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EVA VALLEY BHP JV

EXPLORATION LICENCES 4713

COMBINED PARTIAL RELINQUISHMENT REPORT

TO 15TH JANUARY, 1987 AND 1988

NORTHERN TERRITORY
GEOLOGICAL SURVEY

CR 87 / 298



STOCKDALE
PROSPECTING
LIMITED

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Title: STOCKDALE PROSPECTING LIMITED
EXPLORATION LICENCE 4713

COMBINED PARTIAL RELINQUISHMENT
REPORT TO 15TH JANUARY 1987 AND
1988

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SUMMARY

EXPLORATION LICENCE: No 4713

DATE GRANTED: 16th January, 1985
JV with BHP approved 2nd October, 1986

INITIAL AREA: EL 4713 927 km² (296 blocks)

CURRENT AREA: EL 4713 564 km² (176 blocks)

OCCUPANT: BHP

OPERATOR: Stockdale Prospecting Limited

COMMODITIES SOUGHT: Diamonds

EXPLORATION: After initial encouraging results with the recovery of possible kimberlitic spinel in reconnaissance sampling, follow-up sampling has been disappointing. Spinel recovered have been of low interest and examination of their suite indicates a primary diamond bearing source being most unlikely.

STOCKDALE PROSPECTING LIMITED

EXPLORATION LICENCES 4713

PARTIAL RELINQUISHMENT REPORT

TO 15TH JANUARY 1988

1. INTRODUCTION

On 2nd October, 1986, a joint venture agreement was entered into between BHP and Stockdale Prospecting Limited on Exploration Licences 4713 located north-east of Kathine (on the Katherine 1:250,000 mapsheet) in the north of the Northern Territory. The licence covers a total area of 927km², (294 blocks), in a region considered by Stockdale to be geologically attractive to kimberlite emplacement. The first reduction reduced tenement coverage to 564 sq km (176 blocks) on 16th of January 1987.

This report comments on the fieldwork carried out by BHP and Stockdale in the area relinquished (in 1987) and in the area to be relinquished on the 16th of January 1988.

2. ACCESS

Access is reasonable in the west. The more important of the access tracks had been totally destroyed by heavy rains in February 1987. A combination of helicopter and vehicle transport was used in this work. Road access to the east was very poor. All fieldwork was carried out by helicopter.

3. PHYSIOGRAPHY, CLIMATE AND VEGETATION

The area covered by the exploration licences includes the physiographic divisions of the Granite Areas and Uplands in the west and the Arnhem Land Plateau in the east.

The Granite Areas consist of rocky, rounded hills with expanses of bare rock and a typical drainage pattern of converging alluvial and eluvial flats. The Uplands are characterised by steep-sided hills and narrow valleys. The Arnhem Land Plateau is cut by deep gorges eroded along joint and fault planes.

The vegetation is moderately densely wooded in the lower areas, becoming sparse with elevation.

The climate is monsoonal with a short, wet season from late November to late March, and a long dry season for the remainder of the year (adapted from Randal, 1963).

4. GEOLOGY

4.1 General

Descriptions of the rock units in the Katherine area are detailed in the Katherine 1:250,000 Geological Series Explanatory Notes (Bureau of Mineral Resources, 1963). A compilation of fieldwork carried out in 1982-1983 by the Pine Creek Geological Party (BMR and NTGS) in the Eva Valley and Waterhouse 1:100,000 sheet areas has been prepared (Needham, et al, 1986). The geology of the area is summarised in the abstract of the publication.

"The area contains mostly Early Proterozoic rocks. Moderately folded Tollis Formation (El Sherana Group) is intruded by Maud Dolerite and Maranboy Porphyry. These units are unconformably overlain by Hindrance Creek Sandstone and Plumb Tree Creek Volcanics of the Edith River Group in which a large subvolcanic intrusion, the Grace Creek Granite, is developed. The El Sherana Group is intruded by the Eva Valley and Yeralba Granites, and these granites may also post-date the Edith River Group. Middle Proterozoic rocks of the Kombolgie Formation rest unconformably on older rocks and form dissected sandstone plateaux in the west and east. Gently dipping sandstone and basalt in the south mark the edge of the Paleozoic Daly River Basin. Thin horizontal Mesozoic sediments form tablelands over much of the south and southeast."

