DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

Rept.Bk.No. 79/132

DOLOMITE AGGREGATE DEPOSIT - CRYSTAL BROOK

Section 736 hundred of Crystal Brook
- Highways Department -

GEOLOGICAL SURVEY

by

A.M. PAIN
Senior Geologist

D.C. SCOTT
Geologist

MINERAL RESOURCES SECTION

D.M.E No. 211/79

ER, 1979.

Crystal Brook Dolomite Aggregate Deposit. October, 1978

Frontispiece - View of proposed quarry site looking southwesterly.

CONTENTS

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

Rept.Bk.No. 79/132
D.M.E. No. 211/79

DOLOMITE AGGREGATE DEPOSIT CRYSTAL BROOK

Section 736 hundred of Crystal Brook
- Highways Department -

ABSTRACT

Two deposits comprising gently dipping dolomitic sediments of the Skillogalee Dolomite were located during reconnaissance for construction materials for the Crystal Brook bypass. The southern deposit, 4 km northeast of Crystal Brook, was subsequently chosen for detailed evaluation.

Two diamond drill holes totalling 78.35 m were drilled, and a quarry to yield 132 000 m^3 of useable stone in situ has been outlined. This stone is interbedded with 31 500 m^3 of shaly material and overlain by 29 500 m^3 of overburden, some of which may be suitable for sub-base.

INTRODUCTION

In 1978, the Highways Department requested the assistance of this Department in locating a source to supply 80 000 m^3 of crushed rock and 38 000 m^3 of chippings for construction of the Crystal Brook bypass and re-sealing roads in the district.

During reconnaissance in October 1978, two potential sites were located in dolomitic siltstone, dolomitic quartzite, and quartzitic dolomite of the Skillogalee Dolomite of Adelaidean age.

Both sites are substantially hidden from view.

The northern site, 7 km east of Warnertown is within an area designated "Environmental Class A" in the Mid-North Planning Area Supplementary Development Plan for the Southern Flinders Ranges (see Fig. 2). This deposit was mapped on 6th February 1979, and is the subject of a separate report (Pain, 1979).

The southern site, 4 km northeast of Crystal Brook, is under interim development control in the Crystal Brook District Council and in a Rural Area as defined in the Supplementary Development Plan. Two diamond core holes totalling 78.35 m were drilled between 6th February and 9th March 1979.

In July 1979, the Crystal Brook Bypass project, which had been scheduled to commence in late 1979, was deleted from the Highways Department 5 year plan.

LOCATION, ACCESS AND TOPOGRAPHY

The deposit is located 4 km northeast of Crystal Brook in section 736 hundred of Crystal Brook county Victoria.

Access is via 1 km of unsealed road which runs northwards to Bowman Park recreation reserve from the Crystal Brook-Gladstone road, 4 km east of Crystal Brook.

The deposit occurs on the northeastern part of a spur rising 30 m above two creeks which drain northwards into a tributary to Crystal Brook (See Figs 1 and 4 and Frontispiece).

ENVIRONMENTAL ASSESSMENT

The deposit is on freehold land in a Rural Area as defined in the Mid-North Planning Area Supplementary Development Plan for the Southern Flinders Ranges.

Most of section 736 is used for cereal farming, but rocky outcrops and steep topography have precluded cultivation of the proposed quarry site.

Vegetation has been cleared from much of the area to be quarried, but some trees remain along the southern bank of the creek at the northern margin of the proposed quarry.

The quarry site cannot be seen from the Crystal Brook-Gladstone road nor the unsealed road into Bowman Park. The deposit is 1 km southeast of the oval at Bowman Park and will have no impact on this recreation area.

GEOLOGICAL SETTING

The regional geology of the area is shown on Figure 3 which has been adapted from BURRA (Mirams, 1964).

The deposit occurs within a sequence of dolomitic sediments of the Skillogalee Dolomite, part of the Willouran Group of Adelaidean age.

An anticline with a core of Willouran sediments extends for about 15 km between Wirrabara and Huddleston. Regional dips on the western flank of this structure are commonly around 60^{o} but shallow locally to 7^{o} in the vicinity of the deposit.

SITE GEOLOGY

The deposit consists of interbedded dolomite, dolomitic siltstone, dolomitic quartzite, quartzitic dolomite and carbonate rich shale. The distribution of these rock types is shown on the geological plan and section accompanying this report (Fig. 4). The dolomitic sequence is overlain by interbedded quartzite and siltstone with some dolomitic bands which outcrop poorly on the west of the hill.

The deposit is gently folded and has an overall strike of 130^{o} and dips southwesterly at 7^{o}.

The dip steepens slightly near the western margin of the quarry site. Two hundred metres east and west of the site, beyond the limits of Figures 4 and 5, dips steepen to $60\text{-}70^{o}$.

Outcrop on the northern edge of the deposit flanking the westerly draining creek is extensive but elsewhere is limited generally to the more resistant quartzitic dolomite and dolomitic quartzite bands.

Weathered overburden on the northern and eastern slopes of the deposit is expected to vary in depth up to about 2 m.

Overburden comprising weathered siltstone and shale reaches a depth of 8 m on the western limit of the proposed quarry (see Fig. 6).

DRILLING

A Highways Department rig was used to drill 2 vertical diamond core holes totalling 78.35 m. Logs and photographs of the core are presented in Figures 7, 8 and 9.

The drill holes intersected all the geological units to be quarried, with an overlap of 30 m between the holes.

TESTING OF DIAMOND DRILL CORE

Petrographic Examination

Selected samples of drill core were examined petrographically by Mr W.O. Harvey (Scientific Officer, Highways Department). No deleterious secondary minerals occur within the rock types to be used for crushed rock and chippings.

Material Testing

Four samples of diamond drill core were tested in the Highways Department Northfield Laboratory. Detailed results are presented in Table 1 and summarized on the drill logs in Figures 7 and 8.

Bitumen Stripping Tests

Limited testing has been carried out as detailed in Table II. Stripping up to 85% (wet) and 68% (dry) was obtained without additives. Only one of the 3 samples tested showed significant improvement with 0.5% Megamine B.A., and additional testing of other additives is required.

