

ANNUAL REPORTS

FOR THE PERIOD ENDING 13 / 7 / 78

BURNSIDE EAST E.L. 1137

AND

BURNSIDE WEST E.L. 1149

PINE CREEK BASIN, N.T.

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Copy to	:	N.T. Department of Mines and Energy
Date	:	October, 1978
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**OPEN FILE**

9415

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## 1. SUMMARY AND CONCLUSIONS

Work during the second year of tenure on E.L.'s 1137 and 1149 consisted of regional 'A' horizon soil sampling. Samples were collected at 50m intervals on lines spaced one kilometer apart along strike. Interpretation of analytical and field data yielded seven anomalies in the Burnside East E.L. and eleven anomalies in the Burnside West E.L..

In the Burnside East E.L. 1137 we have identified 3 first, one second and 3 third order anomalies. Of the first order anomalies, one has been field checked and down graded; another is caused by the Mt Ellison Copper Mine and no further work is warranted. The third is caused by mineralisation at Olive Prospect and is being drill tested in October 1978.

In the Burnside West E.L. 1149, 4 second and 7 third order anomalies have been identified. One second order anomaly has been field checked and downgraded. Other anomalies will be field checked but at this stage none looks particularly promising.

## 2. INTRODUCTION

The Burnside East E.L. 1137 and Burnside West E.L. 1149 are situated in the Brocks Creek District of the Pine Creek Basin, N.T. Location is shown on Plan NTd 818. Work in the first year consisted of geological mapping and ironstone sampling during a regional appraisal of the Pine Creek Basin. This has been described in annual reports for the first year of tenure by Wills (1977a and 1977b). Exploration during the second year of tenure is described in this report. The area of each E.L. was reduced by 50% from 14th July 1978.

## 3. RECOMMENDATIONS.

### 3.1 E.L. 1137 Burnside East.

Future work should concentrate on Olive Prospect and the field checking of additional anomalies.

### 3.2 E.L. 1149 Burnside West.

Additional anomalies should be field checked. If this work does not significantly upgrade any of the anomalies the E.L. should be relinquished.

#### 4. REGIONAL SOIL SAMPLING

Areas considered prospective for base-metal mineralisation were outlined by geological mapping during the first year of tenure (Wills, 1977a & b). These areas were covered by Lines of 'A' horizon soil traverses. Lines were positioned at approximately 1 km intervals along strike and samples spaced every 50m along lines. Shallow pits were dug with a pick axe and soils sieved on site. The -80 mesh fraction was analysed by A.A.S for Pb, Zn, Cu and Mn at Tetchem Laboratories Cairns under D.P.O.'s 19864 and 19865. Line position and assay results are shown in relation to geology on Plans NTd 713A and 717A for E.L.'s 1137 and 1149 respectively.

In conjunction with assays from other Pine Creek Basin E.L.'s, all results were statistically analysed by the G.A.S. computer programme. Together with orientation geochemical studies, this led to the following table for background and threshold concentrations :-

	<u>Pb</u>	<u>Zn</u>	<u>Cu</u>
Background	20	18	22
Threshold	120	200	110

Plans NTd 713 and 717 were colour coded for each element and anomalies assessed. At this stage, additional rock chip and other geological information was included in the following subjective definition of anomalies.

First Order	-	Thought to be caused by mineralisation
Second Order	-	Possibly caused by mineralisation
Third Order	-	Statistical anomalies.

A few anomalies have been followed up in the field, but more anomaly checking remains for exploration in the 1978/79 year of tenure.

#### 5. ASSESSMENT OF RESULTS - BURNSIDE EAST

##### E.L. 1137

The main area of interest, including the best rocks in the E.L., lies in the southwest quadrant. This has been retained for the 3rd year's exploration (Plan Ntd 746). Within this area, 3 first order, one second order and 3 third order anomalies have been identified. These are shown on Plan NTd 713B and are listed below :-

Anomaly	Anomalous Elements	Maximum Pb Assay in PPM	Formation*	Order	Name
13.1	Pb(Zn, Cu)	395	Pldd	1	
13.2	Cu, Zn	10	Pldd	3	
13.3	Pb, Zn, Cu, Sn	1270	Pldd	1	Olive Prospect
13.4	Cu, Zn, Pb	155	Plmg	1	Mt Ellison
13.5	Cu, Zn	27	Plo	3	
13.6	Cu, Zn( Bi, Sn)	30	Pldk	2	Ban Ban Gossans
13.7	Cu	51	Plo	3	

\* Formation Symbols are explained on Plan NTd 713.

Of these anomalies, the third order have not yet been field checked. The second order anomaly at the Ban Ban Gossans (13.6) was drilled in 1958 by Enterprise Exploration (Patterson, 1959). No significant mineralization was encountered.