A detailed account of the geology of the area mapped is in preparation and will be published in the BMR Map Commentary Series.

4.2 Stratigraphy

The stratigraphy is summarised in Table 1.

5. ABORIGINAL LAND CLAIM

The Exploration Licences fall within the Eva Valley and Waterhouse leaseholds. A land claim over this area was submitted by the members of the Jawoyn Aboriginal Tribe on 31/3/78. Due to the land claim status Stockdale obtained permission from the Traditional Owners, at a meeting held in conjunction with the NLC at the Rock Hole on the 24th March 1987 for agreement to sample and camp within the area (Appendix 2). All sample sites were cleared by consultation and site inspection.

The Traditional Owners are resident at the Eva Valley Station and have commenced rehabilitation of the station which had been neglected for a period of time. Sacred site information on the area was obtained from BHP and the Sacred Sites Authority.

Table 1: Summary of Stratigraphy of the Edith River Region, N.T.

	Unit	Description	Field Relationships
MESOZOIC	CRETACEOUS K	Fine to coarse commonly ill-sorted and friable ferruginous sandstone, pebbly in places; conglomerate, porcellanite kaolinite; rare fossils.	Unconformable on older units; forms low areas commonly with wide sandy aprons.
	UNCONFORMITY		
PHANEROZOIC (CAMBRIAN)	DALY RIVER GROUP TINDAL LIMESTONE €mt	Grey crystalline limestone with chert nodules, flaggy limonitic silty limestone, buff-orange well-sorted sandstone.	Overlaps Jindare Sandstone in places.
	JINDARE SANDSTONE €lw	Massive, laminated and brecciated chert, sandstone, arkose, siltstone, conglomerate; rare calcite crystals <3 cm.	Upper part conformable on Antrim Plateau Volcanics, lower part interfingers with it.
	ANTRIM PLATEAU VOLCANICS €la	Massive dark grey basalt, vesicular in places, minor jasper and chert; interbedded medium-grained equigranular to conglomeratic sandstone near base.	Unconformable on older units.
	UNCONFORMITY		
PROTEROZOIC	TOLMER GROUP DEPOT CREEK SANDSTONE Ptd	Mainly medium-grained equigranular pink quartzite, in places, minor jasper and chert; interbedded medium-grained equigranular to conglomeratic sandstone near base.	Unconformable on older units
	UNCONFORMITY		
MIDDLE		Fine dolerite dykes	Cut Kombolgie Formation and older units as an ENE-trending swarm.

PROTEROZOIC

GROUP RIVER EDITH	MOUNT SHEPHERD RHYOLITE MEMBER	sediments and massive to laminated tuff; porphyritic andesite in Edith Falls area Purple-cream banded rhyolite	Sandstone. Elsewhere highly angular unconformity on older units. Forms possible rhyolite dome in southeast of region.
	'FERGUSON RIVER TOSCANITE' Bef	Red-brown glassy to fine ignimbrite	Correlative of similar ignimbrite within Plum Tree Creek Volcanics. Highly angular unconformity on older units, except for conformity with Phillips Creek Sandstone. Intruded by Tennysons Leucogranite.
	PHILLIPS CREEK SANDSTONE Bel	Fine to coarse, partly tuffaceous, and in places pebbly, sand- stone, arkose, conglomerate	Highly angular uncon- formity on older units, conformable beneath other units of the group.

U N C O N F O R M I T Y

EARLY

EL SHERANA GROUP	MAUD DOLERITE Bdm	Fine pink-grey to coarse grey-green ophitic dolerite	Hornfelses Tollis Formation, unconformable under Kombolgie Formation.
	TOLLIS FORMATION Bbt ₁ , Bbt ₂ , Bbt ₃	Interbedded greywacke, siltstone, argillite, tuff and minor phyllite, feldspar porphyry flow rock	Unconformable relationship with Burrell Creek Forma- tion interpreted from differing fold styles. Cut by dolerite, porphyry and felsite dykes.
	DOROTHY CREEK BASALT MEMBER Bbt _d	Basalt, minor banded chert and tuff	Conformable within Tollis Formation.