TABLE I

MATERIAL TESTING

Sample No.	789-A-3906	789-A-3907	789-A-3908	789-A-3909
Drill Hole No.	DDH1	DDH1	DDH2	DDH2
Interval (m)	4.78-8.74	14.84-18.80	0.61-5.79	12.19-15.85
Use Category*	C	D	D	D
Proposed Quarry Bench	Middle	Bottom	Middle	Bottom
Los Angeles %loss	N.D.	21	21	20
Sulph. Sound.+ %loss	N.D.	2	2	0.8
Soil Constants+ (Crusher fines)				
Plast. Lim.	18	15	17	16
Liq. Lim.	29	24	25	18
P.I.	11	9	8	2
Lin. Shr.	4.0	3.6	4	1
Soil Constants+ (L.A. fines)				
Plast. Lim.	N.D.	14	14	16
Liq. Lim.	N.D.	18	17	18
P.I.	N.D.	4	3	2
Lin. Shr.	N.D.	1.4	1.4	0.8

TABLE II

BITUMEN STRIPPING TESTS (% stripping)

Sample No.	Without additive		With 0.5% Megamine B.A.	
	Dry	Wet	Dry	Wet
3907	59	85	24	35
3908	68	77	15	83
3909	36	51	37	69

* See under STONE QUALITY AND USAGE

+ Plast. Lim. - Plastic Limit
Liq. Lim. - Liquid Limit
Sulph. Sound. - Suphate Soundness
P.I. - Plasticity Index
Lin. Shr. - Linear Shrinkage

STONE QUALITY AND USAGE

Based on detailed examination of the drill core, petrographic examinations and laboratory testing, four main categories have been determined, and are shown on cross sections in Figure 6 and detailed below:

A. Overburden

On the flanks of the hill, this unit which comprises weathered dolomitic sediments is expected to vary in depth up to about 2 m. On the crest of the hill, thickness of weathered siltstone, shale, dolomitic quartzite and quartzite comprising this unit reaches 8 m within the area to be quarried.

In general, overburden is expected to be rippable. Indurated layers near the hill crest may be of sufficient quality for use as sub-base.

B. Waste

Thin bands of fissile shale, deeply weathered in parts, occur throughout the sequence. The thickest bed reaches 3 m as shown on cross sections in Figures 4 and 6. The material in the drill core appeared to be sufficiently weathered to be scalped out during crushing and screening operations. However, partly weathered fragments may pass through the plant in the crushed rock, increasing the P.I. of the product.

C. Crushed rock

Material in this category comprises quartzitic dolomite, dolomitic quartzite, quartzite and shale, in general moderately to slightly weathered. Scalping of the more weathered, friable shale should produce a suitable crushed rock for pavement construction. Sample 789-A-3906 in Table I is representative of this material.

Limited quantities of sealing aggregate may be obtained during production of crushed rock by screening out material in the 7-14 mm size range.

D. Chippings and crushed rock

Quartzitic dolomite, dolomitic quartzite, dolomitic siltstone and shaly interbeds comprise this material. With scalping of the weathered friable shaly material, rock in this category should be suitable for production of sealing aggregate or concurrent production of sealing aggregate and crushed rock. Samples 789-A-3907, 3908, 3909 in Table I represent material in this category.

RESERVES AND QUARRY DEVELOPMENT

A quarry designed to yield a total of 193 000 m^3 of in situ material is outlined in Figure 5.

Table III details the quantities of material in each category which could be won from each bench.

TABLE III

RESERVES

(m^3 in situ)

	A Overburden	B Waste	C Crushed rock	D Chippings and crushed rock	Totals
Top Bench	14 000	-	-	-	14 000
Middle Bench	10 500	9 000	24 500	19 500	63 500
Bottom Bench	5 000	22 500	-	88 000	115 500
Totals	29 500	31 500	24 500	107 500	193 000
Composite Total	61 000		132 000		

Material from the top bench is almost entirely overburden, most of which is expected to be rippable, although some blasting may be required. Some sub-base may be won from this bench.

The second bench will be suitable for crushed rock (Category C) but higher quality (Category D) material near the bottom of the face will enable the concurrent production of crushed rock and small quantities of chippings.

The bottom bench will provide the highest quality (Category D) material, suitable for the production of chippings, or the concurrent production of chippings and crushed rock.

The contract specifications for production rates and delivery dates of the various products will determine the relative development rates of each of the quarry benches.

The quarry outlined in Figure 5 has been specifically designed for the Crystal Brook Crushing Contract No. 2. The overall rock quality is not high enough to supply a "chippings only" contract, particularly from the top two benches, but is capable of supplying stone for this contract of mainly crushed rock. If the site is being considered as a future source of re-seal aggregates, advantage should be taken of the large quantity of crushed rock required in this contract to develop the top two benches to a greater extent than shown in Figures 5 and 6. A higher proportion of Category D material would be exposed in the bottom face for future crushing contracts for re-seal aggregate.

CONCLUSIONS AND RECOMMENDATIONS

A quarry to yield a total of 193 000 m^3 of in situ material comprising 132 000 m^3 of useable rock interbedded with 31 500 m^3 of shaly waste, and overlain by 29 500 m^3 of overburden has been

outlined 4 km northeast of Crystal Brook.

The quarry has been designed to satisfy a crushing contract to supply 80 000 m^3 of crushed rock and 38 000 m^3 of chippings.

Since the project has been posponed indefinitely, the quarry development proposed in Figures 5 and 6 should be re-considered when the contract is called eventually.

If the site is to be considered as a future source of re-seal aggregates, the top two benches should be extended further than has been proposed in this report, thus leaving higher quality material exposed in the bottom face for future contracts.

The quarry is located on the northeastern flank of a spur, and could be worked out of sight of all main roads with minimal impact on the environment. The only known alternative site occurs in a Class A Environmental Area, in the Southern Flinders Ranges, 7 km east of Warnertown.

As the deposit is on freehold rural land appropriate action is recommended by the Highways Department to secure future access to the deposit.

AMP/DCS:GU

A.M. Pain
Senior Geologist

D.C. Scott
Geologist

REFERENCES

Mirams, R.C., 1964. BURRA map sheet, Geological Atlas of South Australia, 1:250 000 series. Geol. Surv. S. Aust.

Pain, A.M., 1979. Dolomite Aggregate Deposit-Warnertown. Sections 307, 308, hundred of Napperby. S. Aust. Dept. Mines and Energy report 79/64 (unpublished).

