UR1949/18-22.

Department of Mines,

Hobart, Tasmania.

18th August, 1949.

LIMESTONE DEPOSIT NEAR SORELL

These deposits are situated some three miles north of Sorell and are contained in recent alluvial deposits on the western side of Sorell Rivulet. A shallow quarry has been opened up by Mr. C.B. Barber of Sorell, who is selling the limestone to the Electrolytic Zinc Company.

The geology of the country in the immediate vicinity is typical of much of that of South-Eastern Tasmania - that is Permian sediments intruded by Mesozoic Dolerite. This dolerite outcrops to the north and west of the deposit. About fifty chains south-east of the workings, on the eastern side of the Pawleena Road, a road quarry has been opened up in mudstones which show a typical array of Permian fossils. Some two hundred feet vertically above these mudstones are beds of Permian limestones. A sample of this showed a calcium carbonate content of 83%. It is possible that the Permian sediments and the dolerite are in faulted relationship, the present stream, Sorell Rivulet, following the strike of the fault. However, a covering of recent alluvium masks the junction of the two rock types. The alluvium consists mainly of clay with some dolerite gravel and boulders, and it is in this clay that the limestone deposit occurs. In the bed of Sorell Rivulet, south of the workings an outcrop of vesicular basalt is exposed.

The limestone, as it occurs here, is, on account of its recent formation, not a rock at all but a white to brownish powder contained between beds of clay. Throughout the deposit also are irregular seams of greenish clay and smaller bands of brown peat. Calcite has crystallised mainly as a crust on the top of the powder but also in aggregations throughout the mass. The formation of this deposit originated in a small lagoon

or swamp possibly derived from hot springs. Later with the drying of the springs and the lowering of the water table calcite was deposited.

A brief boring campaign was carried out with a hand auger. Over forty holes were sunk to depths of from 5 to 7 feet. Not all of these yielded limestone and the limits of the calcareous material - that is down to seven feet - have been determined and are shown on the accompanying plan.

Quality of Material. The white powder, itself, is very high grade and the calcite is of course quite pure. Unfortunately the seams of clay make any composite sample appear comparatively low in $CaCO_3$. The results of the bore samples are inclined to show a smaller percentage of $CaCO_3$ than could actually be obtained. This for two reasons.

1. In working the deposit a certain amount of handpicking can be done.

2. The samples obtained from the auger were contaminated to a certain extent by overlyihg clays. The results of 18 different holes showed an average grade of 70% $CaCO_3$. However, some of these samples were taken close to the edge of the limestone and an average grade through the centre of the deposit could probably be worked to 80%.

Quantity. The deposit is not extensive, in area neither is it of any great depth. The area as shown on the accompanying plan is elongated with an average width of 80 feet. The average depth of the limestone is three feet with a two foot overburden of soil and clay. Overall the yardage of calcareous material as revealed by the hand bores is about 4.5 thousand cubic yards.

Conclusion. Although the boring has indicated the existence of about five thousand tons of calcareous material the average grade of this is probably too low for the purpose required. However, about half this tonnage of 80% $CaCO_3$ material could probably be obtained

under an average overburden of two feet. The best prospect seems to either extend the present pit to the north-east or open up the old pit, and work approximately along the line of bores marked "G" and about twenty feet either side towards the present workings.

It is possible that other deposits of limestone formed under similar lagoon or swamp conditions exist in the extensive alluvial flats fringing the Sorell Rivulet. This however could only be determined by an extensive boring campaign. The Permian limestone occurring on the hill to the east of these deposits appears to be of good average grade and fairly wide extent and may at some future date be economically exploited. Two small samples of this limestone were analysed and showed 83 and 88 percent of $CaCO_3$.

Sgd. Terence D. Hughes B.Sc.

GEOLOGIST

ANALYSES OF LIMESTONES -

SORELL DISTRICT.

	Acid Insol.	Fe_2O_3. Al_2O_3.	CaO.	MgO.	$CaCO_3$
Permian Limestone. (Above Road Quarry.)	25.2 (?)	1.4	46.7(?)	0.3	83 (?)
Recent Limestone.					
As Sold to Zinc Works Grab Sample.	11.68	5	43.18	0.93	77%
East Face (Present Pit)	10.30	3.12	46.34	0.64	83
South Face (Present Pit)	8.72	3.60	45.99	0.86	82
D12A 2' - 3' 3"	28.1	9.5	29.0	1.9	52
DE12 2' - 5' 6"	9.7	3.2	45.3	1.7	81
E10 2' 6" - 3' 6"	34.8	9.3	25.8	1.3	46
E11 2' 6" - 4'	24.3	14.3	29.1	1.8	52
F7 2' - 4'	25.6	9.5	32.1	1.1	58
FG1 2' - 4' 9"	19.5	6.4	36.3	1.8	65
FG3 2'3" - 5' 9"	28.1	10.1	28.8	1	52
FG5 2' - 4' 3"	38.8	12.3	21.1	1.1	40

ANALYSES OF LIMESTONES -

SORELL DISTRICT.

	Acid Insol.	Fe_2O_3. Al_2O_3.	CaO	MgO.	$CaCO_3$
Permian Limestone. (Above Road Quarry.)	25.2(?)	1.4	46.7(?)	0.3	83(?)
FG7 2' - 5'	7.88	3.76	46.79	0.97	83
G1 1' 6" - 5'	14.0	4.7	42.3	1.1	76
G3 1' 6" - 7'	8.5	3.6	46.71	0.65	84
G5 2' 6" - 6'	14	5.2	42.0	0.79	75
G7 1' 9" - 7' 2"	13.9	4.6	41.7	.7	74
G8 1' 6" - 3' 6"	5.4	2.5	49.1	0.7	88
GHG5 2' 3" - 6'	14.2	4.5	42.6	1.0	76
GH8 3'3" - 4' 6"	8.9	3.1	46.5	1.3	83
HGH7 1' 3" - 5'	11.9	2.8	45.3	1.1	81
H7 2' 6" - 4' 6"	7.0	2.8	48.0	1.1	86