U N C O N F O R M I T Y

FINNISS

RIVER GROUP	BURRELL CREEK FORMATION Bfb	Interbedded greywacke, phyllite, slate, meta- siltstone, rare siliceous argillite.	Oldest unit in the Edith River Region.
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MIDDLE PROTEROZOIC

KATHERINE RIVER GROUP

KOMBOLGIE
FORMATION
k₁, Bhk₂

Massive or cross-bedded medium-coarse buff-grey sandstone, pebbly in places, conglomerate beds mainly near base, rare siltstone beds.

Comprise a conformable sequence, itself unconformable on older units. Slight angular unconformity on Plum Tree Creek Volcanics, major angular unconformity elsewhere.

HENWOOD CREEK
VOLCANIC MEMBER
Bhh

Partly amygdaloidal andesite and basalt, tuff

McADDENS CREEK
VOLCANIC MEMBER
Bhm

Fine grey-green basalt - andesite, vesicular in places, banded purple - cream tuff.

UNCONFORMITY

YENBERRIE
GRANITE
Bgl_c, Bgl_d

Coarse pink and fine white and pink leucogranite, commonly altered and greisenised

Intrudes and hornfelses Burrell Creek Formation; probably continuous at depth with Cullen Batholith.

LEWIN SPRINGS
SYENITE
Bew

Grey-pink glassy to very fine equigranular or porphyritic syenite, rhyolite and microgranite dykes, rarely flow-banded.

Intrudes Cullen Batholith and Fergusson River Toscanite.

CULLEN BATHOLITH
Bgc_{a,c,d,e,h,i,k}
l,m,o,z

Fine to coarse equigranular to porphyritic leucogranite, granite and granodiorite with rafts and screens of cordierite hornfels

Four plutons, two of leucogranite, one of mainly granodiorite, and one of granite and leucogranite. Intrude and hornfels Burrell Creek Formation, Tollis Formation, and Fergusson River Toscanite; cut by Lewin Springs Syenite.

EARLY PROTEROZOIC

EDITH RIVER

GROUP

PLUM TREE
CREEK VOLCANICS
Bep

Red-brown glassy to fine ignimbrite, red and mauve banded agglomeratic rhyolite, massive and amygdaloidal basalt, minor cherty and sandy

Conformable sequence of mainly felsic volcanics with intermediate to mafic flows in lower part of sequence. Conformable on Phillips Creek

6. FIELDWORK

6.1 1985 Field Season

6.1.1 Reconnaissance

BHP took 26 stream samples in the first and second tenement reduction areas as part of an extension to their regional reconnaissance programme. The 40kg stream sediment samples were screened in the field to -2.0mm

6.1.2 Results

One encouraging sample on Eva Creek (southern branch) produced three non-kimberlitic and one possible kimberlitic spinel. All other samples failed to produce any diamonds or kimberlitic indicators.

6.2 1986 Field Season

6.2.1 Barrage Sampling

Stockdale Prospecting found BHP's results to be encouraging. It was considered that larger samples would give more confidence in obtaining reflective results in the tenements predominantly granitic landscape.

A total of nineteen barrage samples were taken ranging from 400 to 800kg of -4.75mm stream sediment.

6.2.2 Results

One sample in the adjacent tributary to BHP's positive site produced abundant low to moderate interest spinels, but the sample at BHP's positive site could not be repeated. A sample in Yueralba Creek produced one non-kimberlitic spinel. All other samples failed to produce any diamonds or kimberlitic indicators.

6.3 1987 Field Season

6.3.1 Follow-up Sampling

One stream sample was taken (40kg of -2.0 + 0.3mm stream sediment) as part of the follow-up to SPL's previous positive site.

6.3.2 Results

A total of 36 spinels were recovered for this follow-up sample but even though the chemistries of these spinels range from low to moderate interest, the spinels considered as a suite do not appear to have kimberlitic affinities.