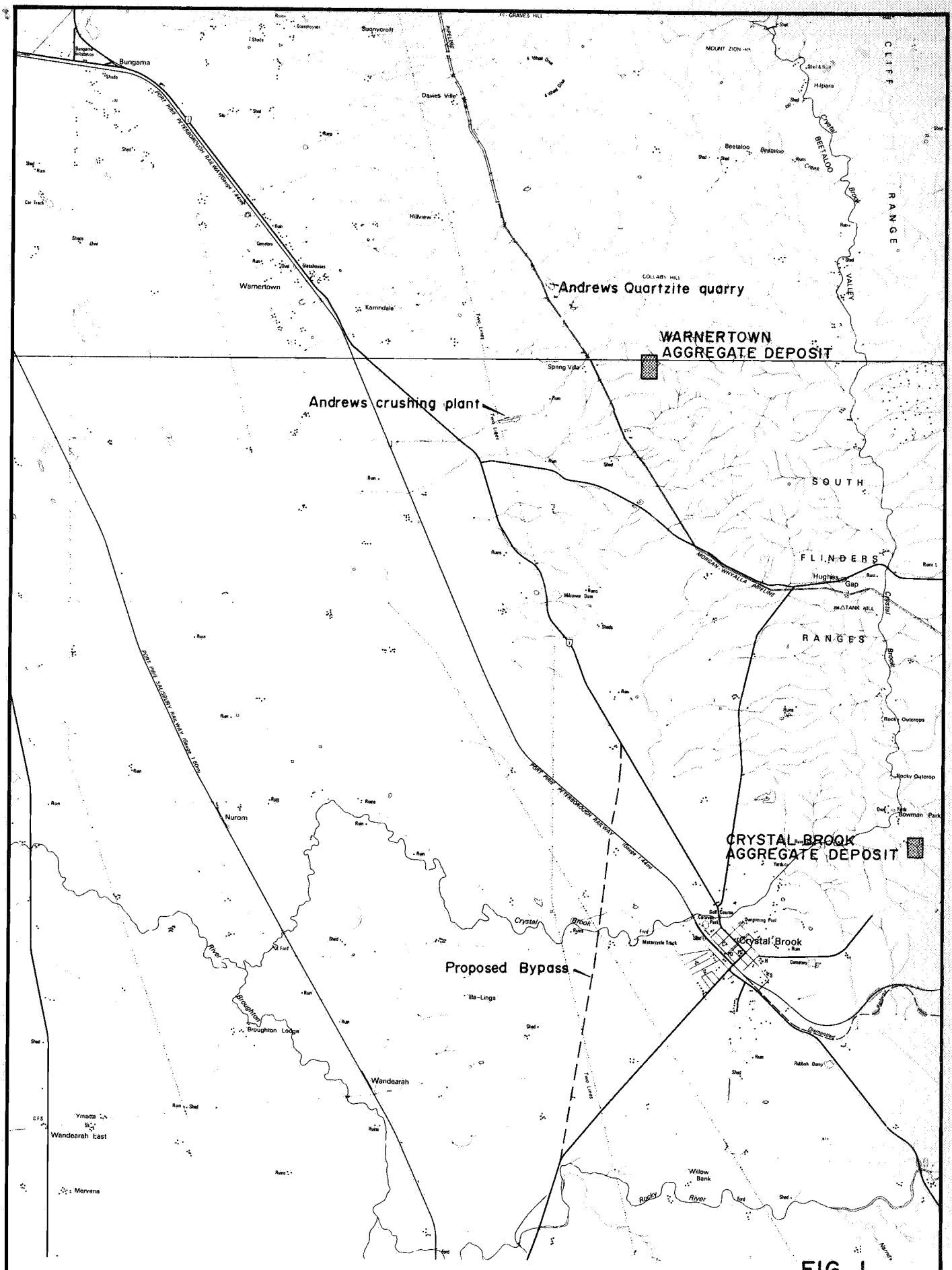


FIG. 1

	DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA	SCALE: 1 : 100 000
COMPILED: A.M.P.	WARNERTOWN AND CRYSTAL BROOK AGGREGATE DEPOSITS	DATE: April 1979
DRN: A.F. CKD:		PLAN NUMBER
	LOCALITY MAP	S14078

