

NORTHERN TERRITORY GEOLOGICAL SURVEY REPORT G.S. 73/14

INVESTIGATION

OF

KULGERA (AREA 4) RAILWAY BALLAST SITE

MINING RESERVE NO. 342

QUARRY SITE 1-B

by

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OPEN FILE

SUMMARY AND INTRODUCTION

This report, concerning Quarry Site 1-B, should be read in conjunction with Northern Territory Geological Survey Report G.S. 345: Investigation of Kulgera (Area 4) Railway Ballast Site, Mining Reserve Number 342, by J.S. Morlock.

The location, access and general geology of the area have been described in the previous report, and are not repeated here.

During the present investigation, eight diamond drill holes totalling 612 feet were put down and dolerite thicknesses between 26 and 32 feet were encountered in all of them.

Reserves of 546,000 cubic yards (417,000 cubic metres) of dolerite are accordingly estimated to be available from Quarry Site 1-B.

CALCULATION OF DOLERITE RESERVES AT QUARRY SITE 1-B

Site 1-B has been divided into four Zones. Zones One and Two include the outcrop and the area extending south until the overburden depth reaches 25 feet; this area extends from the vicinity of D.D.H. 19 eastwards to the vicinity of D.D.H. 15. Zones Three and Four include the outcrop only, extending from the vicinity of D.D.H. 15 eastwards to the vicinity of D.D.H. 2.

Zone One

This Zone commences approximately forty feet from the northern edge of the outcrop (at which point the dolerite thickness is assumed to reach nine yards) and extends southwards until the overburden depth reaches 25 feet. The area of this Zone is some 50,000 square yards. Assuming a dolerite thickness of nine yards, the volume of dolerite is 450,000 cubic yards.

Zone Two

This Zone includes the area within 40 feet of the northern edge of the outcrop. In this area, the dolerite thickness varies from nine to three yards. An average thickness of five yards is assumed. The area of this Zone is 5,000 square yards. The volume is some 25,000 cubic yards of dolerite.

Zone Three

This Zone includes the southern part of the outcrop in the area to the east of Zone One. Area is about 6,500 square yards and the volume is some 58,500 cubic yards of dolerite.

Zone Four

This Zone is an eastward extension of Zone Two. The area is about 2,500 square yards and the volume of dolerite is some 12,500 cubic yards.

Details are shown on Plate II.

In summary: Quarry Site 1-B

DOLERITE RESERVES

<u>ZONE</u>	<u>CUBIC YARDS</u>	<u>CUBIC METRES</u>
1	450,000	344,000
2	25,000	19,000
3	58,500	44,500
4	<u>12,500</u>	<u>9,500</u>
TOTAL:	546,000	417,000

APPENDIX

DRILL HOLE LOGS

- NOTE:
- 1- All holes are vertical.
 - 2- Angles are given relative to core axis, (t.c.a.)

D.D.H. 15

Summary: 1- Depth to dolerite; 36 feet.
2- Thickness of dolerite; 29.5 feet.

<u>Depth (feet)</u>	<u>Core Recovered</u>	<u>Remarks</u>
0 - 30	(no core) (taken)	<u>Alluvium and Weathered Granitic Rocks.</u>
30 - 36	6	<u>Granite Gneiss:</u> Gneissosity 60-65° t.c.a. Slightly weathered to about 34 feet. Contact with dolerite approximately at right angles t.c.a.
36 - 65½	29	<u>Dolerite:</u> Very-fine-grained at contacts then medium to medium-coarse-grained. Generally competent except for minor shear fracturing (approx. 15° t.c.a. from 59-60 feet and 61-61½ feet.
65½- 82	16	<u>Granite Gneiss:</u> With minor granite. Contact with dolerite at right angles t.c.a. Gneissosity 60-65° t.c.a. In the interval 70-72½ feet, the gneiss is somewhat weathered.
82 - --	--	END OF HOLE

D.D.H. 16

Summary: 1- Depth to dolerite; 13 feet.
2- Thickness of dolerite; 30 feet.

