DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

Rept. Bk. No. 80/135

AQUARIUM ROCK - ISLAND LAGOON M.C. 1254

GEOLOGICAL SURVEY

By

R.S. ROBERTSON

D.M.E. No. T116

CONTENTS

FIGURES

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

Rept. Bk. No. 80/135
D.M.E. No. T116

AQUARIUM ROCK - ISLAND LAGOON
M.C. 1254

ABSTRACT

M.C. 1254, on the northern shore of Island Lagoon, contains rock of the Corrabeŗra Sandstone Member of the Tent Hill Formation (Adelaidean). The rock is weathered red brown, fine grained silty and shaley sandstone. Ferruginuous case hardening along polygonal joint sets results in unusual shaped rock fragments. A few examples of cavernous honeycombed weathered rock were also observed. Both types of rock fragments are sold as ornamental stone in aquarium supply shops.

INTRODUCTION

M.C. 1254 on the northern shore of Island Lagoon was inspected on the 24th July, 1980 by the author, B.J. Morris (Geologist), P.P. Crettenden and M.W. Flintoft (Field Assistants) during mapping of ballast quarries on the Trans-Australia Railway.

The claim is held by K. Schmidt and expires on 19th June 1981. Application for a mineral lease was lodged on 2/6/80. The material sought is aquarium rock or "Woomera Rock" sold as ornamental stone in aquarium supply shops.

Application for approval to commence operations was made on 7/7/80. As at 13/8/80, the Chief Inspector of Mines had withheld consent.

LOCATION & ACCESS

The claim is on the northern shore of Island Lagoon (Figs. 1 & 2). From the claim, Pointed Island bears about 184° M.N. and Vanguard Trig. about 240° M.N. The claim is 1.8 km east of the eastern boundary of the Narrungar Prohibited Area.

Access is by a bitumen road from the Pimba to Pt. Augusta road, near Bernard Hill, to the now abandoned Island Lagoon Deep Space Research facilities, thence along a reasonable quality dirt track from the "Minitrack" locality to the lake and then southeastwards along the shore.

GEOLOGY

The geological setting shown on Fig. 1 has been adapted from TORRENS 1:250 000 sheet (Johns et al., 1964). Flatlying Tent Hill Formation rocks of the Wilpena Group of Adelaidean age occur north of Island Lagoon. Simmens Quartzite member (Arcoona Quartzite equivalent) caps the sequence and the underlying Corraberra Sandstone Member is exposed on the slopes down to the edge of Island Lagoon. Some remnants of Tertiary silcrete capping are present along the lake shore outside the claim area.

Rock outcropping on the claim is weathered red brown, ferruginous, fine grained silty and shaley sandstone (Corraberra Sandstone). Ferruginous case hardening along polygonal joint sets gives rise to weathered rock fragments with unusual shapes (Plates 2, 3 and 4). Some examples of cavernous honeycombed rock were observed

Both types of rock fragments are on sale in aquarium supply shops in Adelaide.

RSR:AF

R. S. Robertson

R.S. ROBERTSON

REFERENCES

Johns, R.K., et al., 1977. TORRENS map sheet. Geological Atlas of South Australia 1:250 000 series. Geological Survey S. Aust.

Robertson, R.S., 1980. Aquarium Rock - Lake Hart, E.M.L. 4554. S. Aust. Dept. Mines & Energy report (unpublished).

PLATE 1. Aquarium Rock, Island Lagoon. July 1980. Site of M.C. 1254. View northwards from lake.

PLATE 2. Aquarium Rock, Island Lagoon. July 1980. Case hardened jointing in Corraberra Sandstone.

PLATE 3. Aquarium Rock, Island Lagoon. July, 1980. Case hardened jointing in Corraberra Sandstone.

PLATE 4. Aquarium Rock, Island Lagoon. July, 1980. Examples of fragments.

APPENDIX

Petrographic description extracted from AMDEL Report GS976/81 by Dr. B. Steveson.