1330

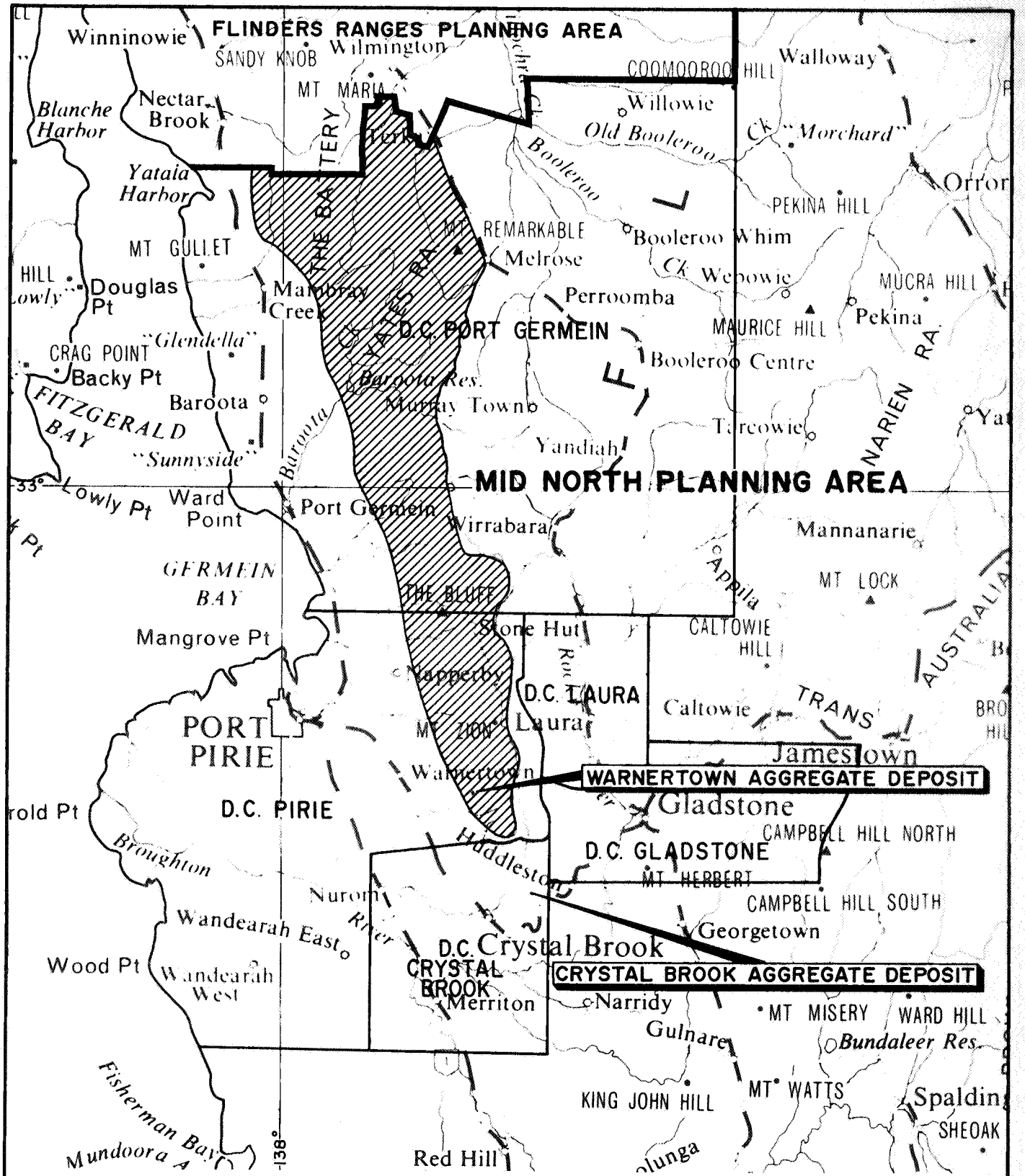


FIG. 2

	DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA	SCALE: 1:500000
COMPILED A.M.P.	MID NORTH PLANNING AREA–SOUTHERN FLINDERS RANGES	DATE: April 1979
DRN: A.F. CKD:	WARNERTOWN AND CRYSTAL BROOK AGGREGATE DEPOSITS LOCALITY MAP	PLAN NUMBER S 14079

