

TR 14-17-20

**3. Luck Bros brickmaking materials, Haines Siding**

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The area was investigated in order to assess the clay reserves on the property of Luck Bros at Haines Siding, and to provide representative samples for ceramic testing.

Haines Siding lies between Railton and Latrobe approximately five miles from each town.

The area was geologically mapped and contoured by plane table survey and eight auger holes were drilled with the Proline rig (fig. 7). The auger samples are the subject of a separate report by the ceramic technologist, D. Clements (p. 216).

The report is accompanied by the geological map and sections which were used for the calculation of reserves.

#### GEOLOGY

The oldest rocks in the area are Ordovician sediments which are almost wholly arenaceous. They consist of sandstone, siltstone and conglomerate and crop out on a low hill half way between the railway cutting and the Bush Pit, and are also exposed in the railway cutting between the plane table stations 18 and 20. A small sandstone exposure at station 24 on the edge of the alluvial plain may also belong to this group of rocks but the sandstone was not encountered in any of the auger holes and so is unlikely to occur within working depth in the reserves area (delineated on geological map). The finer-grained sediments may have some application as a blending material.

The Ordovician sediments are overlain unconformably by Permian strata. Only the lowest member of the system, the Quamby Formation, is present in the area. It consists predominantly of pebbly mudstone and contains a 5 ft oil shale band approximately 50 ft above its base (Banks, 1962). Pebbly mudstone was worked in the disused clay pit in the NE corner of the mapped area and a dark grey plastic graphitic-textured clay was struck in the bottom of the pit. The Bush Pit is being worked in similar pebbly clay and in the nearby auger holes A and F a similar dark grey shale was encountered.

The dark grey shale is probably a correlate of the oil shale; this forms the basis of the structural interpretation shown in the geological cross section. The strike of the band in the disused quarry is  $065^{\circ}$  and the dip is  $5^{\circ}$  NW.

The pebbly mudstone is the brickmaking material used in the plant: the dark grey clay is unsatisfactory for brickmaking.

A discontinuous cover of alluvium overlies the Permian beds on the river flats and a thin layer of material composed of fluvial sediments, doleritic colluvium and weathered Permian pebbly clay. There is no evidence of sedimentary structure in the Bush Pit or in the auger samples to facilitate a distinction between Permian and Quaternary sediments as the material in both consists of pebbly clay.

#### AUGER DRILLING

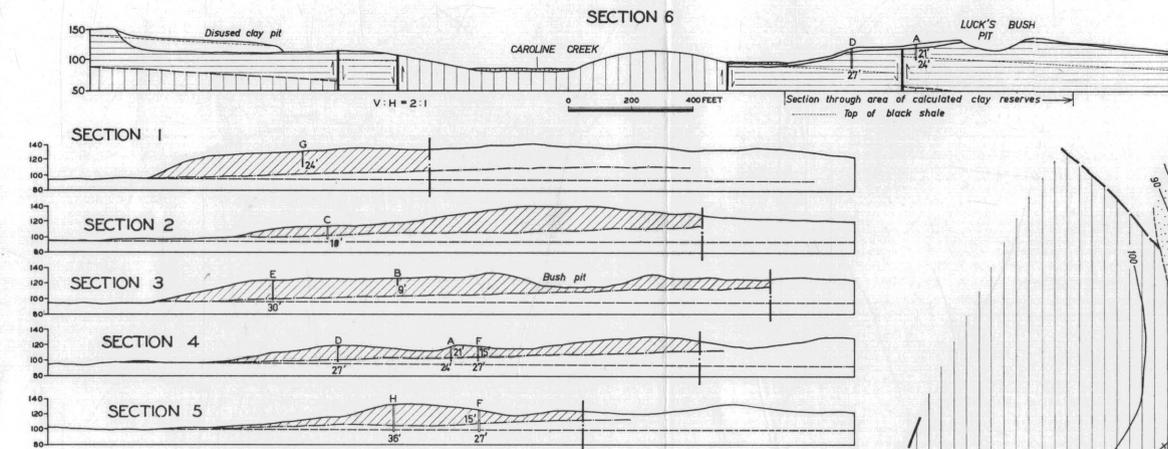
Eight Proline auger holes were drilled in two lines approximately parallel to the slope between the Bush Pit and Caroline Creek. Drilling was stopped when water was struck in the hole because this level would be the limit of quarrying operations except in dry seasons.

