

TR16-39-40

8. Sandstone at Middleton.

V.M. Theader

Prominent sandstone outcrops in the Middleton area have been suggested by local residents as a likely source of high quality building stone. It was further suggested that the stone may be marketed in Sydney. The area was visited with Mr G. Pearsall, M.H.R. for Franklin, on 11 February 1971 and two subsequent visits were made by the writer to obtain material for this report.

GEOLOGY

The sandstone belongs to a sequence of freshwater sandstone and mudstone of Triassic age. The bedding is more or less horizontal except locally where dolerite intrusion has tilted blocks to varying angles. The Triassic succession has been intruded by dolerite and syenite porphyry and disrupted by faulting so that individual beds appear at different elevations throughout the area.

DESCRIPTION OF OUTCROPS

The sandstone crops out in three benches over a vertical thickness of 40 m. At Middleton [EN200139] each bench is 5 m thick and is separated by beds of mudstone or sandy mudstone. The sandstone occurs in both coarsely bedded and finely bedded sections. The sequence of sandstone benches and interbedded sandy mudstones rests on at least a further 160 m of sandy mudstones (i.e. down to high water mark) and can be seen exposed in cuttings on the Channel Highway. The line of outcrop can be followed for 5 km to the north where it is cut off by faulting. The same beds can be seen on the Woodbridge-Garden Island road at 440-480 m a.s.l. and again on the Nichols Rivulet road as a single bench the base of which is 200 m a.s.l.

DESCRIPTION OF THE SANDSTONE

Triassic sandstone is of variable composition. That near the base of the succession is composed predominantly of quartz. Generally speaking sandstone higher in the succession contains higher proportions of less stable particles including mica, feldspar and rock fragments and is correspondingly less resistant to erosion. Samples collected from Middleton contain quartz, mica and feldspar in a clay-mica groundmass and appears to be of suitable quality for building purposes (see Appendix 1).

ACCESSIBILITY

Most of the outcrops seen were close to sealed roads but the sandstone benches occurred on steep slopes above the roads and some difficulty could be expected in establishing access roads from the main roads to the outcrop. The gradient of these slopes is 1:2.5 so that the overburden to rock ratio becomes 1:1 after clearing a 10 m wide bench off the top of a 4 m sandstone bed.

EXTRACTION

Sandstone was originally won in blocks from a vertical face by hammer and chisel, but it is customary now to employ diamond saws on a horizontal face. This provides better and safer working conditions, less waste due to breakage and better control of size of block. It is necessary therefore to clear the top of the outcrop and this is the significance of the overburden/

rock ratio. It is estimated that 100 tonnes of overburden would have to be removed to expose a horizontal working area of 20 m across the slope and 50 m along the slope.

MARKETING

The coarse-bedded sections would yield suitable blocks for building purposes but the finely bedded sections will yield only flagstones which are mainly used for paving and walling. In the production of both building blocks and paving stones, but particularly in the latter, there is a high percentage of waste, sometimes exceeding 50%. The remoteness of this area would make it difficult to find a sale for the waste and add to the cost of the better quality product which would have to compete against stone of equal quality produced from flatter terrain in closer proximity to markets.

CONCLUSION

There are large quantities of medium quality sandstone in the Middleton area. Problems associated with distance from markets, access and hilly terrain make the quarrying of this stone a doubtful economic proposition at the present time. The stone is inferior to that occurring in Sydney, but is probably more abundant.

APPENDIX 1. PETROLOGICAL DESCRIPTION OF THE SANDSTONE.

G.B. Everard

The following specimens were collected by Geologist, V.M. Threader at Middleton.

Specimen A. Fine-grained buff coloured sandstone.

In thin section the rock is a mosaic of angular quartz grains, averaging 0.125 mm across with an occasional grain of fresh feldspar, cemented by very fine-grained sericite and with interspersed patches of fine-grained sericitic material, sometimes containing feldspar remnants. There are also occasional wisps of black opaque carbonaceous material and small patches stained with limonite.

The rock is a feldspathic sandstone in which most of the feldspar has been sericitised.

Specimen B. Fine-grained white quartz sandstone.

In thin section the rock is a close packed mosaic of quartz grains averaging 0.15 mm across, without visible cement, and with occasional voids. There are also some grains of fresh feldspar and occasional flakes of muscovite and biotite.

The rock is a feldspathic sandstone.

EXPLANATION

Sandstone was originally won in blocks from a vertical face by hammer and chisel, but it is customarily now to employ diamond saws on a horizontal face. This provides better and safer working conditions, less waste due to overcutting and better control of size of block. It is necessary therefore to clear the top of the overcut and this is the significance of the overburden.