DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

REPT.BK.NO. 86/56
BOREE ROCKS - PRELIMINARY INVESTIGATION OF GRANITE FOR MONUMENTAL & ORNAMENTAL PURPOSES

GEOLOGICAL SURVEY

by

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MINERAL RESOURCES

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DME. 380/74

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BOREE ROCKS - PRELIMINARY INVESTIGATION OF GRANITE FOR MONUMENTAL AND ORNAMENTAL PURPOSES

ABSTRACT

An inlier of late Kimban pink porphyritic adamellite on western Eyre Peninsula is too small and too distant to warrant quarrying for monumental and building use. Although colour and texture are suitable, drilling is required to prove that adequate reserves of stone with consistent texture exist beneath relatively shallow overburden.

INTRODUCTION

During an inspection of building stone and aggregate quarries on Eyre Peninsula, Boree Rocks were mapped on 19 September 1982 by stadia theodolite by the author, L.C. Barnes (Senior Geologist, Industrial Minerals), D.A. Young (Senior Technical Officer) and A.J. Smith (Field Assistant).

One selected sample was submitted to the Australian Mineral Development Laboratories (AMDEL) for petrographic description and chemical analysis. The results from AMDEL report GS3259/83 are incorporated herein.

LOCATION AND ACCESS

Boree Rocks are located on section 5, hundred Nash, county Kintore, 48 km west of Penong, Eyre Peninsula on Glen Boree pastoral station (see Fig. 1). Lessee is Mr. M.D. Wheadon.

The site is outside District Councils and within the Eyre Planning Area.

Access is westwards for 35 km from Penong along the Eyre Highway beyond Bookabie to Pintie Well. The unsealed road to Fowlers Bay is followed west-southwestwards for a further 16 km, thence 1 km by a two wheel track along a gazetted road. The last 200 m meanders northwards through scrub to Boree Rocks.

Land east of the north-south fence (see fig. 2) has been cleared for grazing and supports only sparse saltbush. In contrast, west of the fence is apparently uncleared scrub with sparse mallee eucalypts 5-8 m high and thick understorey of melaleuca and leptospernum shrubs to 3.5 m high.

Glen Boree homestead is about 1.5 km north from Boree Rocks.

MINERAL TENURE

Mineral Claim (MC) 1599 was registered on 20 July 1982 for R.J. Tillett over 16 ha but lapsed on 19 July 1983.

Only the northeastern and southeastern corner posts were located during mapping, as shown on figure 2. As these posts are 336 m apart and not 400 m as designated by the claimholder, MC 1599 may have been somewhat smaller than 16 ha.

GEOLOGICAL SETTING

Regional geology on figure 1 is based on FOWLER 1:250 000 map sheet (Firman, 1975).

Calcreted pale brown to yellow brown cross-bedded aeolianite Bridgewater Formation of Pleistocene age has formed low hills in a region of subdued relief with silt and gypsiferous sediments of Yamba Formation equivalents of Holocene age in swamps and lakes. To the north of Glen Boree, the surface is mantled by Pleistocene Loveday Soil, calcareous brown soil with soft off white patches of carbonate. Coastal dunes comprise off white and pale brown quartz and shell sand of Semaphore Sand of Holocene age.

Boree Rocks are an inlier of granitic rocks of probably Carpentarian age formed late in the Kimban orogeny not recorded on FOWLER. The nearest outcrop shown is at Yangoonaby Rockhole, 43 km to the northeast.

Banded garnetiferous amphibolite crops out on the coast near Cape Adieu on NUYTS (R.B. Flint SADME pers. comm. 1983) approximately 35 km westsouth west of Boree Rocks.

However, another unrecorded inlier, 18 km to the west-southwest near Coorabie, has been quarried for road aggregate

(Major, in press). This exposure and Boree Rocks are beyond the limits of interpreted granite and adamellite as shown on figure 3 in Firman (1978).

Boree Rocks near the top of a low rise which slopes gently northwards, comprise a group of granite tors which extend over an area about 18 m north-south by 12 m east-west (see fig. 2). The tors stand up to 3.7 m (Plate 1) above fine grey sand overlying calcreted Bridgewater Formation.

The main southern outcrop, 10 m by 7 m is flanked to the north by a jumble of outcrop and large boulders.

Six costeans have been dug by front-end loader through sand, 0.3 to 0.5 m thick, to calcrete. Exploratory holes drilled in the floor of the costeans to 2 m deep failed to intersect granite.