<u>Depth (feet)</u>	<u>Core Recovered</u>	<u>Remarks</u>
0 - 13	(no core) (taken)	<u>Alluvium and Weathered Granitic Rocks.</u>
13 - 43	30	<u>Dolerite:</u> Medium-grained. Fine-grained at contacts. Competent except for minor shear fracturing (approx. 20° t.c.a.) at 19½ feet and 21 feet.
43 - 62	18½	<u>Granite Gneiss:</u> With minor granite. Contact with dolerite approx. 75° t.c.a. Gneissosity is 55-60° t.c.a. Weathered from 53-56 feet. Below 59 feet, proportion of granite increases. Contacts between granite and granite gneiss approx. at right angles t.c.a.
62 - --	--	END OF HOLE

D.D.H. 17

Summary: 1- Depth to dolerite; 16 feet.
2- Thickness of dolerite; 32.5 feet.

Depth (feet)	Core Recovered	Remarks
0 - 16	(no core) (taken)	<u>Alluvium and Weathered Granitic Rock.</u>
16 - 48 $\frac{1}{2}$	31 $\frac{1}{2}$	<u>Dolerite:</u> Fine to very-fine-grained at contacts, medium to (rarely) medium-coarse-grained in remainder. Upper contact is somewhat obscured due to grinding of core. 16 - 46 feet: competent. Very little fracturing. 46 - 46 $\frac{1}{2}$ feet: shear zone. Shears at approx 20 ^o t.c.a. chloritized. 46 $\frac{1}{2}$ - 48 feet: competent. Contact at 48 feet is at 70 ^o t.c.a.
48 - 54 $\frac{1}{2}$	6 $\frac{1}{2}$	<u>Granite:</u> Coarse-grained.
54 $\frac{1}{2}$ - 62	8 $\frac{1}{2}$	Granite Gneiss: Gneissosity 60-65 ^o t.c.a.
62 - ---	---	END OF HOLE

D.D.H. 18

Summary: 1- Depth to dolerite; 23½ feet.
 2- Thickness of dolerite; 26 feet.

Depth (feet)	Core Recovered	Remarks
0 - 23½	4	<u>Alluvium and Weathered Granite Gneiss.</u>
23½ - 49½	25	<u>Dolerite:</u> Fine grained at contacts; medium-grained for remainder. 23½-27½ feet: competent (i.e. no significant fracturing). 27½-29 feet: shear fracturing, at right angles and at 30° t.c.a. 29 -31 feet: competent. 31 -32 feet: shear (?) fracturing at 20-25° t.c.a. 32 -35 feet: competent. 35 -35½ feet: fault, Slickensides and gouge, at 50° t.c.a. Serpentinized and talcose. 35½-37½ feet: competent. 37½-38½ feet: fault, at 50° t.c.a. Chlorite and talc. Rare slickensides. 38½-44 feet: competent. 44 -45½ feet: shear zone, at approx. 20° t.c.a. Possibly also faulting. 45½-47 feet: largely competent. 47 -49 feet: core is highly sheared and ground; worst at contact.
49 - 61	10½	<u>Granite Gneiss:</u> Gneissosity 35-40° t.c.a.
61 - 64	3	<u>Granite</u>
64 - --	--	END OF HOLE.

D.D.H. 19

Summary: 1- Depth to dolerite; 24 feet.
2- Thickness of dolerite; 31 feet.