The management limited the drilling to a total depth of 200 ft. The area delineated on the geological map lies within approximately 200 ft of the test holes and the pit, it covers approximately 18 acres and is the area referred to in

# GEOLOGICAL MAP - LUCK BROS BRICK WORKS HAINES SIDING - VICINITY OF LATROBE

0 100 200 300 400 Feet

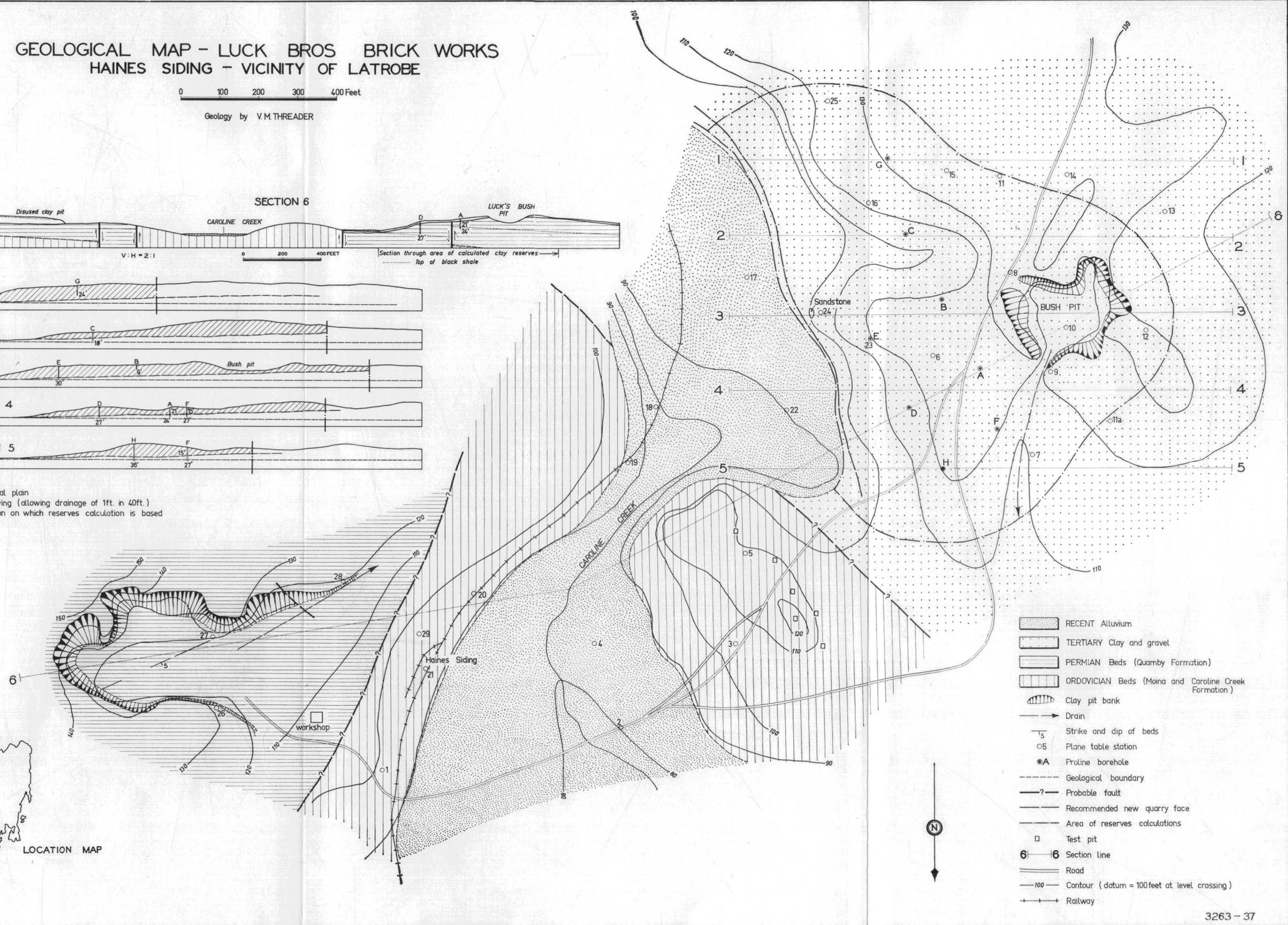
Geology by V.M. THREADER



--- Level of alluvial plain  
 --- Limit of quarrying (allowing drainage of 1ft in 40ft.)  
 // // // Portion of section on which reserves calculation is based



Drawn by T.R. BELLIS



- RECENT Alluvium
- TERTIARY Clay and gravel
- PERMIAN Beds (Quamby Formation)
- ORDOVICIAN Beds (Moina and Caroline Creek Formation)
- Clay pit bank
- Drain
- Strike and dip of beds
- Plane table station
- Profile borehole
- Geological boundary
- Probable fault
- Recommended new quarry face
- Area of reserves calculations
- Test pit
- Section line
- Road
- Contour (datum = 100 feet at level crossing)
- Railway

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FIGURE 7

5 cm

the calculation of reserves. The eight holes drilled give an inadequate coverage for a proven reserve within this area but an indicated reserve figure has been calculated which should be subsequently confirmed by an additional 200 ft of drilling.

<i>Proline Hole</i>	<i>Depth (ft)</i>	<i>Description</i>
A	0- 3	soil and ferruginous clay
	3-21	cream and pink clay
	21-24	greasy dark grey clay
B	0- 3	soil and ferruginous clay
	3- 9	cream clay
(water struck at 8 ft, static level 6 ft)		
C	0- 3	soil and ferruginous clay
	3-18	cream clay
D	0-30	yellow pebbly clay
	(water struck at 30ft)	
E	0-30	cream, yellow and brown clay
F	0-18	cream clay
	18-27	dark grey greasy clay
G	0-24	cream clay
H	0-36	cream, yellow and brown clay