Of the first order anomalies, 13.1 has been field checked. A maximum soil content of 365 ppm Pb, 160 ppm Zn and 114 ppm Cu is associated with maximum rock chip assays of 1365 ppm Pb, 56ppm Zn and 297 ppm Cu. The rock chip assays are sufficient to explain the anomaly but are not high enough to suggest they were caused by economic mineralization. No further work is planned at this stage. first order

Anomaly 13.3, Olive Prospect, is covered by M.L's 974b and 979b which are the subject of a Joint Venture agreement between C.R.A. Exploration and Comalco Limited. Comalco's assessment of this prospect is described by Gove (1975). In C.R.A.E's assessment by Alexander and Wills (1975) two diamond drill holes were proposed. These will be drilled in October 1978.

Anomaly 13.4 is caused by the disused Mt Ellison Copper Mine. This deposit has been assessed by a diamond drill hole put down to 106 m by A.M. & S. in 1955 (Murray, 1955). The hole encountered only disseminated pyrite mineralization. No further work is planned on this anomaly.

#### 6. ASSESSMENT OF RESULTS - BURNSIDE WEST E.L. 1149

The main areas of interest in this E.L. are on the eastern and western margins of the Burnside Granite. These areas have been retained for the third year's exploration (Plan NTd 747).

Within these areas, four second order and seven third

....4/

order anomalies have been located. These are shown on Plan NTd 717B. All these anomalies are thought to be caused by either :

1. Lithological differences
2. Influence of intrusive dolerite
3. Remobilisation effects of Burnside Granite
4. Surface effects.

Anomalies identified are :-

Anomaly	Anomalous Elements	Maximum Pb Assays in PPM	Formation	Order
17.1	Cu, Pb	46	Pldd *	3
17.2	Pb, Cu	123	Pldk *	3
17.3	Cu, Pb, Zn	221	Pldk	2
17.4	Pb, Cu, Mn	37	Pldd	3
17.5	Pb	96	Plmg	3
17.6	Pb, Zn, Mn	218	Plmg *	3
17.7	Pb, Zn, Mn	150	Plo *	3
17.8	Pb	195	Pldk *	2
17.9	Pb	220	Plmg *	2
17.10	Cu, Mn	32	Plmg *	3
17.11	Pb	179	Plmg *	2

\* = dolerite influence

Orientation geochemistry in the Pine Creek Basin has shown that given suitable soil types a zone at least 50m wide over 500 ppm Pb is developed over base metal deposits. Since the maximum lead assay in the Burnside West E.L. is 221 ppm and soil types are residual, the chances of economic mineralization being present are low.

To date, one anomaly (17.9) has been field checked. A 25m sample spaced soil traverse returned peak soil assays of 401 ppm Pb, 28ppm Zn and 53 ppm Cu. Silver and tin were not anomalous. A rock chip sample collected over the peak soil anomaly returned an assay of 870 ppm Pb, 111 ppm Zn and 182 ppm Cu. This result is sufficient to explain the soil anomaly, but is unlikely to have been caused by mineralization.

A few more anomalies will be field checked late in 1978 before a final decision is made on retention of the E.L.



K.J. WILLS

REFERENCES

- |                                    |       |   |
|------------------------------------|-------|---|
| Alexander, G.K. and<br>Wills, K.J. | 1975  | Assessment of Olive Prospect,<br>E.L. 678, Ban Ban, N.T.<br>C.R.A.E. Report No 8239.                          |
| Gove, C.J.                         | 1975  | E.L. 678, Ban Ban, N.T.<br>Annual Report for year<br>ended 4th October, 1974.<br>Comalco Limited Co<br>Report |
| Murray, K.J                        | 1955  | Brocks Creek Area, N.T.<br>A.M.& S. Co. Report  |
| Patterson, G.W.                    | 1959  | Brocks Creek Gossans,<br>C.R.A.E. Report No 588<br>N.T. Open File CR59/3                                      |
| Wills, K.J.                        | 1977a | Annual Report Burnside East<br>E.L. 1137, Pine Creek Basin,<br>N.T. CRAE Report No 8962.                      |
| Wills, K.J.                        | 1977b | Annual Report Burnside West<br>E.L. 1149, Pine Creek Basin,<br>N.T. CRAE Report No 8963                       |

KEYWORDS

Lead, zinc, copper, geochem. - soil, Proterozoic - lr.