1336

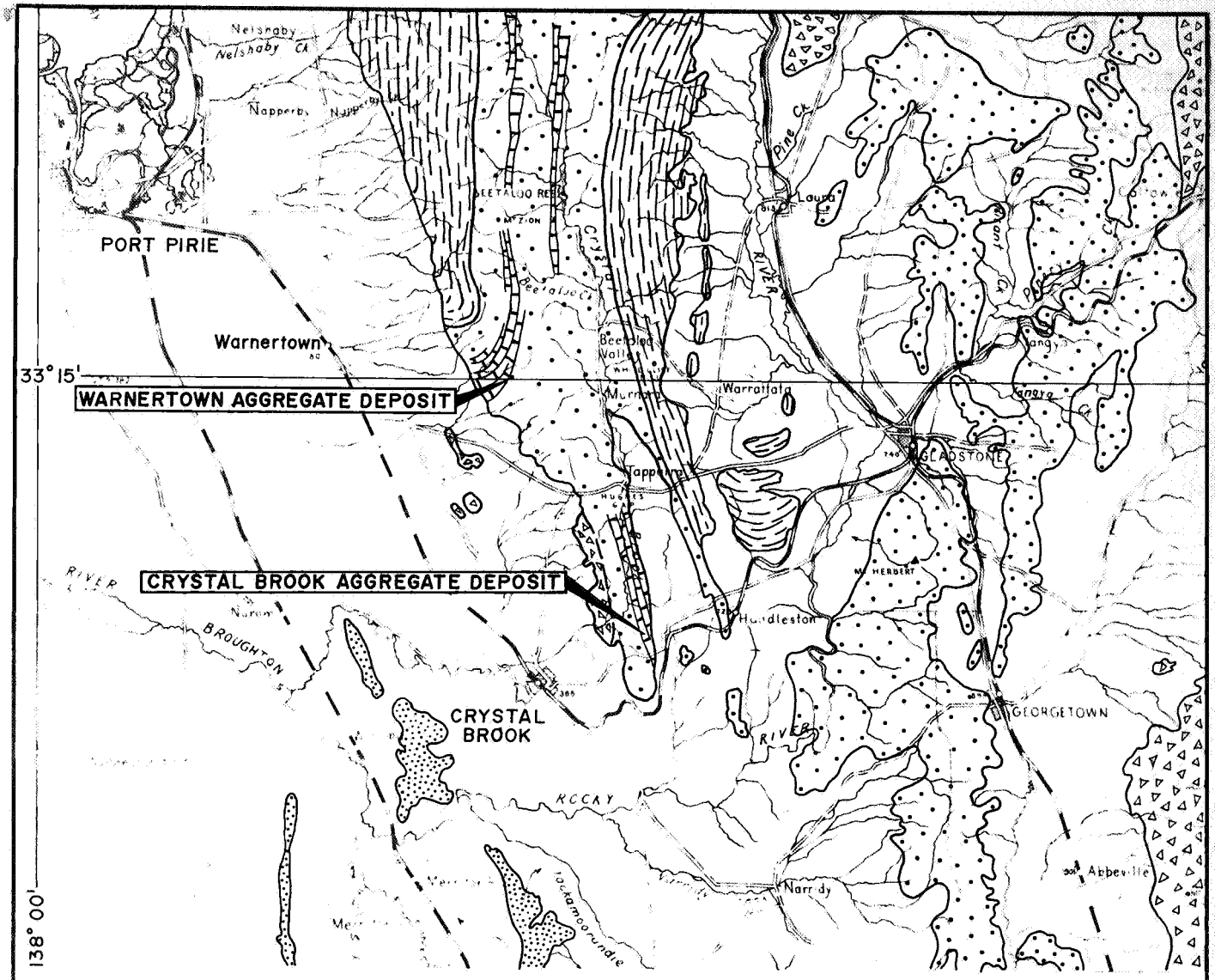
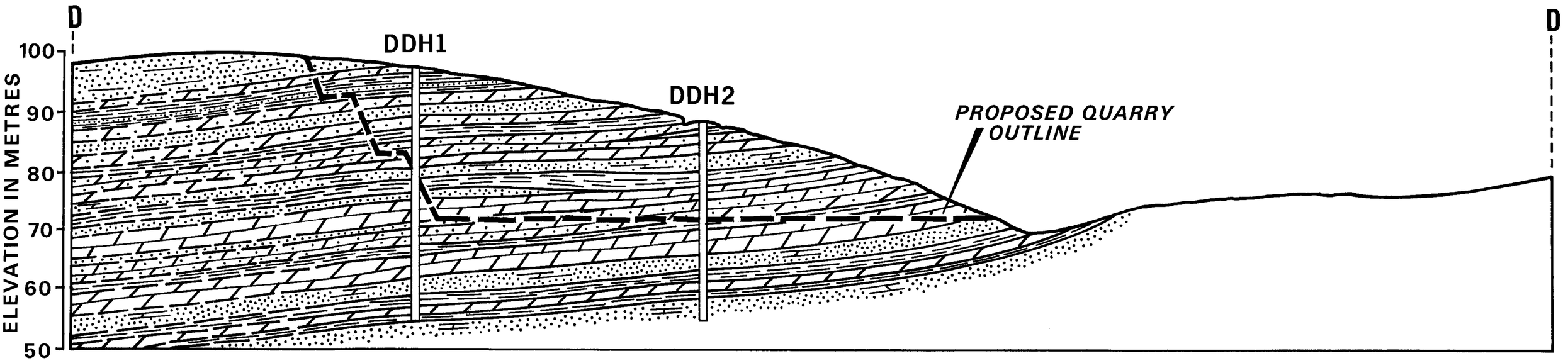
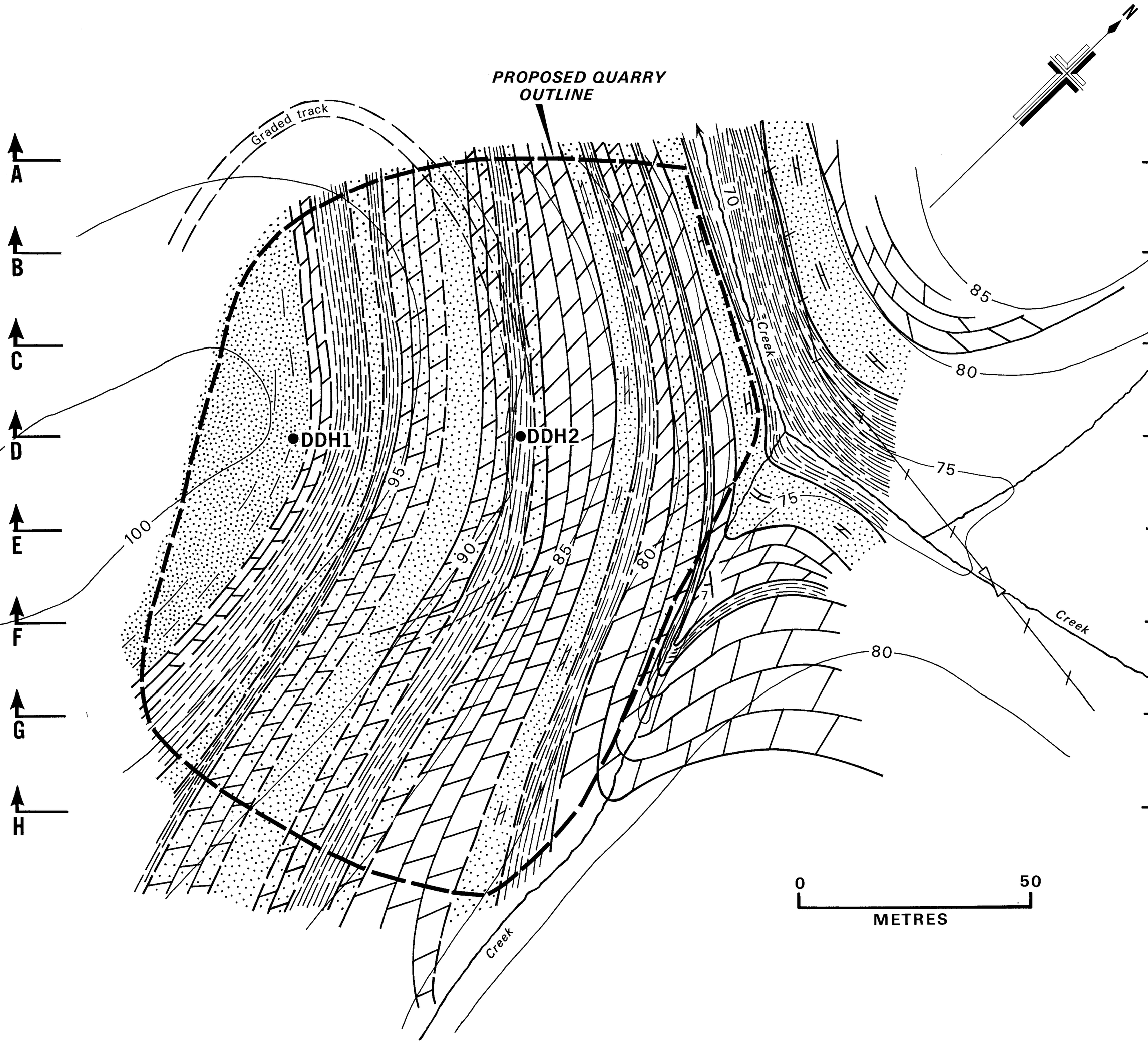


FIG. 3

	DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA	SCALE: 1 : 250000
COMPILED: A. M. P.	WARNERTOWN AND CRYSTAL BROOK AGGREGATE DEPOSITS	DATE: April 1979
DRN: A. F. / CKD:		PLAN NUMBER
	REGIONAL GEOLOGY	S 14080

1336





Interbedded QUARTZITES and SHALES

Laminated SHALES

QUARTZITES: Pale brown to grey medium-grained rock with minor dolomite

DOLOMITIC QUARTZITES: Grey medium-grained quartzites with interstitial dolomites and thin dolomite–rich laminations

QUARTZITIC DOLOMITES: Blue-grey dolomites with medium to coarse quartz grains and thin quartzite laminations

DOLOMITES and DOLOMITIC SILTSTONES: Dark blue-grey rock, laminated in parts. Some thin shaly laminations