#### CLAY RESERVES

It may be necessary to discard the upper two or three feet due to soil, vegetation and too high a pebble content. This has not been allowed for in the calculations because it is more than offset by the amount by which the water table could be lowered by adequate drainage. Water levels in the boreholes were recorded in May and June after heavy rain, whereas most clay extraction is carried out in the summer months when the water table would be lower which would enable deeper working and so tend to increase clay reserves.

Five sections were constructed across the delineated area and an average thickness of clay was determined for each section. The thickness was measured from surface to a base line determined by a 1 in 40 drainage gradient. The average thicknesses were applied to sub-areas to calculate volumes:

<i>Profile</i>	<i>Area of Sub-Area</i>	<i>Average Depth (ft)</i>	<i>Volume (yd<sup>3</sup>)</i>
1	15,000	9	135,000
2	21,000	6	126,000
3	21,000	6	126,000
4	16,500	6	99,000
5	15,500	5	77,500
Total			<u>563,500</u>

This volume of clay is sufficient to manufacture 150 million bricks.

#### RECOMMENDATIONS

A new working face should be established parallel to the auger hole line E-D-H. This face should be advanced in a south-westerly direction towards the Bush Pit and all extraction should proceed to the full depth it is intended to work, i.e., the drainage slope level (see sections 1-5). In this manner, a more uniform quarry product would be obtained than would be possible by stripping, and would also permit overburden dumping on unwanted ground thus obviating double

handling. The work should commence at about 95 ft contour and the working face should be as long as possible. The length and depth of the working face are important factors in cancelling out the effects of local variations of material thus ensuring a uniform product.

Additional drilling is also advisable not only to complete the 200 ft grid over the reserves area but closer spacing of holes preferably just ahead of the face as it advances so that small changes can be anticipated and their effects controlled.

#### REFERENCE

- BANKS, M. R. 1962. Permian, in SPRY, A.; BANKS, M. R. (ed.). The geology of Tasmania. *J. geol. Soc. Aust.* 9(2): 189-215.