LOCATION

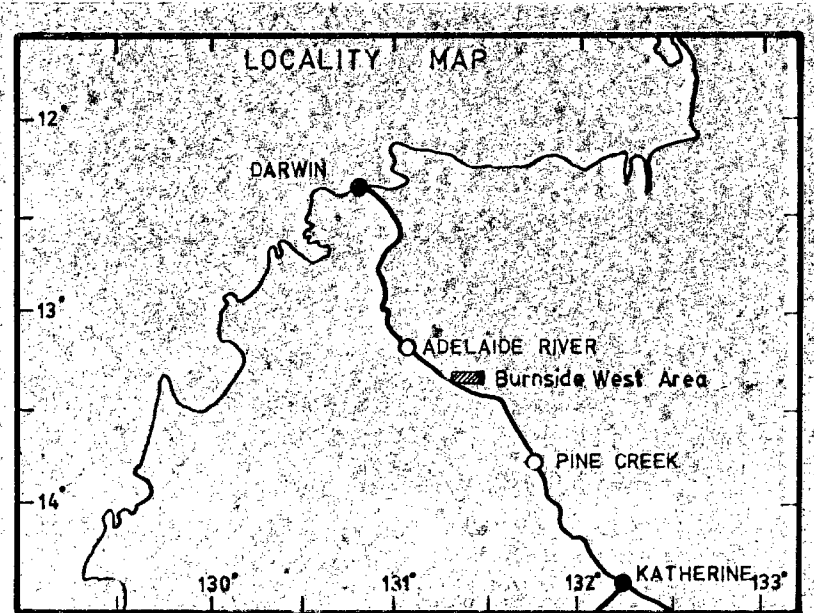
Pine Creek            SD52-8                    1:250 000 Map Sheet

LIST OF PLANS

<u>Plan No</u>	<u>Title</u>	<u>Scale</u>
NTd 818 ✓	Location of E.L.'s 1072, 1137, 1149 and 1155, Pine Creek Basin, N.T.	1:250 000 ✓
NTd 713A ✓	Soil Geochemical Map 13 Burnside East Area Pine Creek Basin	1:25 000
NTd 713B ✓	Location of Anomalies Burnside East Area Pine Creek Basin	1:25 000
NTd 717A ✓	Soil Geochemical Map 17 Burnside West Area Pine Creek Basin	1:25 000
NTd 717B ✓	Location of Anomalies Burnside West Area Pine Creek Basin	1:25 000
NTd 746 ✓	Application for Renewal Burnside East E.L. 1137, N.T.	1:25 000
NTd 747 ✓	Application for Renewal Burnside West E.L. 1149, N.T.	1:25 000







NOTE: THIS MAP FALLS WITHIN THE BATCHLOR 1:100 000 NATIONAL MAPPING SHEET / SHEETS.

**TRAVERSE DETAILS**

LINE DATUM POINT - STAR PICKET IN POSITION

SOIL SAMPLE SITE

ALLUVIAL SOIL SAMPLE SITE

AUGER SAMPLES ARE INDICATED ON THE LINE

Six digit Sample numbers: The last 3 digits are indicated at each sample site; The first 3 digits are indicated periodically along the line.

SCALE 1:25000

COLOUR CODE FOR GEOCHEMICAL DATA

COLOUR DERWENT REP.	PERCENTILE DIVISION	INTERVALS IN PPM		
		Pb	Zn	Cu
45	0 - 15	0 - 12	0 - 8	0 - 10
38	15 - 50	13 - 20	9 - 16	11 - 22
27	50 - 85	21 - 40	19 - 60	23 - 54
25	85 - 93	41 - 60	51 - 100	55 - 75
15	93 - 97.5	61 - 120	101 - 200	76 - 110
9	97.5 - 100	> 120	> 200	> 110

- GEOLOGICAL INDEX**
- GEOLOGICAL BOUNDARY
  - UNCONFORMITY
  - FAULT
  - BEDDING PLANE TRACE
- Pu-K Carbon Rocks - Carboniferous - Cretaceous
- Plg Pine Creek Granites
- Plo Zamu Complex Dolerites
- Pllb Burrell Creek Formation
- Pllm Mary River Beds
- Pldd Douglas Creek Formation
- Pldk Koolpin Formation
- Pimg George Creek Formation
- Pimc Maude Creek Formation
- Pimn Mount Masson Grit
- Pimh Namoona Formation
- Plmh Halfway Peak Formation