Geological boundaries, observed, inferred

Strike and dip of bedding

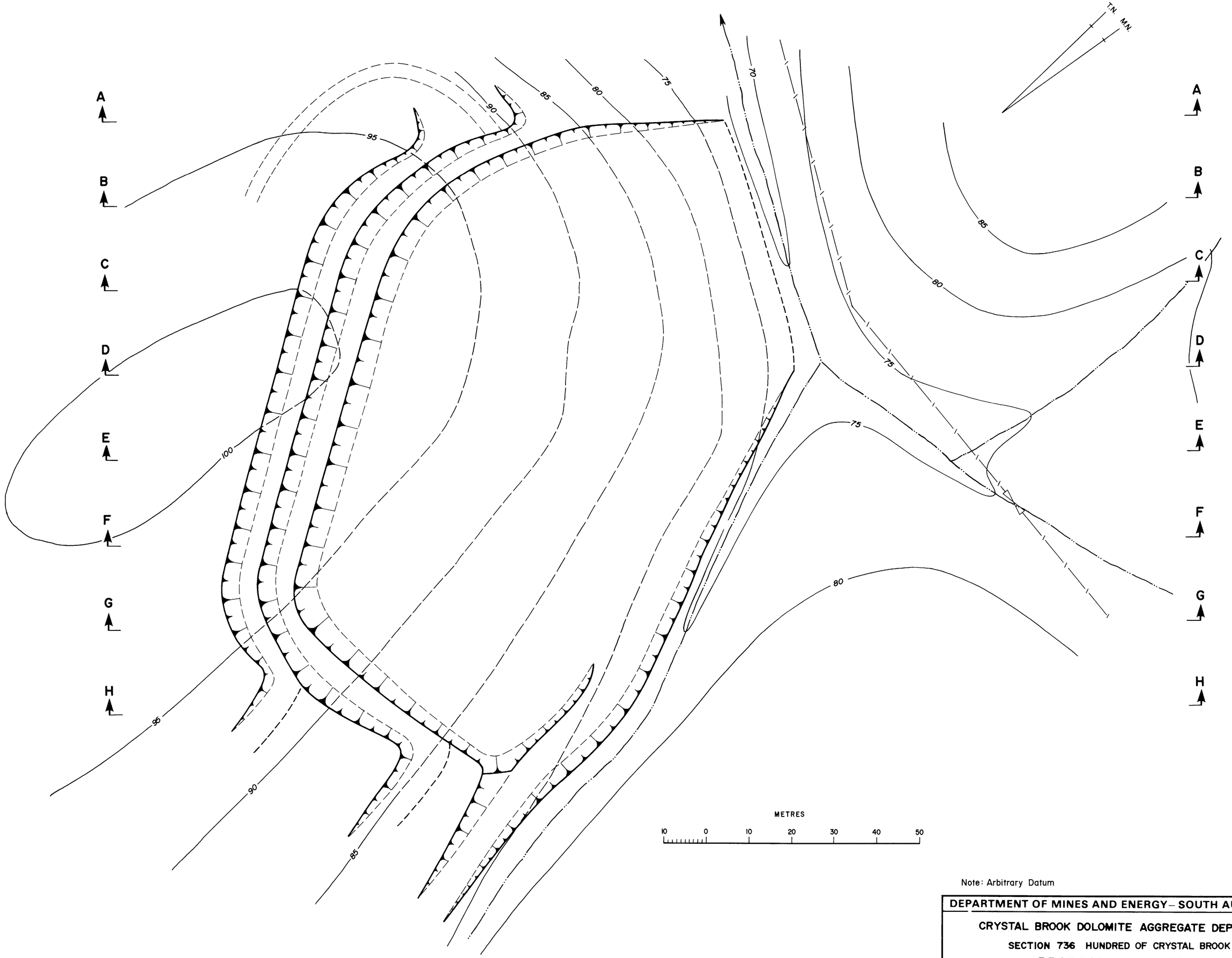
Topographic contour in metres (Arbitrary datum)

Fence

Drillhole location ● DDH1

Drn. E.A.M. MRR 151

79–388 S.A. Department of Mines and Energy



Note: Arbitrary Datum

Fig. 5

DEPARTMENT OF MINES AND ENERGY – SOUTH AUSTRALIA

CRYSTAL BROOK DOLOMITE AGGREGATE DEPOSIT

SECTION 736 HUNDRED OF CRYSTAL BROOK

PROPOSED QUARRY

	COMPILED A. Pain	DRN K.W.	SCALE 1:500	PLAN NUMBER
DIRECTOR GENERAL		CKD	DATE May 1979	79-387

1536

DEPARTMENT OF MINES AND ENERGY — SOUTH AUSTRALIA

LOG OF DIAMOND DRILL HOLE

MINERAL RESOURCES DIVISION

HOLE No. DDH 1

PROJECT CRYSTAL BROOK
ELEVATION 99·2 m DATUM Arbitrary
DRILLER HIGHWAYS DEPT
UNIT/STATE NO.

INCLINATION 90°
COMMENCED 6-2-79
DOCKET NUMBER D.M.E. 211/79

LOCATION 4 km ENE of Crystal Brook
AZIMUTH —
COMPLETED 26-2-79
PLAN REFERENCE 79-388