Sample: RS 252; TSC30112

Location: 1:100,000 sheet 6235; edge of Island Lagoon

Rock Name:
Ferruginous siltstone

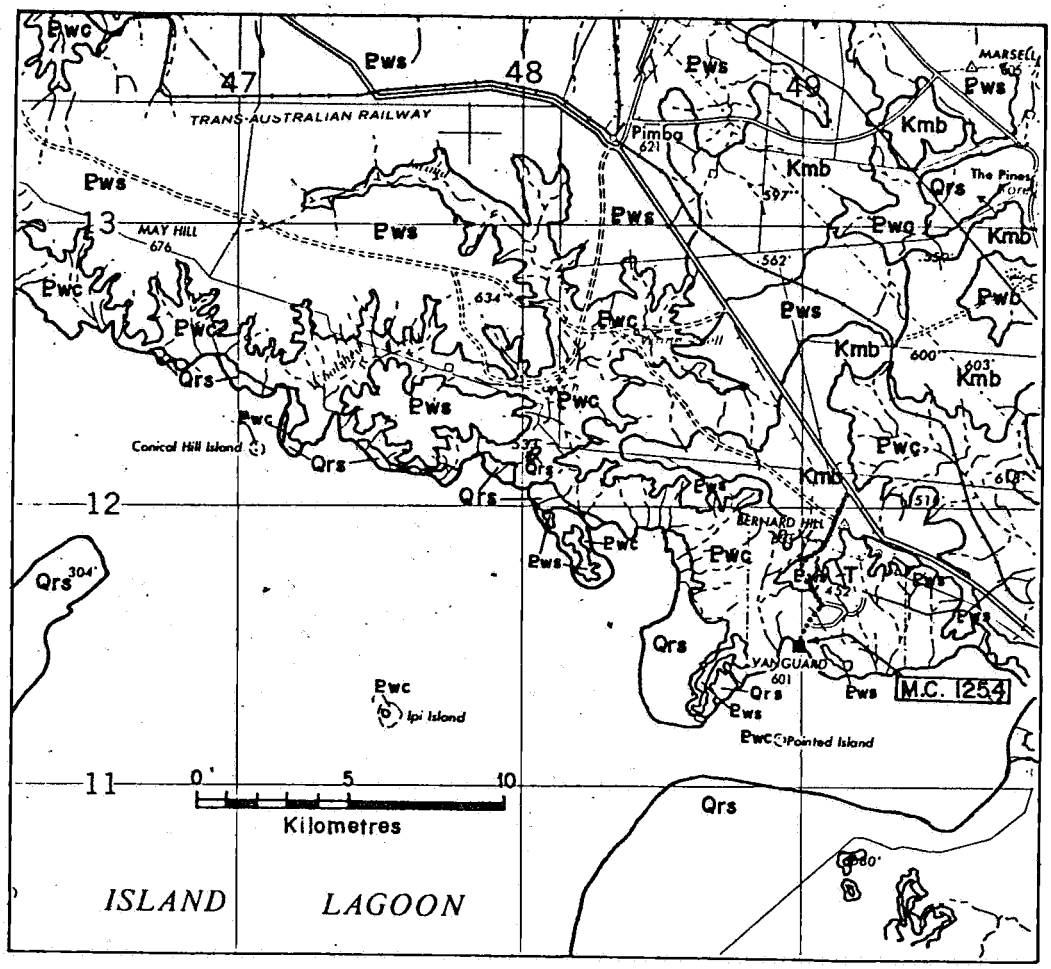
Hand Specimen:
This is a tabular rock with an aphanitic texture. The sample has an even, dark reddish colour, clearly resulting from the presence of abundant secondary ferruginous material.

Thin Section:
This is a tightly compacted siltstone consisting very largely of quartz and feldspar with minor amounts of mica and secondary limonitic material. It seems unlikely that the sample contains a very large amount of clay.

