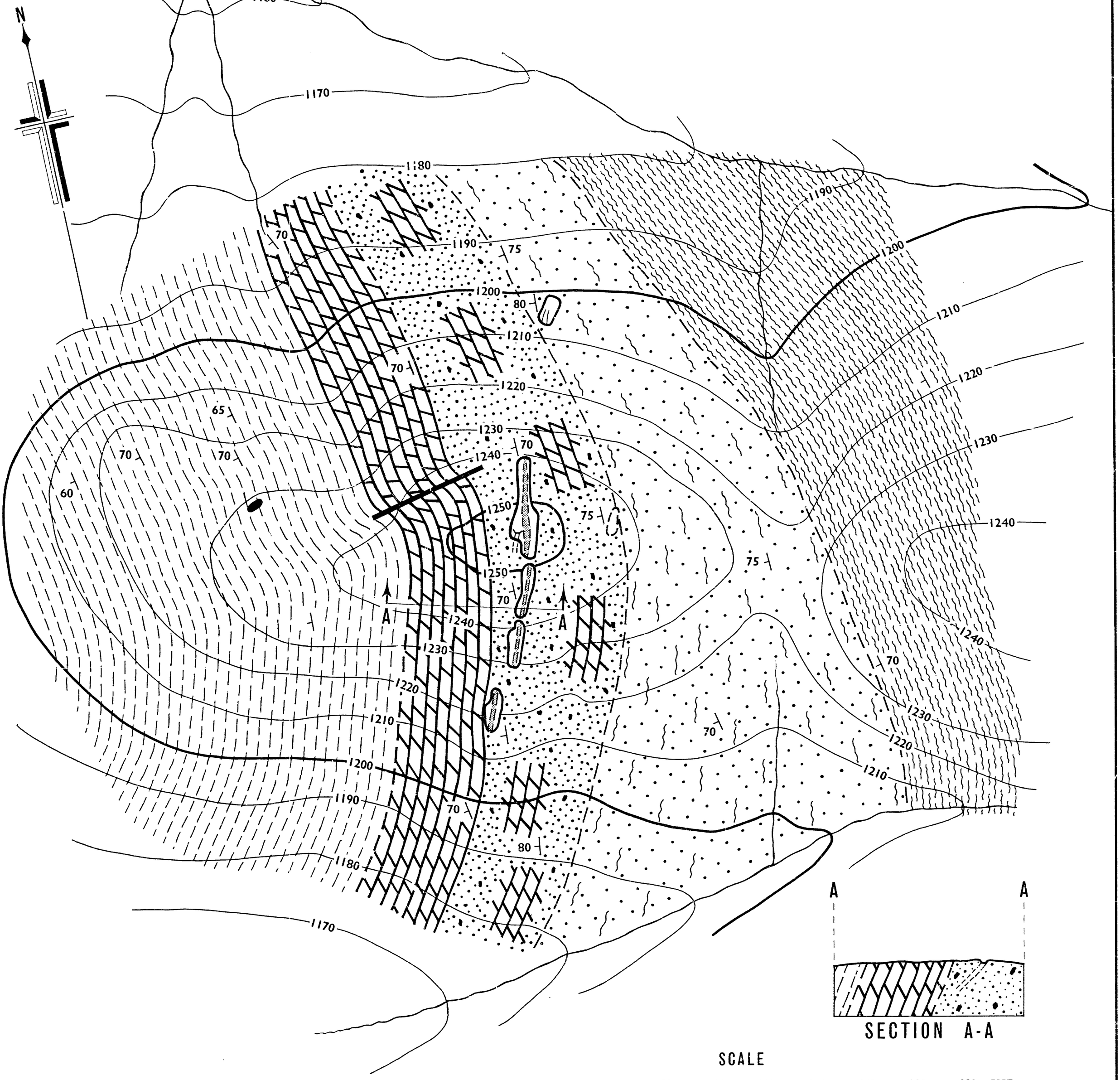
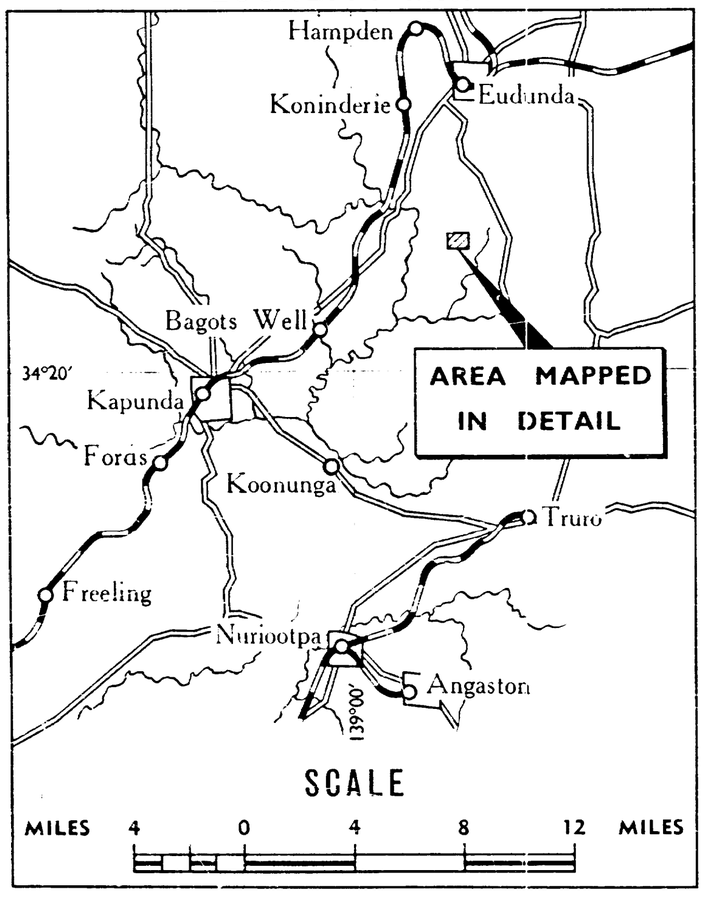
PDF:AGK
4/1/65



SCALE

FEET 40 0 40 80 120 160 200 240 280 320 FEET

LOCALITY MAP



L E G E N D

- Brownish grey sandy schists
- Grey silty schists
- Greenish or grey dolomitic siltstones
- Flaggy dolomites
- Greenish grey siltstones and schists
- Barytes lode
- Strike and dip of bedding — 75
- Observed geological boundaries
- Inferred geological boundaries
- Contours at 10ft. intervals — 1180 / 1170

64-1114

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S.A. Dept. of Mines

Reduce to 5¼ inches.

GEOLOGICAL PLAN
SHOWING
"NEWLANDS" BARYTES DEPOSIT
Hd. JULIA CREEK SECS. 162, 201

RDN. Scale: As shown
64-1114/4
Gk3
13-8-66

tR
R122

9269/10196