CRA EXPLORATION PTY LIMITED

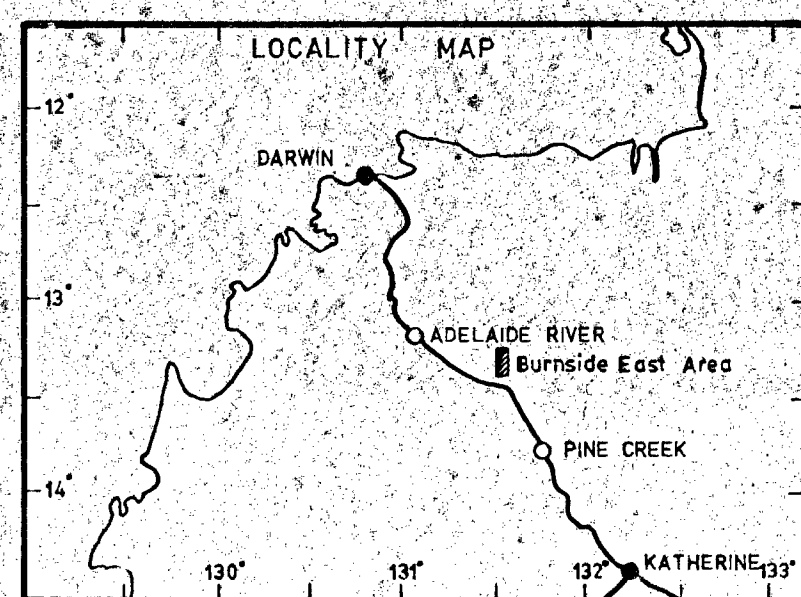
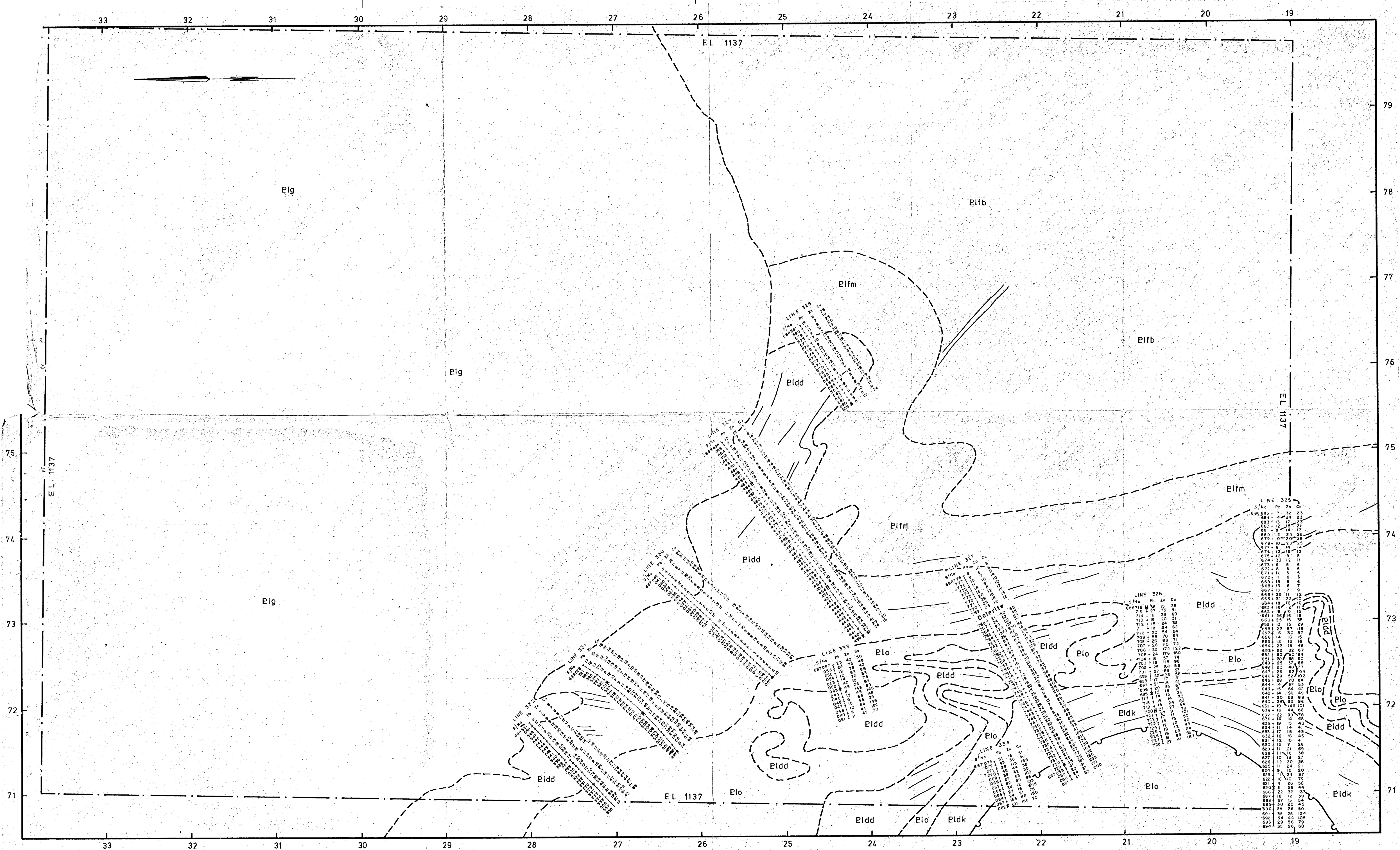
**SOIL GEOCHEMICAL MAP 17**

**BURNSIDE WEST AREA**

**PINE CREEK BASIN**

Geologist K.M. & D.M.	Scale 1:25000	Drawn CROUCHER
Report No. B-4-15	Date APRIL 1978	Plan No. Ntd. 717 A