HUNDRED CRYSTAL BROOK SECTION 736
DEPTH 43·79 m
LOGGED D.C.S. & A.M.P.
DRAWING NO. 79-389

CORE LOSS (%) 0 50 100

DEPTH (m.)	GRAPHIC LOG.	LITHOLOGICAL DESCRIPTION	TEST INT.	TEST RESULTS L.A.	S.S.	Liq. Limit (1)	P.I. (1)	Lin. Shr. (1)	Liq. Lim. (2)	P.I. (2)	Lin. Shr. (2)
		0·0 – 1·12 No recovery.									
		1·12 – 1·78 QUARTZITIC DOLOMITE – Blue-grey. Weathered, porous, moderately hard, weakly banded at 75-85° to core axis.									
		1·78 – 3·56 SHALE – Brown with few dolomitic zones up to 10 cm. soft, weathered. Bedding 80° to core axis.									
		3·56 – 4·04 QUARTZITE – Pale grey to yellow brown. Soft, friable in part.									
		4·04 – 4·78 SHALE – As at 1·78 to 3·56. Bedding at 80° to core axis.									
5		4·78 – 7·52 QUARTZITIC DOLOMITE – Blue grey. Vughy, hard with soft, weathered shale bands up to 10 cm.	4·78	ND	ND	29	11	4·0	N.D.	N.D.	N.D.
		7·52 – 9·25 QUARTZITE – Fine to coarse grained. Pale grey to brown. Moderately hard with a few softer friable zones.	8·74								
10		9·25 – 11·56 QUARTZITIC DOLOMITE – Blue-grey, some vughy, porous bands and mottled zones with intraformational brecciation, weak, wavy banding, some iron-stained joints at 10-20° to core axis.									
		11·56 – 13·31 SHALE – Brown, laminated. Highly weathered, clayey in part. Bedding at 75-80° to core axis.									
15		13·31 – 16·21 QUARTZITIC DOLOMITE – Blue-grey with lighter quartz, rich patches. Vughy in part with intraformational brecciation. SHALE band 14·9 to 15·0. Moderately hard to hard. Jointed at 5-20°.	14·84								
		16·21 – 17·89 DOLOMITIC SILTSTONE – Blue-grey, laminated. Few shaley bands up to 30 cm. Variable banding at 65 to 75°.		21	2	24	9	3·6	18	4	1·4
		17·89 – 19·71 DOLOMITIC QUARTZITE – Fine to coarse grained. Grey with darker blue-grey dolomite rich bands.	18·80								
20		19·71 – 21·90 SHALE – Yellow-brown. Highly weathered in part, clayey, soft. Laminated at 75 to 80° to core axis.									
		21·90 – 23·10 QUARTZITE – Fine to medium grained. Slightly dolomitic. Brown with grey dolomite rich bands. Bedding at 80° to core axis.									
		23·10 – 24·74 DOLOMITE and DOLOMITIC SILTSTONE – Dark blue-grey with lighter silty bands. Few, short, soft, shaley bands at 80° to core axis.									
25		24·74 – 26·11 QUARTZITE – As at 21·90 – 23·10.									
		26·11 – 27·33 SHALE – Yellow-brown. Weathered, soft, clayey.									
		27·33 – 28·45 DOLOMITIC QUARTZITE – Fine to coarse grained. Grey, hard.									
30		28·45 – 31·55 QUARTZITIC DOLOMITE – Blue-grey with lighter quartz-rich bands at 65-75° to core axis. Hard, with carbonate filled joints. Intraformational brecciation to 29·5. Jointed at 30° and 50° to core axis.									
		31·55 – 32·88 SHALE – Dark grey, dolomitic. Some quartz-rich bands up to 5 cm. Laminations at 75° to core axis.									
		32·88 – 33·79 Core loss.									
35		33·79 – 35·61 DOLOMITIC SILTSTONE – Dark grey with paler inter-bands up to 5mm. Hard, fresh. Silicious in part, strongly laminated at 70-75° to core axis.									
		35·61 – 37·44 Core loss.									
		37·44 – 39·83 DOLOMITIC QUARTZITE – Dark grey with paler bands; weak, wavy, banding at 65-80° to core axis. Hard, fresh.									
40		39·83 – 41·35 SHALE – Dark grey with paler, partly weathered zones. Dolomitic, few black carbonaceous bands. Strongly laminated at 70-75° to core axis.									
		41·35 – 43·49 DOLOMITE and DOLOMITIC SILTSTONE – Blue-grey with white carbonate filled fractures. Few, short, paler shale bands up to 10 cm. at 75° to core axis.									
		43·49 – 43·79 SHALE – Dark grey to black. Carbonaceous.									
		43·79 m End of hole.									

Note: (1) Soil constants on crusher fines.
(2) Soil constants on L.A. fines.

Fig. 7

1336

DEPARTMENT OF MINES AND ENERGY — SOUTH AUSTRALIA

LOG OF DIAMOND DRILL HOLE

MINERAL RESOURCES DIVISION

HOLE No. DDH 2

PROJECT CRYSTAL BROOK | ELEVATION 89·6 m | DATUM Arbitrary | DRILLER HIGHWAYS DEPT | UNIT/STATE NO.

INCLINATION 90° | COMMENCED 27-2-79 | DOCKET NUMBER DME 211/79

LOCATION 4 km ENE of Crystal Brook | AZIMUTH — | COMPLETED 9-3-79 | PLAN REFERENCE 79-388

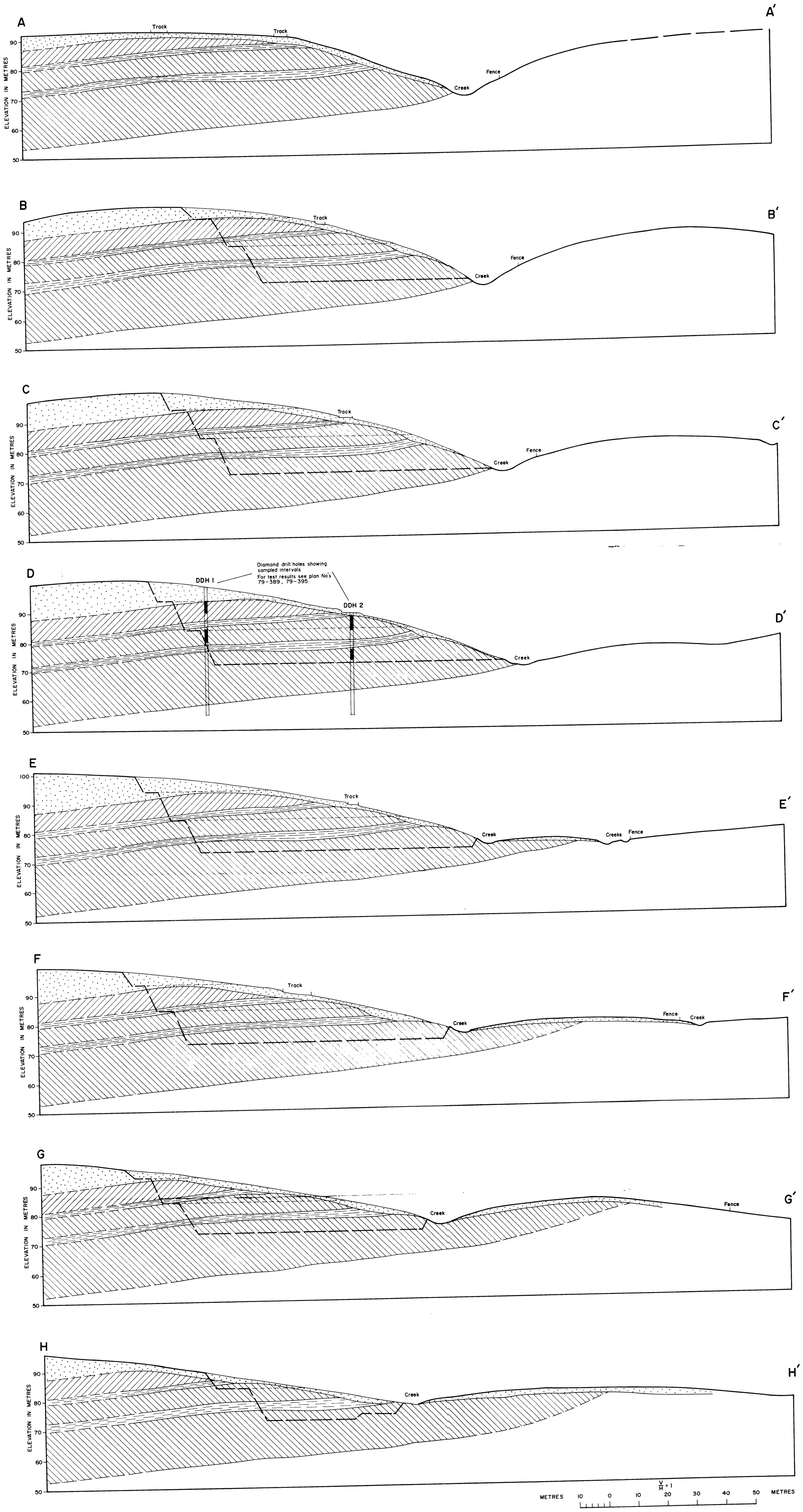
HUNDRED CRYSTAL BROOK | SECTION 736 | DEPTH 34·56 m | LOGGED D.C.S. & A.M.P. | DRAWING NO. 79-395

