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DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES GEOLOGY AND GEOPHYSICS

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GEOLOGICAL REPORT ON THE KEMPFIELD BARITE DEPOSITS

by

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DEPARTMENT OF SUPPLY & SHIPPING.

Mineral Resources Survey Branch

GEOLOGICAL REPORT ON THE KEMPFIELD BARITE DEPOSITS.

Report No. 1943/30.

SITUATION.

The principal deposit is situated in Portion 47, Parish of Kempfield, County of Georgiana, four miles west-northwest of Trunkey in a direct line and about seven miles by road, which is mostly fairly rough and hilly. The ore is carted to the railway at Newbridge over seven miles of poor bush track and then eleven miles on the main Trunkey-Newbridge road. It is shipped as required to Sydney processing firms, McLeods Limited, Minerals Limited and Non-Metallics Limited.

The Sugarloaf deposit is 1½ miles south of the main workings and other lesser occurrences are known in the area.

The main deposits and the Sugarloaf area were examined on April 27th, 1943, in the company of Mr. F. Canavan of this Branch, and Mr. Henry, who works the main quarry on behalf of W. T. Harris. The accompanying plan, Plate 1, is the result of a compass, clinometer and tape survey. Plate 2, is a geological plan of the locality taken from a map prepared by H. G. Raggatt to accompany a report to the New South Wales Mines Department on the Trunkey-Tuena Goldfield.

GEOLOGY.

The barite lodes are massive bodies formed by replacement of schistose sedimentary rocks. The sedimentary series includes shale, sandstone and conglomerate and the immediate country rock of the barite lodes is a slightly sandy type. Just south of the main deposits on the north side of Rocky Bridge Creek, the sediments have been strongly silicified, suggesting the proximity of an intrusive igneous mass. Granite outcrops 1 mile to the south-west of the main deposit, and very close to the Sugarloaf Hill occurrence (Plate 2). The strike of the series, from 0 to 30 degrees west of north, and the dip, steep to the west, are fairly constant throughout the area.

The barite bodies are irregularly lenticular in shape. The degree of replacement varies; in the northern ore-body it has been exceptionally complete, though one prominent band of unreplaced rock is exposed; in the other bodies silicified and partly replaced beds are plentiful. The limits of the barite are fairly well-defined; in some places there is a definite wall and in others a short gradation through semi-replaced material.

The massive barite is grey in colour, but is usually badly iron-stained. Iron-bearing solutions have percolated through the barite along the numerous cracks and joints which traverse it, and the staining has penetrated into the barite from these joint planes. Some of the cracks contain an appreciable thickness of limonitic material, which when ground stains the whole mass a brownish-red colour. The solid barite, free from iron-staining, grinds to an off-white, slightly greyish, colour which could probably be classified on a colour and purity basis as second grade. However, even the best barite carries tiny pyrite crystals and unless these were removed, they would eventually oxidise on exposure, resulting in discolouration of any product in which they were used. It seems, therefore, that the Kempfield deposits cannot produce barite better than third-grade without beneficiation.

Apart from silica the only other mineral besides pyrite which has been noted is galena (H.G.Raggatt, Report on Trunkey-Tuena Goldfield) and this appears to be largely confined to the eastern side of the more southerly deposit.

DESCRIPTION OF INDIVIDUAL DEPOSITS.

North Orebody. The more northerly orebody, from which all recent production has come, is almost entirely within P.M.L. 13. It has an average width over the main portion (see plate 1)of a little over 60 feet, and a total length of 270 feet. Area of outcrop is 126,000 square feet, which, allowing 20% reject and assuming 9 cubic feet to the ton, gives 1120 tons per foot of depth. The quarry, which is working northerly into the hill, exposes a maximum depth of 17 feet. The barite is massive and fairly pure, apart from iron-staining and small pyrite crystals. Near the western side of the quarry is a horse of unreplaced schist, 5 to 6 feet wide, which increases in width at the bottom of the quarry. Walls of the barite are well-defined and dip either vertically or 80 to 90 degrees to the west. Along the strike the barite pinches out, but smaller lenses outcrop to the north and north-east.

