

UR 1945/31-34

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SWC/3

12th June, 1945.

MEMORANDUM:REPORT ON JOHN DUNHAM'S QUARTZITE
PROSPECTS IN THE ULVERSTONE DISTRICT.

In accordance with your memorandum of May 23rd, 1945, I have examined the following quartzite prospects in the Ulverstone district taken up in the name of John Dunham:-

- (1) Area adjacent to Forth School on Lots 423 and 424 (Edwin Martin Purchase, County of Devon).
- (2) Area near Gawler, 2½ miles SW of Ulverstone on portion of lot 407 (Devon 5/47 and 67/3).
- (3) Area near Jeanbrook Creek, Loongana, on W. Hartnell's purchase (Devon 91/15).
- (4) Area at Picnic Point 1 mile NW of Ulverstone.

(1) FORTH AREA.

The Forth deposit is a bed of pure quartzite of Proterozoic age, which forms a wooded ridge immediately west of the Forth Public School. A sketch plan on a scale of 5 chains to the inch is appended.

The bed is approximately 60 feet thick and outcrops continuously for 16 chains, striking N5°W and dipping to the west at angles of 65° to 75°. Southwards the outcrop passes beneath weathered basalt and basalt soil. Northwards the outcrop pinches out, partly covered by alluvium but probably partly covered by transgressive overlap of the basal beds of the Silurian system.

Within its range of outcrop and in other outcrops of proterozoic beds, 8 chains SE of Forth School, the strike and dip are remarkably uniform so it is safe to assume that the bed will continue downwards with its observed strike and steep westerly underlay to any practicable working depth.

Lithologically the material is an unusually pure quartzite, clean white in colour, and tending to be friable. No minerals other than quartz are seen but it is possible that thin quartz schist partings with golden mica scales will be found when the deposit is opened up, breaking the 60 foot bed into beds ten feet or so thick. Some staining with iron was observed in fractures in the outcrop material, but this may be due to surface precipitation of leached salts and may disappear on fresh faces below. Even should it persist, however, the quantity of impurity is not high.

Four samples for analysis (2903, 4, 5, 6) were collected from the outcrops at intervals across the width of the bed near the highest point of the hill. These contain a fair proportion of the stained material referred to above and should not be better but may be poorer than the average material when opened up.

The quartzite breaks down readily on weathering to a white sand.

Topographically the hill is very suitable for quarrying operations,

having steep slopes to the Wilmot Road with cliffs up to 30 feet high. A road capable of carrying heavy traffic is in existence right on the outcrop. Transport distance is 5 miles to Ulverstone, nearly 7 miles to Devonport.

Approximately 400,000 cubic yards of quartzite are available in the deposit by straight quarrying and open cut to an average depth of 100 feet over the area of the deposit. If greater quantities are likely to be required they would be available without serious limit, though increasing cost and difficulty would be met in getting them out. The problem would be the removal to depth of a body of rock nearly 2 chains wide, 15 chains long, underlying at 70° .

(2) GAWLER AREA.

The Gawler deposit consists of a belt of quartz schists of Proterozoic age which strike N 20° - 40° W at 55° to 75° . The rocks consist mainly of quartz but contain varying amounts of golden mica and possibly other minerals. The quality as a source of silica is distinctly inferior to the quartzite at Forth. Ample quantities are available, which could be quarried without difficulty. Road access is also in existence; the distance from Ulverstone is nearly 3 miles. One sample (29C10) has been collected from the deposit for analysis. This sample is probably of better grade than the average of the deposit.

(3) Loongana Area.

The Loongana deposit consists of reef quartz which is found as scattered boulders and blocks distributed across a button grass area about 25 chains by 10 chains in the vicinity of Jeanbrook Creek. A sketch plan has been prepared on a scale of 5 chains to the inch. The bedrock is a sheared tuffaceous conglomerate belonging to the porphyroid group of the west coast. These strata strike 40° - 60° W and dip steeply to the SW. Sporadic intrusive quartz reefs occur in this series. Over much of the area these beds are covered with soil and drift of undetermined thickness. It is likely that this drift is partly of glacial origin. The quartz boulders occur in this drift. From their distribution it is likely that they represent the residual accumulation from the decay of quartz reefs in the porphyroids. There is little doubt that the quartz, which is glassy and often shows crystal faces, is of sufficient quality for use as a source of silica, though some impurities are present in vugs and cavities. One sample (37C9) has been collected for analysis. It is extremely difficult to arrive at an estimate of quantity in a deposit of this sort. But the deposit has no depth (except as reefs in the porphyroid) and I doubt whether the quantity would exceed a hundred tons, and that scattered irregularly over a considerable area so that it would be more expensive to extract than a concentrated deposit. There is no existing road access, and 40 to 50 chains of road would have to be constructed to connect with the Loongana road at a point some 5 miles from the terminus of the Nietta tram or 23 miles by road from Ulverstone.