Despite this, coarse granitic gravel has been deposited adjacent to numerous wombat burrows in the scrub away from outcrop.

No geological logs exist for the 5 water bores within 2 km of Boree Rocks, therefore the depth of weathering is unknown.

PETROGRAPHY

Sample No. 5434 RS05 was collected from the southwestern corner of the northern outcrop and boulders (see fig. 2 and Plate 2) where fresh rock has been exposed by trial blasting and splitting.

In AMDEL Report GS3259/83, Don McColl (Petrologist) reported that the rock is a porphyritic adamellite with the following description:

Hand Specimen

A slightly porphyritic leucocratic siliceous igneous intrusive in which pale pink feldspar phenocrysts are enclosed in a slightly finer white feldspathic matrix.

Thin Section

A visual estimate of the constituents is as follows:

	%
Quartz	25
Feldspar (potassic)	35-40
Feldspar (soda-lime)	25-30
Biotite (chloritic in part)	5-8
Apatite	trace
?Titanite (sphene)	< 1
Opaques (magnetite)	2

Subhedral rectangular phenocrysts of orthoclase up to 10x 15 mm are scattered in a granitoid matrix of plagioclase, quartz, minor potassic feldspars and biotite. The grain size of the matrix is up to approximately 5 mm. It contains an assortment of feldspars, although the main one is plagioclase of close to oligoclase composition (Ab_{80}). Various perthitic intergrowths, and a few crystals of microcline are also present. The feldspars are generally fresh and unaltered although there are a few random patches of slight turbid argillisation, some of which has developed into a mesh of sericite. The degree of alteration is, however, very slight to insignificant by comparison with the other samples in this suite.

The biotite flakes are generally finer than the other components, only being up to 2 mm in diameter. Interlaminated inclusions of chlorite are present in a few flakes, but most are unaffected. Granular trains of ?titanite (or ?leucoxene) are also enclosed within some of the biotite flakes, and a sparse scattering of irregular prisms of apatite frequently occur as inclusions or in association with clusters of the mica.

The rock is classified as a porphyritic adamellite, with a very slight degree of hydrothermal alteration.

POTENTIAL USE

Outcrop was discovered in 1980 by Chris Tillett (S.D. Tillett Memorials Pty Ltd) during the search for brown and red granite for New Parliament House, Canberra. Polished samples were submitted to Mitchell, Guigola and Thorpe (architects), but were not accepted.

The adamellite has a pleasing appearance with an overall pink-grey colour similar to Sardinian Grey granite which is used in Europe for monuments and buildings. Colour of the orthoclase phenocrysts vary:

- from Pink (Hue 5R7/21) to Pale red (Hue 10R7/1) - Geological Society of America,
- from brownish orange (7C3) to Dull red (8C3) - Methuen Handbook of Colour.

Although suitable as a building stone, the coarse grained feldspar phenocrysts detract from use as ornamental stone as bevel edges may be unstable (Chris Tillett pers. comm.).

CONCLUSIONS

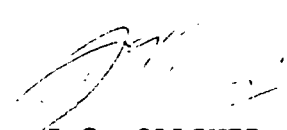
Pink porphyritic adamellite protrudes through Pleistocene and younger sediments at Boree Rocks.

This inlier is correlated with other granitoids formed late in the Kimban orogeny.

Although colour and texture appear suitable for monumental and building purposes, outcrop is small and jointed. Overburden increases rapidly away from outcrop and depth of weathering of the adamellite may be a further problem.

Distance from processing plants and markets are a major disadvantage.

Drilling to prove extent of granite and to evaluate textural variations is required before quarrying could be considered.



J.G. OLLIVER

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PLATE 1. Boree Rocks granite tors (19.9.82)

View east of outcrop and boulders up to 3.7 m high with area blasted to obtain fresh samples in centre left.

Slide No. 35145

PLATE 2. Polished slab of Boree Rocks porphyritic adamellite. Slab is 15 cm across.