Depth (feet)	Core Recovered	Remarks
0 - 24	(no core) (taken)	<u>Alluvium and Weathered Granitic Rocks.</u>
24 - 55	30½	<u>Dolerite:</u> Upper contact at 85-90° t.c.a. Lower contact broken but appears approx. at right angles t.c.a. Fine-grained at contacts, medium-grained elsewhere. 24 -29½ feet: competent. 29½-31 feet: highly sheared at 35-40° t.c.a. 31 -32 feet: shear zone. Fractures at 20° and 40° t.c.a. Chloritized. 32 -47 feet: competent. 47 -48 feet: shear zone. Possible faulting but no slickensides observed. Shearing at 10-20° t.c.a. 48 -50 feet: competent 50 -50½ feet: shear zone at 10-20° t.c.a. 50½-54 feet: competent. 54 -55 feet: highly broken and ground core.
55 - 66	10	<u>Granite Gneiss:</u> Minor granite bands. Gneissosity at 55-60° t.c.a.
66 - --	--	END OF HOLE.

D.D.H. 20

Summary: 1- Depth to dolerite; 65 feet.
2- Thickness of dolerite; 30 feet.

Depth (feet)	Core Recovered	Remarks
0 - 40	(no core) (taken)	<u>Alluvium and Weathered Granite Gneiss.</u>
40 - 65	23	<u>Granite Gneiss:</u> Weathered to approx. 55 feet.
65 - 95	29½	<u>Dolerite:</u> Fine grained at contacts which are at 70-80° t.c.a. and sharp, though uneven. Otherwise medium to coarse grained. The rock shows virtually no evidence of fracturing. Rare specks of pyrite have been noted.
95 - 97	2	<u>Granite Gneiss:</u> Gneissosity at 55° t.c.a.
97 - --	--	END OF HOLE.

D.D.H. 21

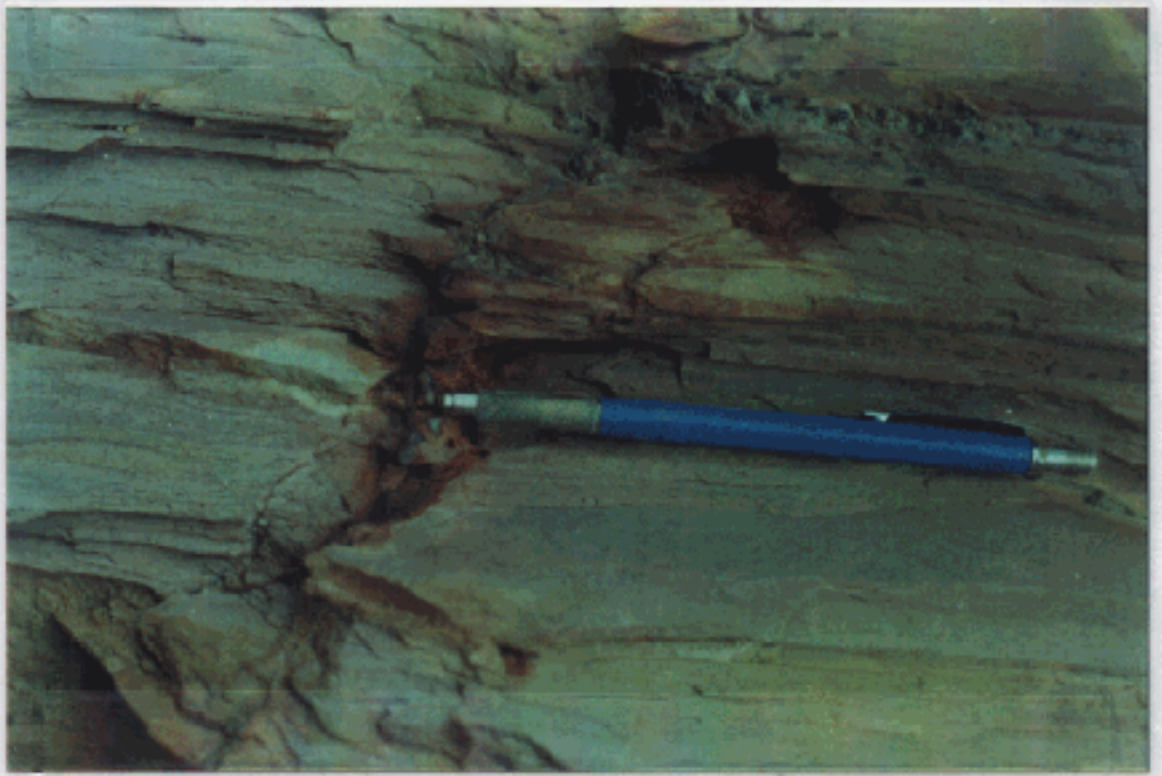
Summary: 1- Depth to dolerite; 48 feet.
2- Thickness of dolerite; 30 feet.