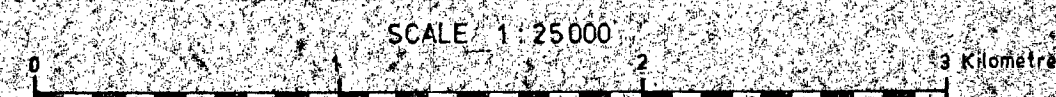


NOTE:  
THIS MAP FALLS WITHIN THE MCKINLAY RIVER  
1:100 000 NATIONAL MAPPING SHEET / SHEETS

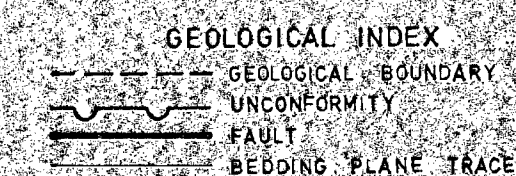
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- SOIL SAMPLE SITE
- ALLUVIAL SOIL SAMPLE SITE
- AUGER SAMPLES ARE INDICATED ON THE LINE

Six digit Sample numbers: The last 3 digits are indicated at each sample site; The first 3 digits are indicated periodically along the line.

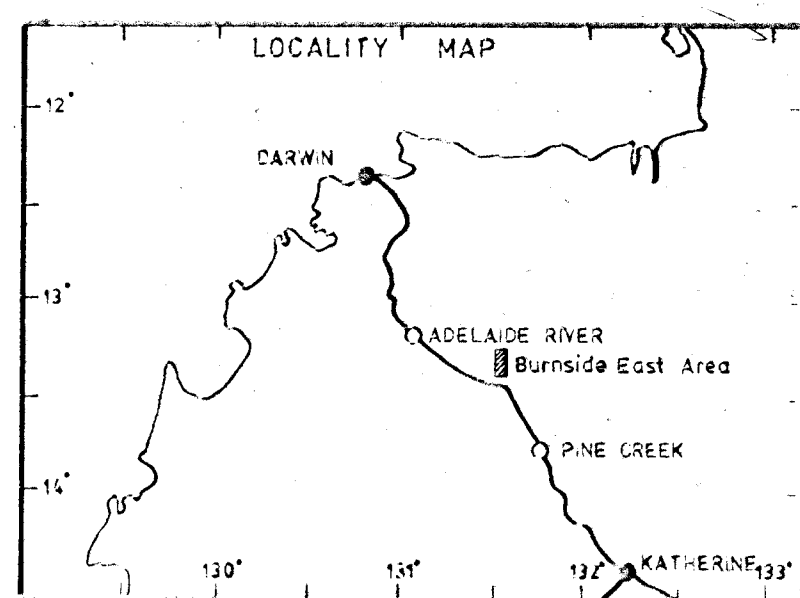
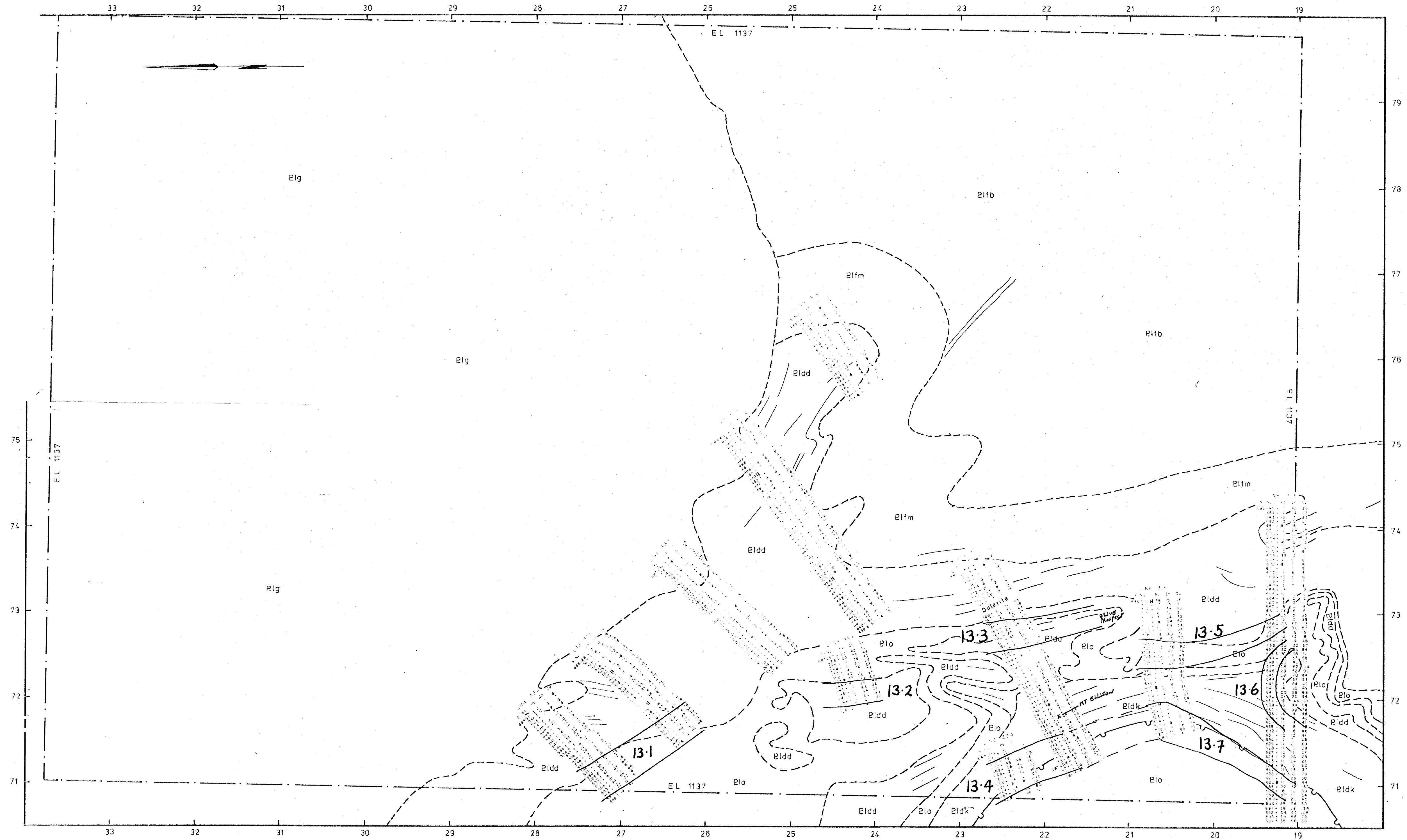


