

SOME CLAY DEPOSITS OF NORTH-WESTERN TASMANIA

This brief account does not purport to mention all the clay deposits of the North West. Indeed if this were attempted, it would fill many volumes, as practically every rock type in this locality weathers to a clay of some kind or another, so that clay deposits cover many hundreds of square miles.

The reason for this investigation is as follows:-

The North Western Regional Committee has recently been very concerned at the lack of bricks for homebuilding etc. and the fact that brick production in that district is very slight. Consequently a few weeks ago a certain amount of publicity was obtained in the press and on the radio and in answer to this some queries as to the suitability of certain clays for brickmaking were received. The deposits dealt with in this report are those examined in reply to such queries.

As mentioned above, the chief rock types of this area, schists, slates and basalt allweather to clays and the lateral extent of these deposits is therefore very great. However, from an economic point of view, the depth of the clay in certain areas is not sufficient to warrant the exploitation of it for brickmaking. Other factors that should influence the establishment of a brickworks are the position of suitable deposits in relation to markets, good roads, water and fuel and power supplies.

This report deals with possible sources of brickmaking clays and does not consider the utilization of slates and other rocks for this purpose. Neither does it report on the ultimate suitability of the clays for brickmaking but indicates those areas where further investigations are warranted.

1. K. LLOYD, ULVERSTONE

This property is situated on the south side of the Penguin South Road about one and a half miles from the Bass Highway and two miles from Ulverstone. Portion of it is occupied by Pre-Cambrian schists which have weathered to clays to depths averaging four feet. Several hand bores were put down at various points as indicated on the attached plan and Mr Lloyd also dug a trench to bedrock. These indicated that the average depth of clay is 3 ft 6 ins to 4 ft, although deeper

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pockets may exist. The overburden of surface soil is slight, about 6 inches being the average depth, but the roots of vegetation have penetrated the clay to one foot and more so that the effective depth of clay is very slight. A chemical analysis of two average samples showed:-

	<u>Bores 1 - 4</u>	<u>Bores 5 - 7</u>
SiO ₂	70.0%	52.44
Al ₂ O ₃	13.18	20.06
Fe ₂ O ₃	6.51	12.25
TiO ₂	1.19	1.33
CaO	Trace	Trace
MgO	0.91	1.26
Na ₂ O	0.14	0.13
K ₂ O	1.25	1.95
Moisture at 105°C.	1.60	2.32
Ignition Loss	5.42	8.26

Thus although the deposit covers a wide area, the depth is such that a practical utilization does not seem possible. This, although other factors such as available water and power, close proximity to markets etc. are very favourable.

2. T. HEALY, ULVERSTONE

This property appears to have greater possibilities than the preceding one. Situated within a mile of Ulverstone, on the Abbotsham Road, it has a fine stream, Button Creek, running through it and power lines passing overhead.

Here again the clay is formed from the weathering of schists but appears to have a greater depth. Six feet of clay containing fragments of schist can be seen in an old siding road at the base of the hill and Mr Healy has reported that by means of a post hole digger he has tested up to 10 feet of clay, the limit of his tool. About one and a half miles further along the Abbotsham Road is a small quarry where twenty feet of clay is exposed. Near the top of the hill on Mr Healy's property is an old shaft. The first six feet are in clay but below is a weathered micaceous schist. If the clay does persist in depth near the base of the hill, it is an excellent position for

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quarrying as a distance of three chains from the flat results in a rise of 50 feet. The overburden is negligible. Before elaborate tests are undertaken, however, something more about the depth of the clay shall have to be investigated.

It is reported that the bricks used in the construction of many prominent Ulverstone buildings were made from clay obtained on this property.

3. H. L. NEWBOLD, PENGUIN

From its junction with the Bass Highway in the western outskirts of Penguin, the Riana Road sidles up a fairly steep hill. This is occupied by a series of Cambrian slates and Quartzites, which near the surface have weathered to slight depths of clay, which may be seen in the cuttings of the road. This series, with its residual clay, extends into Mr Newbold's property and, if this were the only source of clay, it could not be considered from a brickmaking point of view. However, at some stage in Tertiary history, a deep valley in this series has become partially filled with basalt and later completely filled with clay. A well on the property has been sunk to seventy feet in clay, and bottomed on weathered basalt. Two chains to the north-west of this is an old well, now filled in; from this vicinity, a sample (to a depth of three feet) was taken. This is a reddish clay, seemingly mostly from basalt and containing some waterworn pebbles. A chemical analysis of this sample showed :-

SiO ₂	47.44	MgO	Trace
Al ₂ O ₃	19.62	Na ₂ O	0.14
Fe ₂ O ₃	17.63	K ₂ O	0.17
TiO ₂	1.87	Moisture at 105°c	2.12
CaO	Trace	Ignition Loss	11.38

Some twenty chains to the south of this, a second sample was taken of the residual clay from the slates. This is lighter in colour, yellowish and rather friable and appears to be of no great depth. The analysis of this clay is as follows:-

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SiO ₂	57.84	K ₂ O	3.7
Al ₂ O ₃	22.19	Moisture at 105°c	0.86
Fe ₂ O ₃	6.73		
TiO ₂	1.04	Ignition Loss	6.24
MgO	1.19		
CaO	Trace		
Na ₂ O	0.38		

Mr Newbold is interested in the project of brickmaking and if his interest is sustained, his property seems to be ideally situated. However, before any extensive tests are performed it would be necessary to determine by boring the direction and extent of the deep lead of clay.