Depth (feet)	Core Recovered	Remarks
0 - 48	3½ { no core taken } { from } (0-41½')	<u>Granite Gneiss and Granite:</u> Core is badly ground; rock is weathered.
48 - 78	29	<u>Dolerite:</u> Medium-grained except in the vicinity of contacts, where it is fine-grained. Upper contact obscured due to grinding. Lower contact sharp at 65° t.c.a. Rock is tough with no evident shearing and very minor quartz-healed fracturing.
78 - 85	6½	<u>Granite Gneiss:</u> With some granite. Gneissosity at 55-60° t.c.a.
85 - --	--	END OF HOLE.

D.D.H. 22

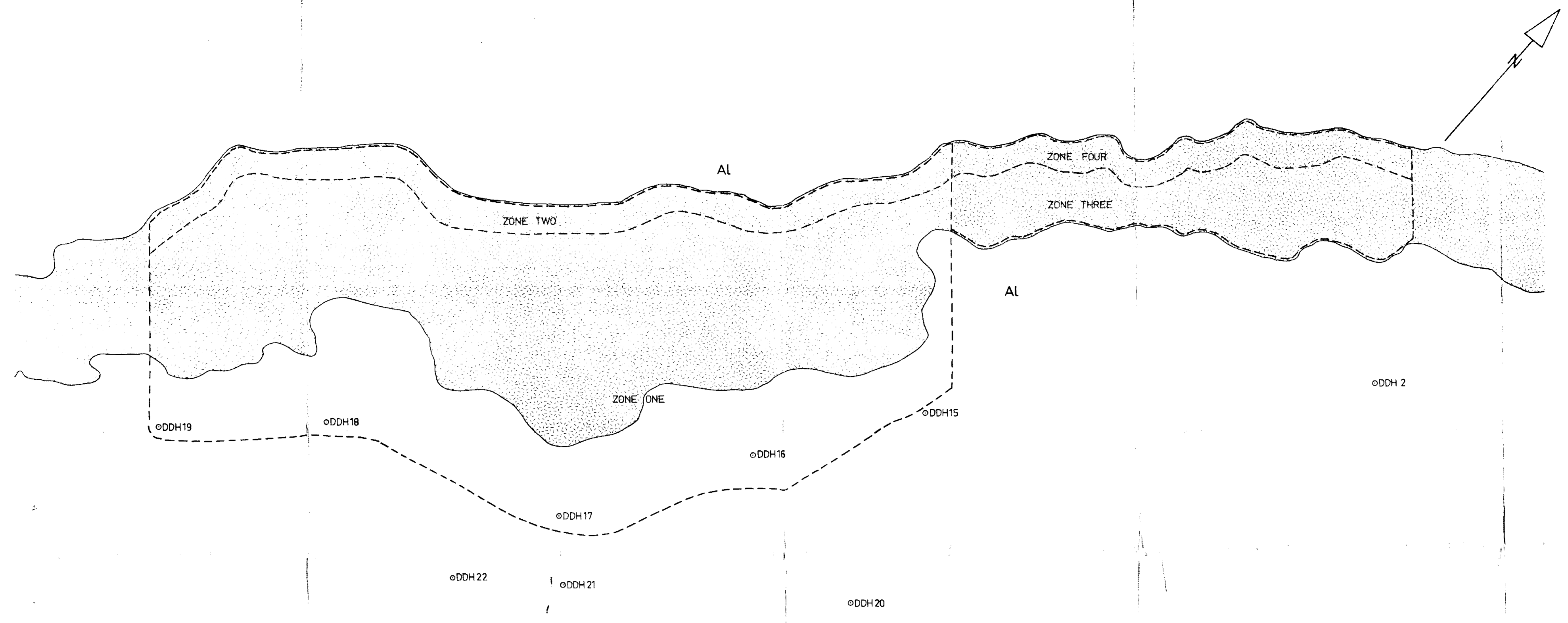
Summary: 1- Depth to dolerite; 63 feet.
2- Thickness of dolerite; 28.5 feet.