Slide No. 35146

PLATE 3. Close up of porphyritic adamellite.
Pink phenocrysts of orthoclase are enclosed by matrix of plagioclase, quartz and biotite.
White spotted xenolith is 2.5 cm long.
Slide No. 35147

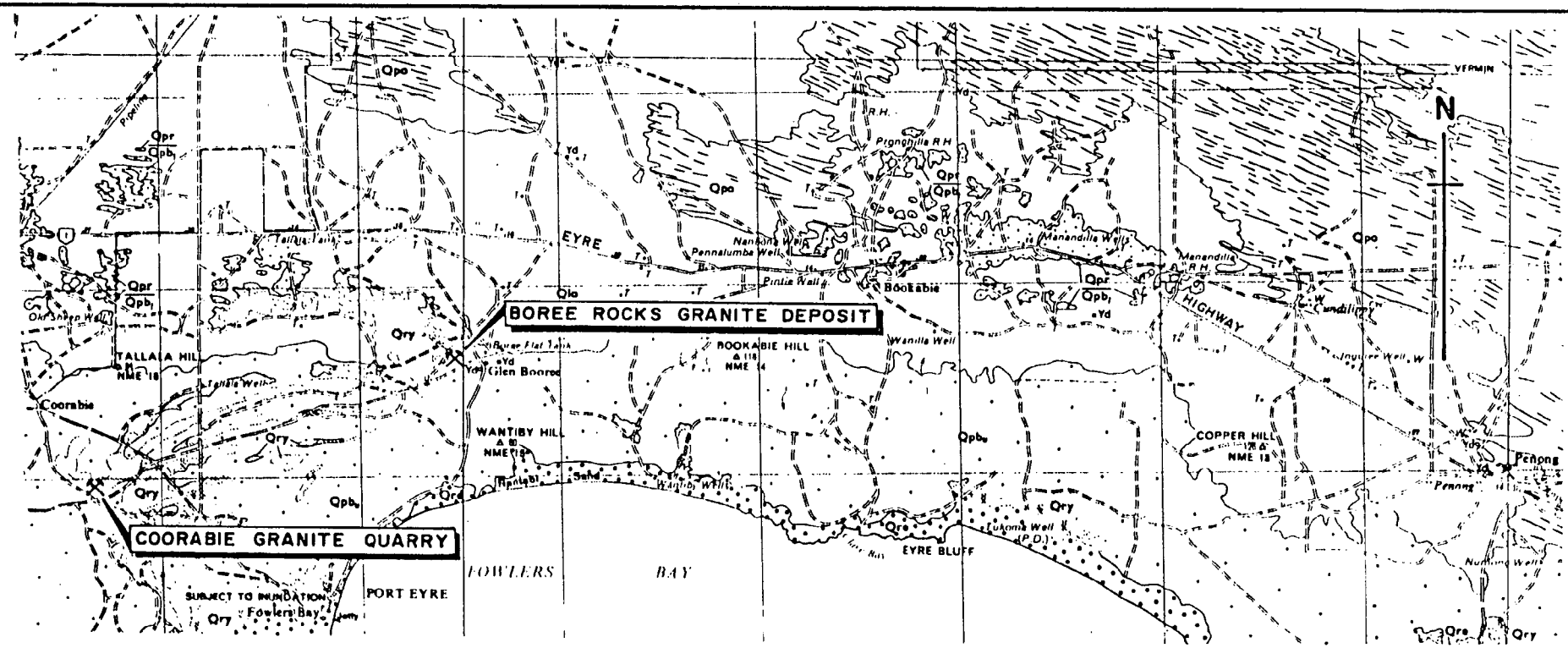
5980

BOREE ROCKS GRANITE
SECTION 5, HD. NASH
LOCATION AND REGIONAL GEOLOGY

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

COMPILED	J. Olliver		
DRAWN	E. Calabio	SCALE	as shown
DATE CHECKED	Jan. '86	PLAN NUMBER	S 18479
		CDO DATE	27.8.86