South Orebody. The other orebody, in P.M.L. 12, 500 feet south of the main workings, has almost twice the surface area, but the quality of the barite is not as good. Silicified and partly replaced bands are present and galena is found on the eastern side. It has been worked previously by a small cut on the west side and by a bench on the east side. The total length is 390 feet and the maximum width probably 100 feet, though the eastern or downhill boundary of the barite is obscured on the surface by loose stones and overburden. Area of outcrop is 23,800 square feet, giving 2,640 tons per vertical foot, though perhaps as much as 40% would have to be deducted from this figure to allow for impurities.

SUGARLOAF HILL DEPOSITS.

1½ miles in a direction just west of south from the principal deposits, is a sharp peak known locally as Sugarloaf Hill. Near the top of the hill barite occurs over a considerable area as nodules, bands and lenses, mostly in small bodies. The largest deposit is right at the summit of the hill and measures about 80 feet long by 40 feet wide. Some mullock is included in this total, but the deposit contains at least 50% of good barite, probably more than 60%. Much of the barite on Sugarloaf Hill seems to be of better quality than the average of the main workings, but it is not so accessible nor are the deposits as big. Geological conditions are similar.

On a level 280 feet below the top of the hill, which itself is 100 feet lower than the quarry at the main workings, an adit put into the hill in search of silver ore passed through a narrow vein of barite. This adit is not directly below the largest lens at the top of the hill, but it serves to prove that barite occurs here through a vertical interval of at least 280 feet.

RESUME OF TONNAGE.

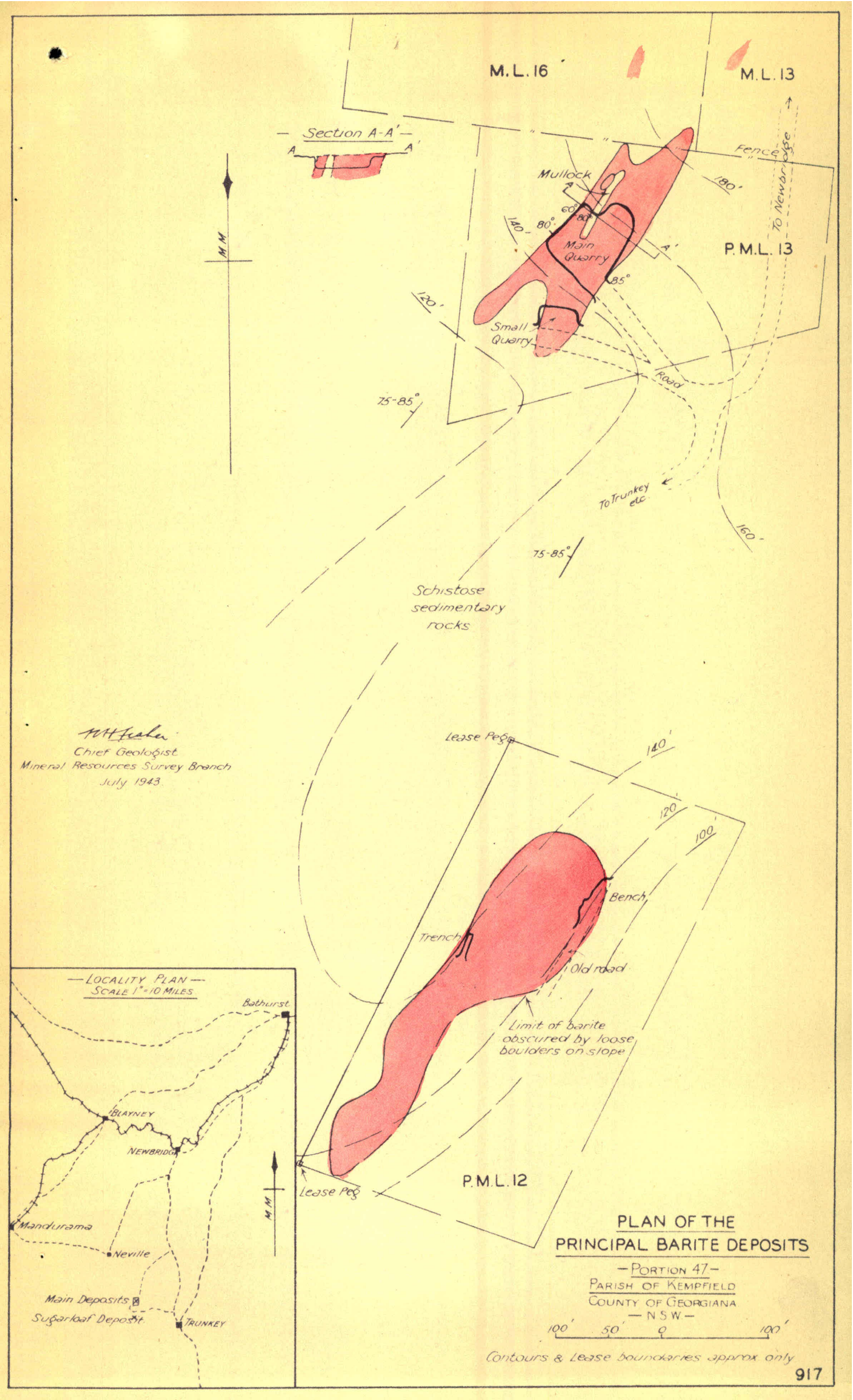
On the assumption that surface dimensions of the orebodies persist unchanged, and allowing for impurities which would have to be rejected, the following tonnages might be expected to 50 feet depth.