Depth (feet)	Core Recovered	Remarks
0 - 63	26	<u>Granite Gneiss, minor Granite:</u> Gneissosity at 55-60° t.c.a. Core badly broken and ground from 0-59 feet.
63 - 91½	27½	<u>Dolerite:</u> Contacts sharp at 75-80° t.c.a. Fine grained at contacts, then medium to coarse grained. Block shows little evidence of fracturing and no evidence of shearing.
91½- 94	2½	<u>Granite Gneiss:</u> With minor granite. Gneissosity at 55-60° t.c.a.
94 - --	--	END OF HOLE.

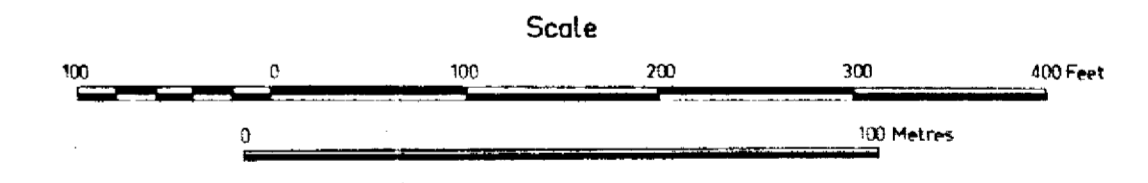





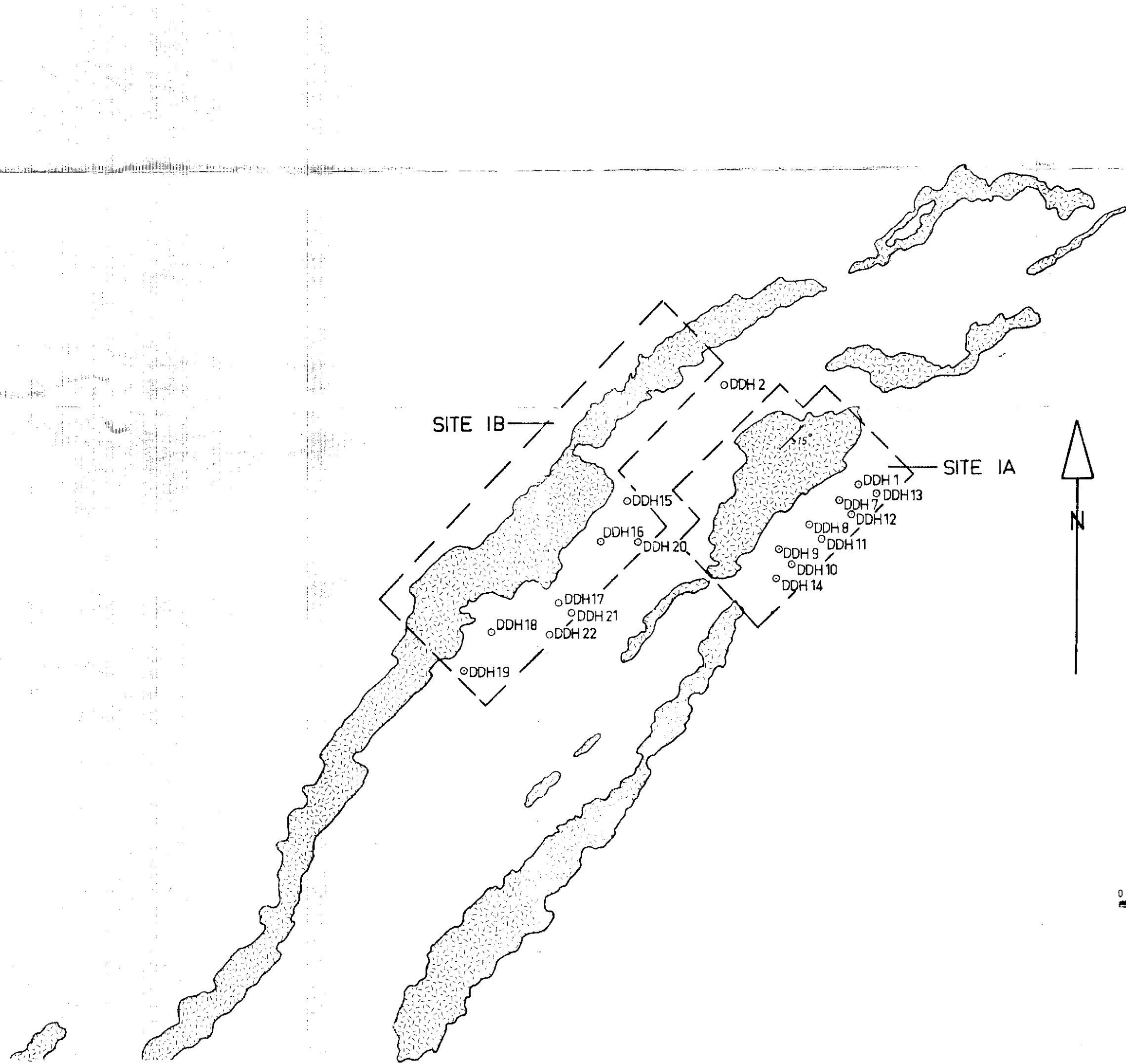