DERWENT REF	COLOUR	PERCENTILE DIVISION	INTERVALS IN PPM		
			Pb	Zn	Cu
45		0 - 16	0 - 12	0 - 8	0 - 40
38		16 - 50	13 - 20	9 - 18	11 - 23
27		50 - 85	21 - 40	19 - 50	23 - 54
25		85 - 93	41 - 60	61 - 100	55 - 75
15		93 - 97.5	61 - 120	101 - 200	76 - 110
9		97.5 - 100	> 120	> 200	> 110



- Pa-K Cover Rocks - Carpentarian - Cretaceous
- Pig Pine Creek Granites
- Pio Zamu Complex - Dolerites
- Pirb Burrell Creek Formation
- Pifm Mary River Beds
- Pidd Douglas Creek Formation
- Pldk Kaolpin Formation
- Pimg George Creek Formation
- Pimc Maude Creek Formation
- Pimm Mount Masson Grit
- Pimn Namoon Formation
- Pimh Halfway Peak Formation

C.R.A. EXPLORATION PTY. LIMITED		
SOIL GEOCHEMICAL MAP 13		
BURNSIDE EAST AREA		
PINE CREEK BASIN		
Geologist: KW&IM	Scale: 1:25,000	Drawn: CROUCHER
Report No: 5415	Date: MARCH 1978	Plan No: NT4, 713A



NOTE  
THIS MAP FALLS WITHIN THE MCKINLAY RIVER  
1:100 000 NATIONAL MAPPING SHEET / SHEETS

SCALE 1:25 000  
0 1 2 3 Kilometres

TRAVERSE DETAILS  
LINE DATUM POINT - STAR PICKET IN POSITION.  
SOIL SAMPLE SITE  
ALLUVIAL SOIL SAMPLE SITE  
AUGER SAMPLES ARE INDICATED ON THE LINE