FIG. 1

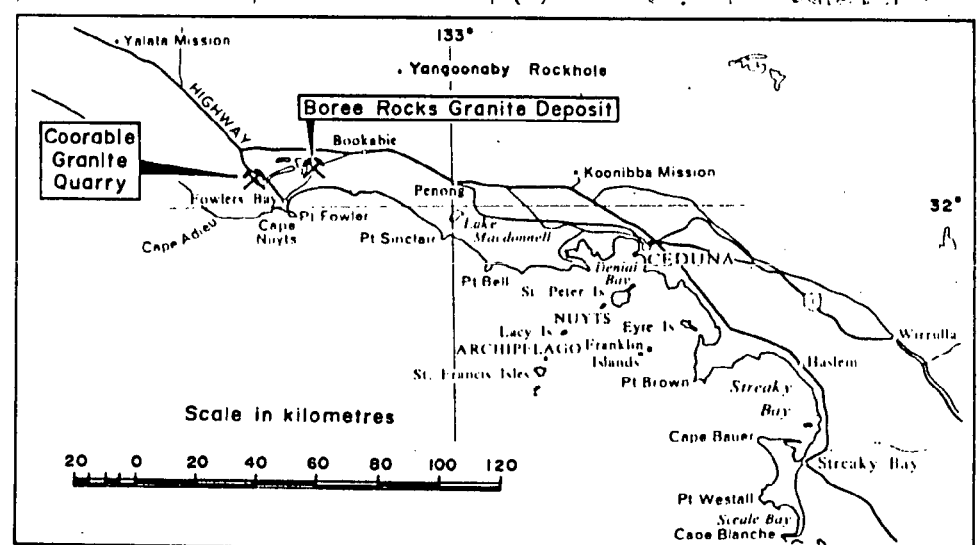


Scale in kilometres

5 0 5 10 15 20

REFERENCE

- Qre — SEMAPHORE SAND
- Qry — YAMBA FORMATION equivalents
- Qlo — LOVEDAY SOIL
- Qpo — WIABUNA FORMATION
- Qpbu — BRIDGEWATER FORMATION – upper
- Qpr — RIPON CALCRETE
- Qpbe — BRIDGEWATER FORMATION – lower



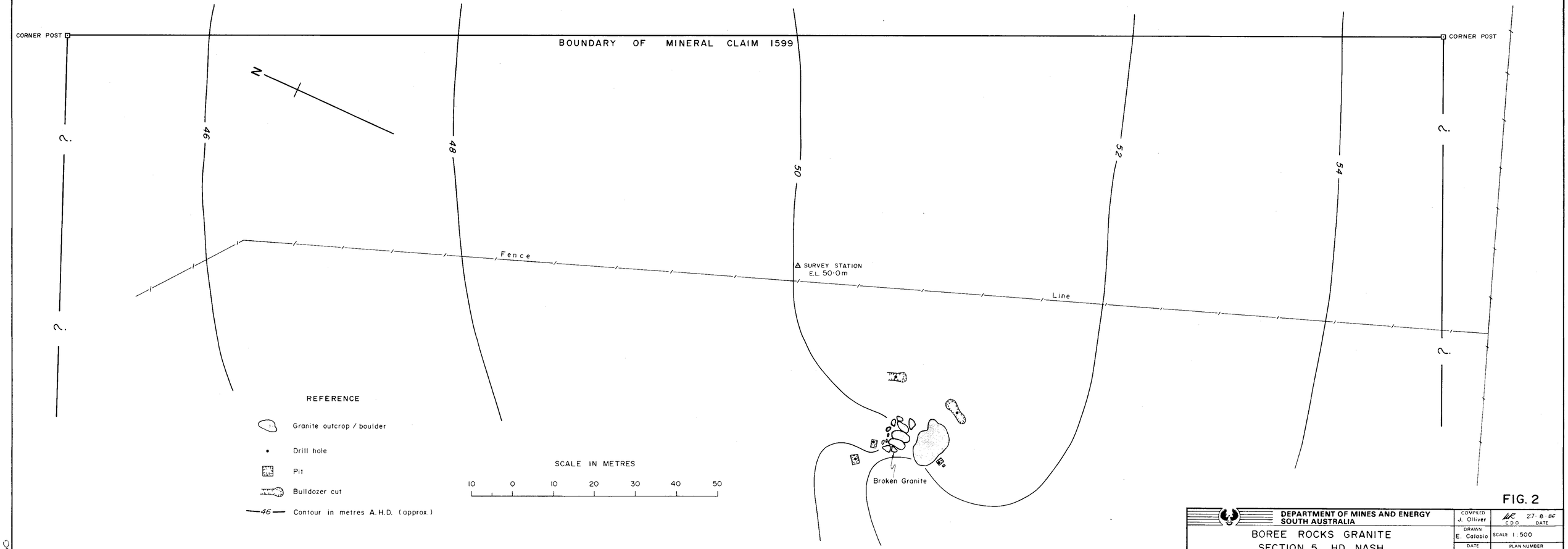


FIG. 2

DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA	COMPILED J. Olliver	C.D.O.	27·8·86 DATE
BOREE ROCKS GRANITE SECTION 5, HD. NASH GEOLOGICAL PLAN	DRAWN E. Calabio	SCALE 1:500	
	DATE Jan. '86	PLAN NUMBER 86-3	
	CHECKED		

2980