North orebody	55,000
South orebody	80,000
Sugarloaf Hill	10,000
	145,000 tons.

H.R.Fisher

CANBERRA, A.C.T.
26th July, 1943.

H.R.FISHER,
Chief Geologist.


M.L. 16
M.L. 13
Section A-A'
A
A'
Fence
To Newbridge
Mullock
180'
60°
80°
140'
80°
Main Quarry
A'
P.M.L. 13
85°
120'
Small Quarry
Road
75-85°
To Trunkey etc
160'
75-85°
Schistose sedimentary rocks
M.H. Fraser
Chief Geologist
Mineral Resources Survey Branch
July 1943
Lease Peg
140'
120'
100'
Bench
Trench
Old road
Limit of barite obscured by loose boulders on slope
P.M.L. 12
Lease Peg
—LOCALITY PLAN—
SCALE 1" = 10 MILES
Bathurst
Blayney
Newbridge
Mandurama
Neville
Main Deposits
Sugarloaf Deposit
Trunkey
PLAN OF THE
PRINCIPAL BARITE DEPOSITS
—PORTION 47—
PARISH OF KEMPFIELD
COUNTY OF GEORGIANA
— N.S.W. —
100' 50' 0 100'
Contours & Lease boundaries approx only
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GEOLOGICAL PLAN
PART OF THE PARISH OF
KEMPFIELD

0 ½ 1 Mile

M N

LEGEND

LATE DEVONIAN

Granite (Hornblende & Biotite - Granite)

UPPER SILURIAN.

Mainly slate with beds of quartzite & acid & felspathic tuffs. Fossiliferous.

Mainly quartz schist with phyllite

Grainger's Creek

70°

49

48

47

32

M.L 16

M.L. 13

Main Barite Deposits

P.M.L. 13

P.M.L. 12

55°

60°

Creek

Kempfield State Forest

Bridge

Rocky

Aplite & quartz dykes striking N 20° E to N 50° E

P M L. 18 Sugarloaf Hill

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