CORE LOSS (%) 0 50 100	DEPTH (m.)	GRAPHIC LOG	LITHOLOGICAL DESCRIPTION	TEST INT.	TEST RESULTS L.A.	S.S.	Liq. Lim. (1)	P.I. (1)	Lin. Shr. (1)	Liq. Lim. (2)	P.I. (2)	Lin. Shr. (2)
			0·0 – 0·61 No recovery.	0·61								
			0·61 – 1·47 QUARTZITIC DOLOMITE – Grey with yellow-brown, quartz-rich bands. Weathered, moderately hard. Some narrow gritty bands at 75° to core axis.									
			1·47 – 2·03 SHALE – Brown, weathered, clayey soft. Laminated at 80° to core axis.									
			2·03 – 2·44 QUARTZITIC DOLOMITE – Blue-grey. Vughy bands. Hard.									
			2·44 – 2·74 Core loss.									
			2·74 – 4·42 QUARTZITIC DOLOMITE – Blue-grey. Few narrow shale bands up to 5 cm. Some vughs Strongly jointed.		21	2	25	8	4	17	3	1·4
			4·42 – 4·57 Core loss.									
	5		4·57 – 5·28 DOLOMITIC SILTSTONE – Dark blue grey with intraformational brecciation. Laminated at 80° to core axis.									
			5·28 – 5·79 Core loss.	5·79								
			5·79 – 7·98 DOLOMITIC QUARTZITE – Grey to pale grey. Paler quartz, rich bands. Hard, with some intraformational brecciation. Bedding at 75–85°. Hard.									
			7·98 – 9·14 Core loss.									
			9·14 – 9·91 QUARTZITE – Fine to coarse grained. Pale grey with darker bands, slightly dolomitic. Few narrow shaley bands at 75° to core axis.									
	10		9·91 – 11·58 SHALE – Brown. Highly weathered, soft, clayey. Laminated at 70–80° to core axis.									
			11·58 – 14·07 DOLOMITIC SILTSTONE – Dark blue-grey with occasional paler quartzitic zones. Few short shale bands up to 10 cm. Few carbonate filled fractures, minor intraformational brecciation. Hard, fresh. Bedding at 80° to core axis.	12·19								
			14·07 – 17·37 QUARTZITIC DOLOMITE – Blue-grey. Becoming slightly paler, more quartzitic with depth. Occasional narrow, soft shale band up to 10 cm.		20	0·8	18	2	1	18	2	0·8
	15		17·37 – 18·75 SHALE – Grey, with highly weathered brown, clayey zones. Soft, broken in part.	15·85								
			18·75 – 20·47 DOLOMITIC SILTSTONE – Blue-grey with white carbonate filled joints. Mainly hard, fresh. Laminated at 80–85° to core axis.									
	20		20·47 – 21·49 Core loss.									
			21·49 – 22·71 DOLOMITIC SILTSTONE – As above. Brecciated, core broken. Moderately hard, partly weathered.									
			22·71 – 25·91 DOLOMITIC QUARTZITE – Pale grey with dark grey dolomite richer bands up to 5 cm. Some intraformational brecciation. Jointed at 20° and 45°, with bedding, at 70–80° to core axis.									
	25		25·91 – 27·95 SHALE – Grey, with some brown weathering. Moderately hard with softer bands. Laminated at 80° to core axis.									
			27·95 – 29·46 DOLOMITE and DOLOMITIC SILTSTONE – Dark blue-grey with white carbonate-filled fractures. Few softer, shaley bands up to 10 cm. down to 28 m. some intraformational brecciation. Hard.									
	30		29·46 – 30·18 SHALE – Grey with brown weathering. Moderately hard. Few black carbonaceous and/or pyritic bands at 75° to core axis.									
			30·18 – 34·56 DOLOMITIC QUARTZITE – Grey to pale grey with darker dolomite-rich bands up to 15 cm. Some intraformational brecciation, hard, fresh. Jointed at 35° to core axis.									
			34·56 m End of hole									

Note: (1) Soil constants on crusher fines.
(2) Soil constants on L.A. fines.

Fig. 8

1336



OVERBURDEN: Weathered sandstone, siltstone and dolomitic sediments.

CRUSHED ROCK: Quartzitic dolomite, dolomitic quartzite, quartzite and shale. Generally suitable for crushed rock with concurrent production of small quantities of chippings.

CHIPPINGS and CRUSHED ROCK: Quartzitic dolomite dolomitic siltstone and dolomitic quartzite. Some shale. Generally suitable for chippings or concurrent production of chippings and crushed rock

WASTE: Soft, weathered shale. Much of this material should scalp out during crushing and screening.

—— —— Outline of proposed quarry.

Note Arbitrary Datum

Fig. 6

DEPARTMENT OF MINES AND ENERGY – SOUTH AUSTRALIA

CRYSTAL BROOK DOLOMITE AGGREGATE DEPOSIT
SECTION 736 HUNDRED OF CRYSTAL BROOK

ROCK UTILISATION AND CROSS SECTIONS OF PROPOSED QUARRY

DIRECTOR GENERAL	COMPILED: A.M. Pain	DRN: K.W.	SCALE: 1:500	PLAN NUMBER 79-386
		CKD	DATE: May 1979	