7. CONCLUSION

The failure to find diamonds or any high interest indicator minerals within the eastern portion of the tenement has downgraded the area. The area to be relinquished is considered to have a low diamond potential, however, the remaining portion should be retained for further investigation.

8. PERSONNEL

1986

<u>DESIGNATION</u>	<u>NUMBER</u>	<u>MAN DAYS</u>
Geologist	1	4
Field Hands	3	12
Cook	1	4
Helicopter crew	1	4

(Tillair Helicopters, Katherine)

1987

<u>DESIGNATION</u>	<u>NUMBER</u>	<u>MAN DAYS</u>
Geologist	1	8
Field Hands	3	24
Cook	1	8
Helicopter crew	2	16

(Jayrow Helicopters, Melbourne)

9. EXPENDITURE

Expenditure of \$23508 has been allocated as indicated in Table 2.

M.S. MITCHELL
DARWIN, N.T.

16TH JANUARY, 1988

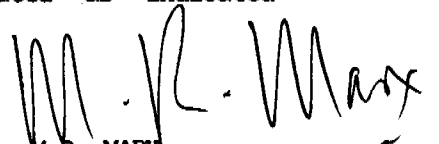

M.R. MARX
CHIEF GEOLOGIST, NORTH

TABLE 2

EXPENDITURE SUMMARY

EL		4713
OPERATIONAL STAFF COSTS	\$	3862
GENERAL OPERATIONAL EXPENSES		465
TRANSPORT AND TRAVEL		100
AIR CHARTER		5426
TENEMENT COSTS		2692
CARNARVON TREATMENT PLANT		1817
LABORATORY : TREATMENT		286
: EXAMINATION		624
CONTRACTORS		410
DRAFTING		375
SAMPLE ANALYSIS		129
ADMINISTRATION : REGIONAL		2266
: HEAD OFFICE		3196
CAPITAL UTILIZATION		1860
TOTAL	\$	23508

OFG:expend.ks

BIBLIOGRAPHY

Randal, M.A. 1963

Katherine - 1:250,000 series Geological Explanatory Notes
BMR Publication.

Needham, R.S., Stuart - Smith, P.G., Bagas, L. 1987

Record 1986/87, Edith River Region, Northern Territory;
data record of 1:100,000 mapping
BMR Publication.

APPENDIX 1

BHP MINERALS LTD/STOCKDALE PROSPECTING LTD

JOINT VENTURE AGREEMENT

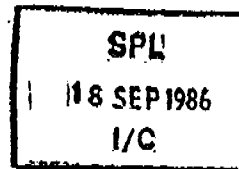
BHP Minerals Limited
695 Burke Road
Camberwell, Victoria 3124
PO Box 559, Camberwell
Victoria, Australia 3124
Telephone 03 8133666
Telegrams 'Hematite' Melbourne
Telex AA30408
Facsimile 03 813 3696

With Compliments



BHP
Minerals

Exploration



BHP MINERALS LTD/STOCKDALE PROSPECTING LTD.
LETTER OF AGREEMENT - ELS 4713 AND 4714, EVA VALLEY

BHP Minerals Ltd. and Stockdale Prospecting Ltd. have successfully negotiated an agreement covering future exploration on ELS 4713 and 4714, Eva Valley. The Agreement also provides Stockdale with an option to explore ELAs 4794 to 4797 in Arnhem Land, should they be granted.

On behalf of the two parties to the Agreement, BHP Minerals Ltd. hereby applies for the approval of the Minister for Mines and Energy and for registration of the documents pursuant to Section 173(2) of the Mining Act 1980 as amended.

The enclosed copies of the Letter of Agreement have been stamped at the Stamp Duties Office. Following processing, please return two fully executed copies to this office and retain one for DME records.

A cheque for \$30.00 is enclosed, being \$5.00 each for both the ELS and the four ELAs (Clause 7) mentioned in the Agreement.

Yours faithfully,

S.A. JOHNSON,
Mineral Properties Officer.