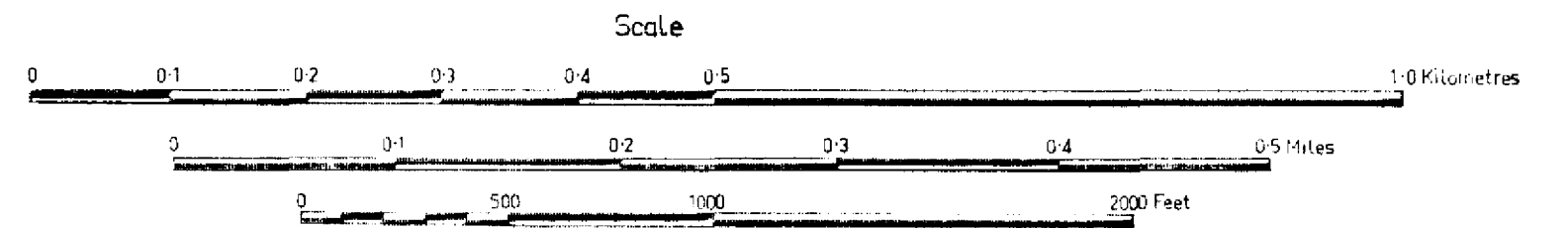
**KULGERA AREA
QUARRY SITE 1B
DOLERITE RESERVES**




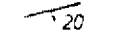
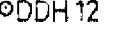
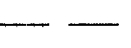
- Reference**
- AL Alluvium over granite-gneiss
 -  Dolerite
 - ODDH 5 Diamond drill hole site
 - - - Zone boundary



KULGERA AREA
 LOCATION MAP
 QUARRY SITE 1B



Reference

-  Dolerite Sill (surrounded by alluvium overlying weathered granitic rocks)
-  Strike and dip of strata
-  Diamond drill hole location
-  Site boundaries