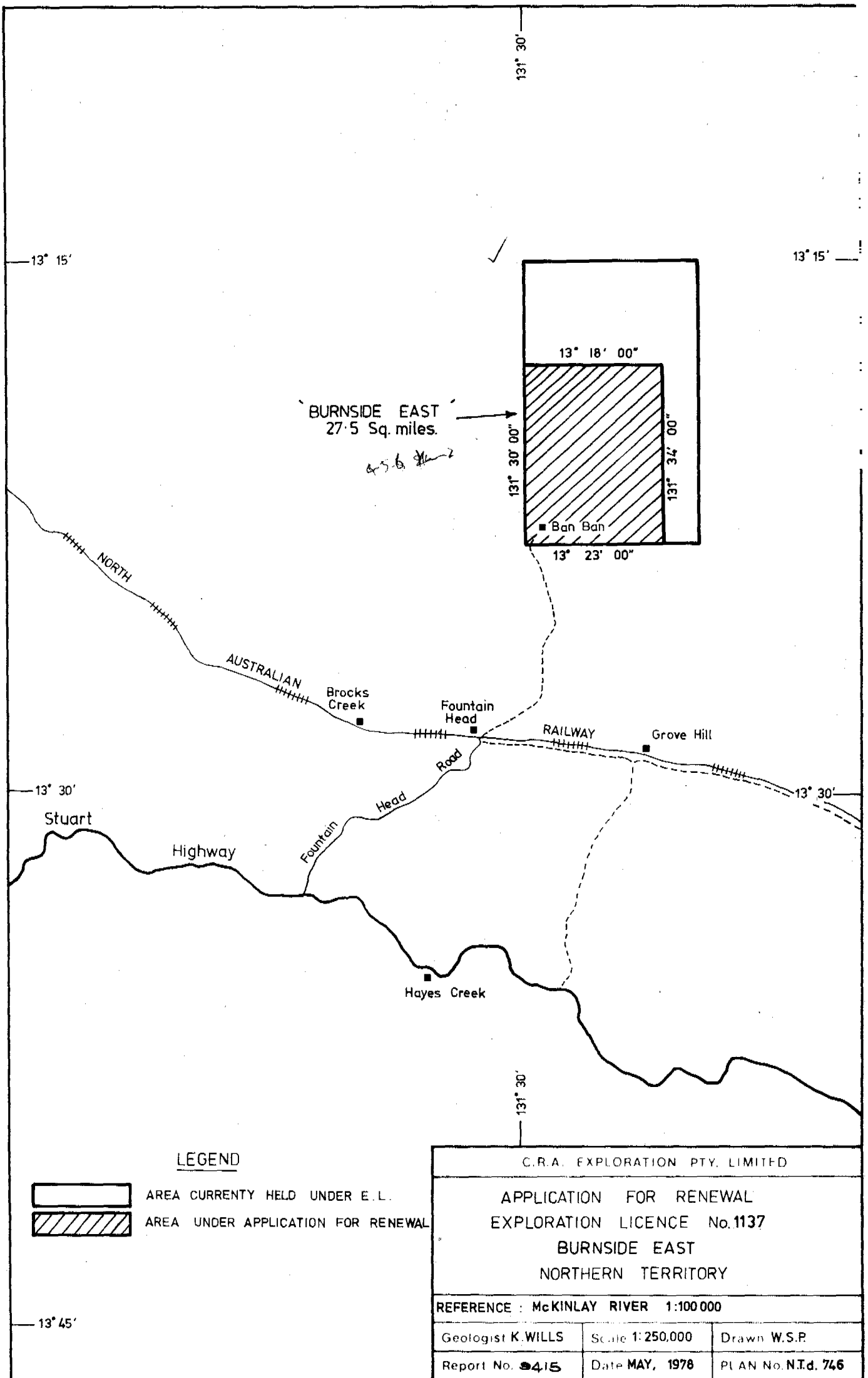
Six digit Sample numbers. The last 3 digits are indicated at each sample site. The first 3 digits are indicated periodically along the line.