Encl.
SAJ:CH
1000m
E8/15/1-M

APPENDIX 2
ABORIGINAL LIAISON

Bureau of the Northern Land Council

HIGHWAY ARCADE, 47 Stuart Highway, Darwin, N.T. 5790.
Telephone Enquiries: (089) 81 7011
Telex: AA85042
Facsimile Phone: 81 6899

P.O. Box 39843
WINNELLIE . NT 5789

Address all Correspondence to:
THE DIRECTOR



IN REPLY PLEASE QUOTE:

86/230 (L3)

22 April 1987

Mr S. Vercoe
Stockdale Prospecting Ltd
5 Searcy Street
DARWIN NT 5790

Dear Stuart,

EVA VALLEY AND BESWICK

We refer to the meeting held at Rockhole near Katherine on 13 April 1987. Thank you for the provision of lunch for all attending.

The following resolution arising from the meeting (and following presentation and discussion of your proposed work programme) is provided for your information:

"Any sampling within 1/2 kilometre of a sacred site area including but not limited to Keckwick Spring must be done in the presence of one dua and one yirritja person.

For all other areas, approval has been given for Dooley Nungalowi and Sandy Barrawei to clear sites before exploration proceeds for the 1987 season.

Either Willy Martin or Reggie Miller may represent the dua group."

It was further resolved to request rental of \$100.00 per week for camping on Eva Valley during the 1987 exploration season.

Yours faithfully,

Michael Neal

Michael Neal
(for) Ian L. Gray
PRINCIPAL LEGAL ADVISOR

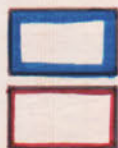
AE-5/MN:rl

133°00'

133°30'

E.L. 4713

LEGEND



TO BE RELINQUISHED

TO BE RETAINED

EVA VALLEY
1:100 000

WATERHOUSE
1:100 000

5 0 15Km

MAP 1

STOCKDALE PROSPECTING LIMITED

NORTHERN TERRITORY

E.L. 4713

EVA VALLEY J.V.- B.H.P.

AREA TO BE RELINQUISHED

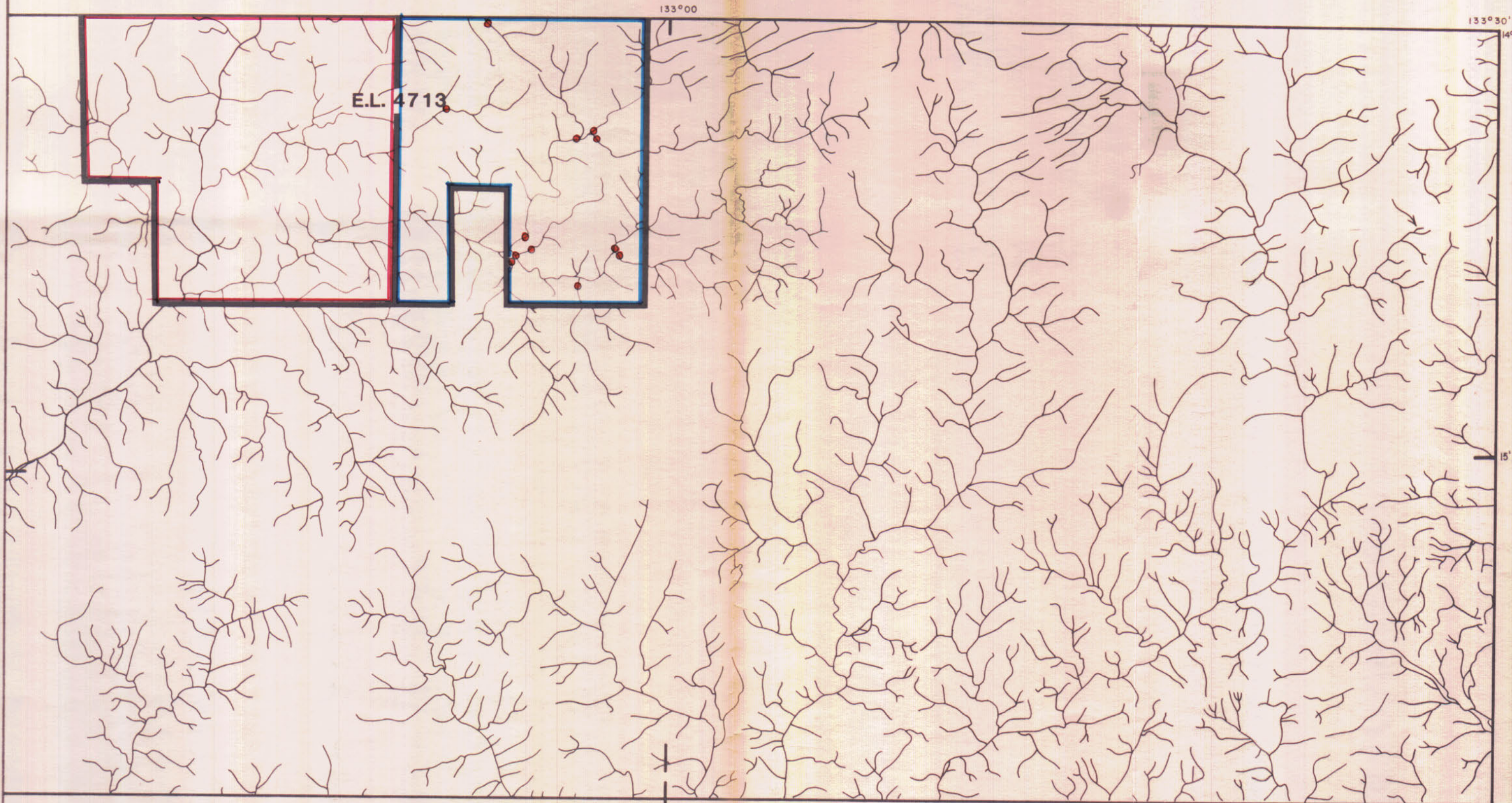
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Drawn	B.A.N.
Date	NOV, '87
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SEL	3144