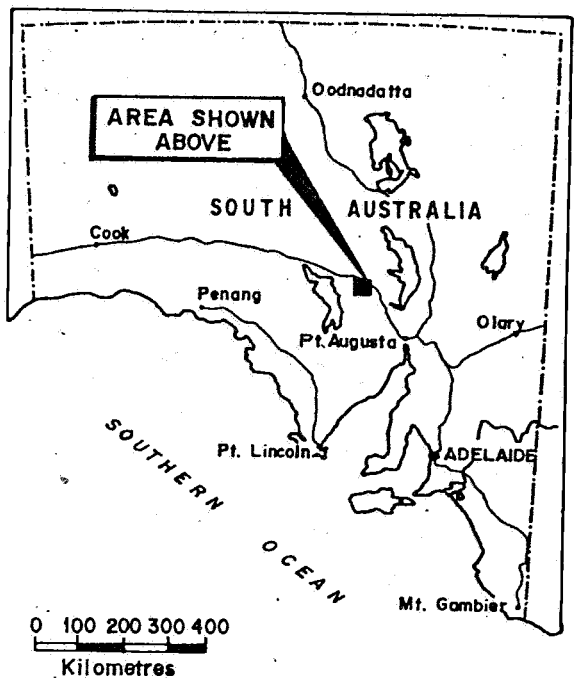
Detrital quartz and feldspar fragments have an average size of approximately 0.06 mm and most are equant but angular single crystals. Some of the angularity has resulted from corrosion of the detrital material by limonite, but it seems unlikely that the original detritus was, in any case, very well rounded. Feldspar appears to be fairly abundant and probably occupies 5-10% of the volume of the rock. The feldspar grains are perfectly fresh and both potassium feldspar and plagioclase can be seen in most fields of view. Mica is present as clear flakes of muscovite which vary considerably in size and shape. Some are notably elongate.

Cementation of the rock appears to have occurred largely by pressure solution and the deposition of iron oxide/hydroxide material. The silt-grade grains appear naturally to fit together well, and it is possible that there has been some re-deposition of silica in original pore spaces so that the sample now has a very compact, interlocked and even granular appearance in places. Most of the grains are more or less rimmed with secondary iron oxide material which is translucent in plane polarized light. Although this material forms a contiguous network throughout the rock it is unlikely that any of the intergranular space consists solely of this component.

The rock is perfectly homogeneous and shows no obvious bedding characteristics whatsoever.



N



LEGEND

Quaternary	Qrs	Sand plains: Sand dunes with claypans.
Tertiary	T	Stream deposits: Boulder beds, ferruginous grits; grits and sands.
	To	Silicified conglomerates, grits and sandstone. Undifferentiated silcrete residuals.
Cretaceous	Kmb	Marree Subgroup: White, kaolinitic siltstones with rounded boulders; gravels and grits.
Adelaidean Wilpena Group	Pws	Tent Hill Formation Simmens Quartzite Member: Cross-bedded flaggy quartzites. (Arcoona Quartzite equivalent)
	Pwc	Corraberra Sandstone Member: Red-brown, silty sandstones and flaggy, micaceous siltstones.

Adapted from TORRENS 1:250 000 sheet.
(Johns et. al., 1964)

