

ANNEXURE B.

BRUNNER FIRECLAY-DEPOSITS.

REPORT BY T. O. BISHOP AND JAMES NEWTON, INSPECTORS OF MINES.

WE beg to present the following report upon the fireclay-deposits at Brunner. For the information contained herein we are largely indebted to R. Alison, Esq., manager of the Brunner Mine, and to A. P. Harper, Esq., attorney, and J. Armstrong, Esq., manager of the North Brunner Coal Company, who assisted us most courteously.

Distribution and Thickness of Deposits.—To arrive at the probable quantity of fireclay in the Brunner district is a difficult matter, as no search for it outside of the existing coal-mines has been made, and there may be extensive deposits apart from the coal, of which nothing is now known. Our sole reliable sources of information are the mines, and we are therefore able to state only approximate available tonnages in the Brunner coal lease and in the North Brunner leases.

The Brunner Lease.—The fireclay left in the old workings of the Brunner Mines must be left out of all calculations of available tonnage, since the cost of obtaining it would be prohibitive, and the work would probably not be permitted by the Inspector of Mines on the grounds of safety.

Two boreholes have been put down to test the measures below the coal-seam, and these have shown the existence of two workable seams of fireclay at depths of 80 ft. and 100 ft. The upper seam is 4 ft. 6 in. and the lower 7 ft. 3 in. thick. From the position of these bores and the regularity of the measures we think it safe to say that these seams will extend over an area of 10 acres, and that the available clay at Brunner is therefore 284,350 tons. An incline is now being driven to develop these seams.

The North Brunner Leases.—In the North Brunner Mine the average thickness of the clay underlying the coal-seam is 18 in. The clay in sight in present workings is 5,500 tons; the clay proved under coal to the dip, 13,600 tons; the clay mined and stacked at surface, 6,000 tons: total, 25,100 tons. In the coal area partly proved to the east there is probably 50,000 tons of fireclay underlying the coal, and extending to the west as far as the old Brunner workings there is an area of 400 acres which contains clay, and possibly thousands of tons.

Composition.—The following analysis by the Dominion Analyst of shaly fireclay from the St. Kilda section, Brunner Mine, is given in Geological Survey Bulletin No. 13 (1911), page 96:—

Silica...	...	...	...	...	...	47.22
Alumina	...	...	...	...	...	36.68
Ferrie oxide	...	...	...	...	...	1.20
Lime	...	...	...	...	...	0.05
Magnesia	...	...	...	...	...	Nil
Alkalies	...	...	...	...	...	3.22
Water and organic matter	...	...	...	...	...	11.63
						100.00

Samples forwarded from the Tyneside Proprietary (Brunner) in 1915 to the Dominion Analyst upon analysis gave the following results:—

	(1.)	(2.)	(3.)
Silica	66.19	68.07	64.12
Alumina	21.31	20.06	21.53
Iron oxide	1.12	1.92	1.84
Lime	0.10	0.16	Nil
Magnesia	0.23	0.78	0.26
Water at 100° C.	0.46	0.78	0.59
Combined water and organic matter	8.21	5.82	8.40
Alkalies	2.38	2.95	3.26
	100.00	100.00	100.00

The plasticity of sample 2 is good, while that of 1 and 3 is fair, and each is of light colour when burned. Although the percentage of alkalies is rather high, the lime and iron oxide are low, and these may be regarded as fireclays of fair quality. (Forty-ninth Annual Report of the Dominion Laboratory, 1915, page 18.)

Method of Mining.—As above stated, the Brunner Mines Company is now opening up a mine for fireclay only, but up till now the clay has been mined only in conjunction with the coal. The method has been to work the coal first for 6 ft. ahead, and then lift the clay from the bottom before laying the rails.

Output.—The output of fireclay for 1916 was, from North Brunner Mine, 3,893 tons; from Brunner Mine, 2,000 tons: total, 5,893 tons. The total output to date is approximately 100,000 tons.