LOCATION MAP





LEGEND



TO BE RELINQUISHED

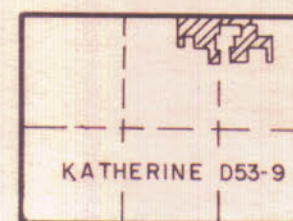
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SAMPLE LOCATONS

EVA VALLEY
1:100 000

WATERHOUSE
1:100 000



LOCATION MAP

5 0 15Km

MAP 2

STOCKDALE PROSPECTING LIMITED

NORTHERN TERRITORY

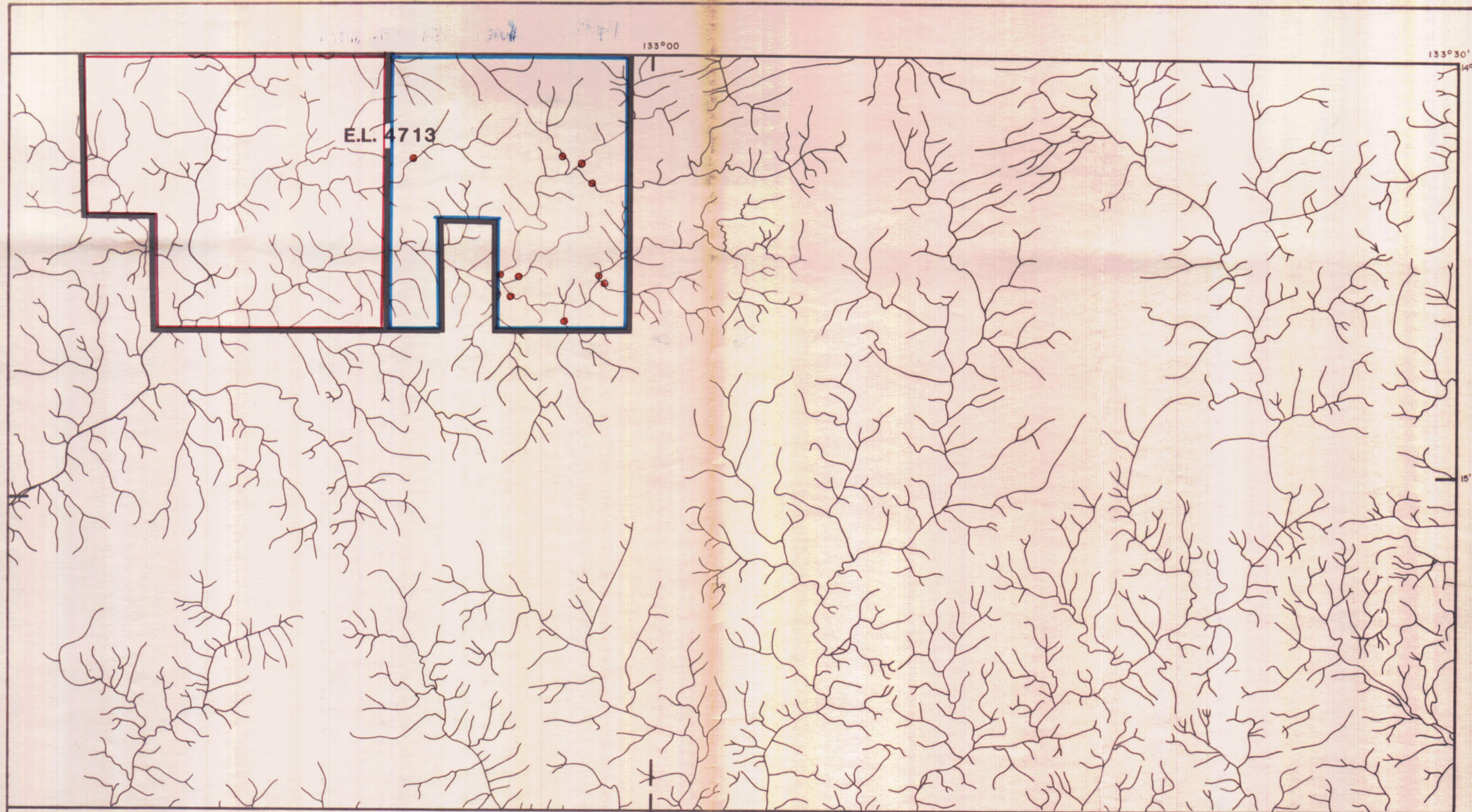
E.L. 4713

EVA VALLEY J.V.- B.H.P.

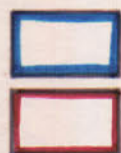
1985 (B.H.P.) SAMPLING

CR 87/298

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Drawn	B.A.N.
Date	NOV, '87
Scale	1:250 000
Revised	
SEL	3144



LEGEND



TO BE RELINQUISHED

TO BE RETAINED



SAMPLE LOCATONS

EVA VALLEY
1:100 000

WATERHOUSE
1:100 000



LOCATION MAP



MAP 3

STOCKDALE PROSPECTING LIMITED

NORTHERN TERRITORY
E.L. 4713
EVA VALLEY J.V.- B.H.P.

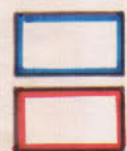
1986 (S.P.L.) SAMPLING

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Compiled	M.S.M.
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Date	NOV, '87
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Revised	
SEL	3144



LEGEND



TO BE RELINQUISHED

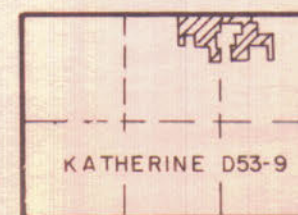
TO BE RETAINED



SAMPLE LOCATONS

EVA VALLEY
1:100 000

WATERHOUSE
1:100 000



KATHERINE D53-9

LOCATION MAP

5 0 15Km

MAP 4

STOCKDALE PROSPECTING LIMITED

NORTHERN TERRITORY
E.L. 4713
EVA VALLEY J.V.- B.H.P.

1987 (S.P.L.) SAMPLING

CR87/298

Compiled	M.S.M.
Drawn	B.A.N.
Date	NOV, '87
Scale	1:250 000
Revised	
SEL	3144