FIG. 1

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

AQUARIUM ROCK—ISLAND LAGOON M.C. 1254
LOCATION AND REGIONAL GEOLOGY

COMPILED S.R.	C.D.O. DATE
DRAWN S.R.	SCALE 1:250 000
DATE 8/10/80	PLAN NUMBER S15143
CHECKED	

2158

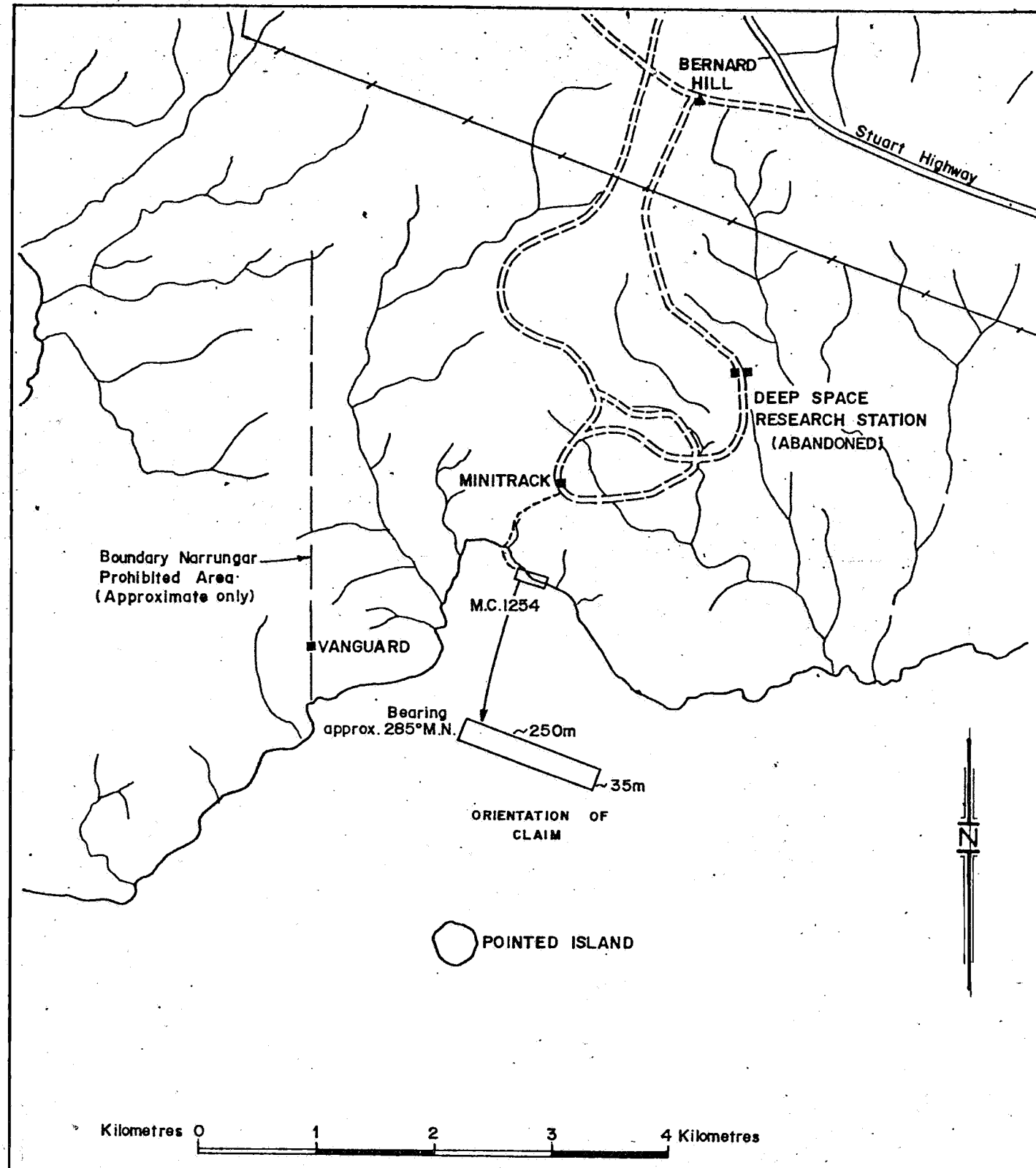


FIG. 2

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

AQUARIUM ROCK—ISLAND LAGOON M.C. 1254

TENEMENT LOCATION PLAN

COMPILED S.R.	C.D.O. DATE
DRAWN S.R.	SCALE 1:47520
DATE 9/10/80	PLAN NUMBER S15144
CHECKED	

215/8