It is quite possible that the slates themselves would be suitable for brickmaking.

4. W. STURZAKER, UPPER STOWPORT

In the company of Mr M. Whitford of Stowport, I examined this property and obtained two samples. It is situated some three miles from Stowport and seven from Burnie to the west of the Upper Stowport Road. Here again the Cambrian slates, and their more arenaceous facies, outcrop and in places have weathered to up to four feet of clay. In parts of the property this is overlain by Tertiary gravels.

The two samples taken comprise the normal clay which showed the following analysis:-

SiO ₂	43.72	Na ₂ O	0.07
Al ₂ O ₃	21.80	K ₂ O	0.51
Fe ₂ O ₃	14.58	Moisture at 105°c	2.50
TiO ₂	4.18		
CaO	Trace	Ignition Loss	10.94
MgO	1.64		

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and a whiter variety which showed :-

SiO ₂	60.32	Na ₂ O	0.31
Al ₂ O ₃	24.14	K ₂ O	5.28
Fe ₂ O ₃	1.70	Moisture at 105°c	0.70
TiO ₂	1.16	Ignition Loss	5.20
CaO	Trace		
MgO	1.29		

As on Mr Lloyd's Property, the depth of clay seems to preclude it from being developed as an economic material, but the slates themselves may constitute useful brick-making material.

5. C. S. RADFORD, HIGHCLERE

This property is situated within half a mile of Highclere, a hamlet on the Emu Bay Railway and distant about fourteen miles by road from Burnie. The Highclere district is portion of an extensive basalt plateau and the clay occurring on Mr Radford's property is a residual one and has been formed from the weathering of the basalt. A hole has been sunk six feet into this basalt and a sample taken gave the following analysis :-

SiO ₂	35.50	K ₂ O	Trace
Al ₂ O ₃	24.76	Moisture at 105°c	6.6
Fe ₂ O ₃	17.63	Ignition Loss	11.46
TiO ₂	2.56		
CaO	Trace		
MgO	1.80		
Na ₂ O	0.07		

As the clay is simply a weathered basalt, the depth of it would vary considerably from place to place.

Mr Radford is interested in the clay as a potential material for bricks rather than in actually manufacturing bricks and before any extensive tests are made, more work would have to be attempted to ascertain the depth of clay and also somebody should be definitely interested in brickmaking. The distance from possible

markets is rather great although the deposit is handy to water, power and transport facilities.

6. TEWKESBURY

Mr J. R. Hilder of Burnie has been interested in clay deposits at Tewkesbury but after discussion the position of the deposit with him, it was agreed that the situation, two miles from a road and far from markets, was too remote to consider it at this stage.

7. A. R. BLENKHORN, RAILTON

To the North-east of Blenkhorn's Limestone Quarry near Railton, is a series of slates and sandstones, which appears to conformably underlie the limestone deposit, striking, as they do, to the North West and dipping at high angles to the South West. These rocks have weathered to clays which appear to form a crust of from one to four feet on the rock series. The clay is not of sufficient depth to consider but the rocks themselves may be able to be utilised for brickmaking. Mr Blenkhorn, who operates the lime quarries, is not interested in manufacturing bricks himself, but would consider supplying material on a royalty basis. An analysis of the clay showed :-

SiO ₂	64.08	Na ₂ O	0.30
Al ₂ O ₃	16.68	K ₂ O	2.45
Fe ₂ O ₃	7.79	Moisture at 105°c	1.08
TiO ₂	0.85		
CaO	Trace	Ignition Loss	5.86
MgO	0.93		

8. SHEFFIELD

Many years ago bricks were manufactured at Sheffield from clay obtained from a pit on a property now belonging to H. Crack, situated on the south side of the Railton Road about one mile from the Sheffield Station.

This deposit differs from those previously mentioned in that it is transported clay and occurs in Recent alluvium. A pit, measuring one by two chains and from where the clay was obtained, is now filled with water but a sample was collected from the edge of this. Much of the clay is nearly white in colour, but some is stained by iron from the neighbouring basalt hill. An analysis

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of the clay showed :-

SiO ₂	67.76	Na ₂ O	0.22
Al ₂ O ₃	16.05	K ₂ O	1.36
Fe ₂ O ₃	4.81	Moisture at 105°c	2.10
TiO ₂	0.78		
CaO	nil	Ignition Loss	6.14
MgO	1.00		

None from the Sheffield District appears to be personally interested in the manufacture of bricks.

CONCLUSION

The Director of Mines has made arrangements for parcels of clay to be tested for brickmaking in Melbourne. These tests will be exhaustive involving detailed laboratory and pilot plant work, will take at least two months to complete and will involve amounts of clay of at least 5 cwt. Before these are undertaken it is necessary that two conditions should be satisfied;-

1. That sufficient clay deposits exist for the establishment of a brick works.
2. That some person or group of people is actively interested in the actual manufacture of bricks. At this stage, it appears, that only two deposits can be considered. That of Mr Newbold at Penguin has definite possibilities and the question in doubt at the moment is whether Mr Newbold wishes his property to be turned into a brickmaking concern. That of Mr T. Healy is worthy of further investigation and this Mr Healy is now doing.

Extensive tests on the slate series may show that these rocks, when crushed, could be utilised in the manufacture of bricks.

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