(4) PICNIC POINT.

The Picnic Point deposit consists of quartzites and quartz schists of Proterozoic age intruded by quartz reefs

of Devonian age. The strata strike N 10° to 15° E and dip to the west at 60° - 70°. The schists are sporadically silicified and the intrusive quartz occur in irregular lenses. There is a considerable quantity of low grade siliceous rock present but the quantity of high grade silica is limited and distributed among the low grade material. Access is easy as the Bass Highway and Western Railway pass by the deposit, but removal of any quantity would involve difficulties because most of the outcrops are between the tide levels.

CONCLUSION.

Of the areas examined the only high grade deposit present in practicable quantities is the deposit at Forth. This deposit is cheaply accessible and easy to work. Provided the analyses satisfy the tolerances permitted by the consumer, this deposit should meet all requirements. It is possible that a systematic examination of the district might reveal other outcrops of high grade material nearer to Ulverstone, but it is unlikely that a combination of quality, quantity, access and quarrying cost better than the Forth deposit would be found.

S. Warren Carey.

GOVERNMENT GEOLOGIST.

ULVERSTONE QUARTZITE.

Hereunder, I forward a copy of the analyses of samples of quartzite collected by the Government Geologist during his recent visit to the Ulverstone district.

" The samples were prepared for analyses as follows:-

" Crushed in jaw and reduced to a fine powder in a disc pulveriser. These treatments occasioned contamination with iron and magnetic material was removed by a permanent magnet prior to submitting the samples to analysis.

RESULTS.

		Percent.				
	<u>Regd.No.</u>	<u>Description.</u>	<u>SiO₂</u>	<u>Fe</u>	<u>TiO₂</u>	<u>Al₂O₃</u>
Forth	" 246	29C3	99.76	0.03	0.02	0.18
"	" 247	29C4	99.79	0.02	0.01	0.11
"	" 248	29C5	99.80	0.03	0.02	0.10
"	" 249	29C6	99.87	0.01	0.01	0.08
Gawler	" 250	29C10	99.79	0.02	0.05	0.12
Loongana	" 251	36C9	99.54	0.02	0.19	0.22

(Sgd.) W. St. C. Manson
Chief Chemist & Metallurgist.

10th July, 1945

MEMORANDUMJOHN DUNHAM'S QUARTZITE PROSPECTS
IN THE ULVERSTONE DISTRICT.

I submit the following comments on the analyses of samples from the above prospects, received today.

Forth Area.

Samples (29C3 to 29C6) are up to quality expected. The iron content of 0.02 is presumably residual contamination from the crusher, but even so is probably within the allowable tolerance. The Alumina is not unexpected and is probably due to a trace of mica, although a corresponding amount of magnesia and potash is not recorded. The TiO_2 (0.02) is quite unexpected. None of the titanium minerals - ilmenite, rutile, sphene, octahedrite, brookite etc. were to be expected in this rock. It is unlikely that the small quantity reported would be detrimental but if the consumer's tolerance does not permit this trace, I recommend that a check analysis for titanium alone be made to make sure that no contamination has occurred. The average of the whole deposit should come up to this quality or perhaps surpass it.

Gawler Area.

Same comments applicable to this sample (29C10). This analysis is probably better than the average of this deposit.

Loongana Area.

Same comments applicable. Sample 37C9 was wrongly labelled 36C6 in the field, but was correctly listed in Memorandum from the Director of Mines to the Chief Chemist, 6th June, 1945, and in my report 12th June, 1945. Hence 36C6 in the analysis report should be changed to 37C9.

My recommendations made before the analyses were received still stand.

Sgd. S.W.C.

GOVERNMENT GEOLOGIST.

The Director of Mines,
HOBART.