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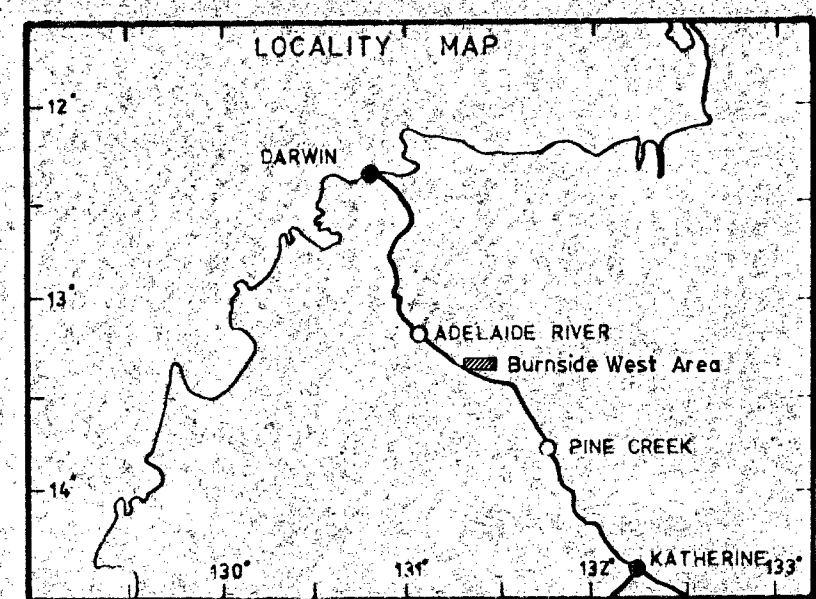
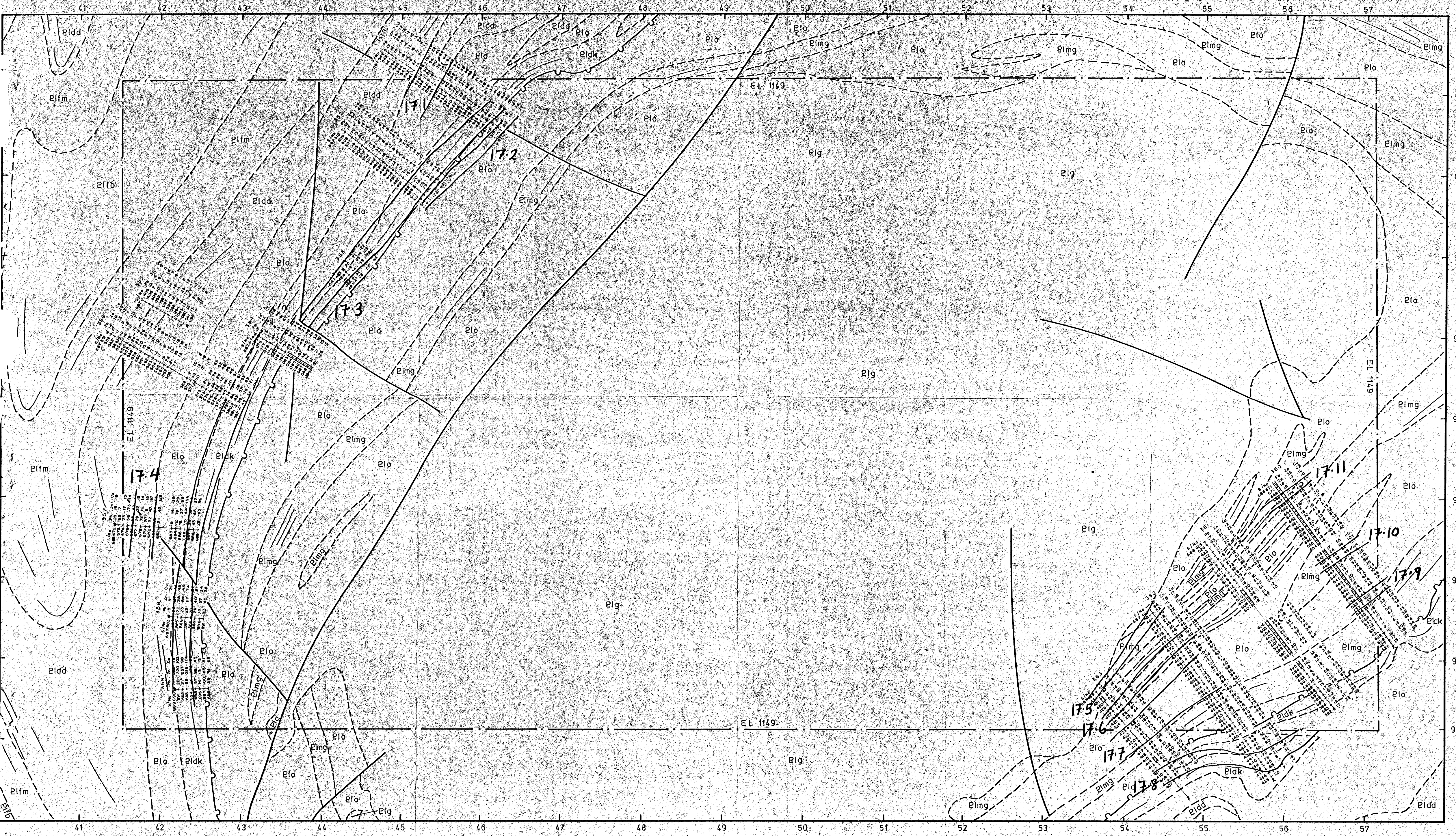
GEOLOGICAL INDEX  
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Pu-K Cover Rocks - Carboniferous - Cretaceous  
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Plng George Creek Formation  
Plmc Mauda Creek Formation  
Plmn Mount Masson Grit  
Plnn Namcood Formation  
Plnh Halfway Peak Formation

C.R.A. EXPLORATION PTY. LIMITED		
LOCATION OF ANOMALIES		
BURNSIDE EAST AREA		
PINE CREEK BASIN		
Geologist: KW&IM	Scale: 1:25,000	Drawn: CROUCHER
Report No: 8415	Date: MARCH 1978	Plan No: N.T.d. 713 B







NOTE: THIS MAP FALLS WITHIN THE BATCHELOR 1:100 000 NATIONAL MAPPING SHEET / SHEETS

**TRAVERSE DETAILS**

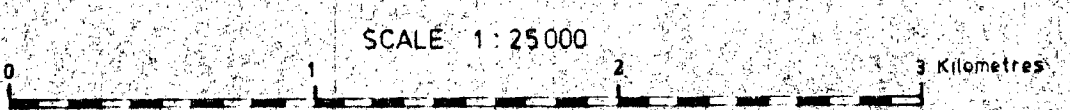
LINE-DATUM POINT - STAR PICKET IN POSITION

SOIL SAMPLE SITE

ALLUVIAL SOIL SAMPLE SITE

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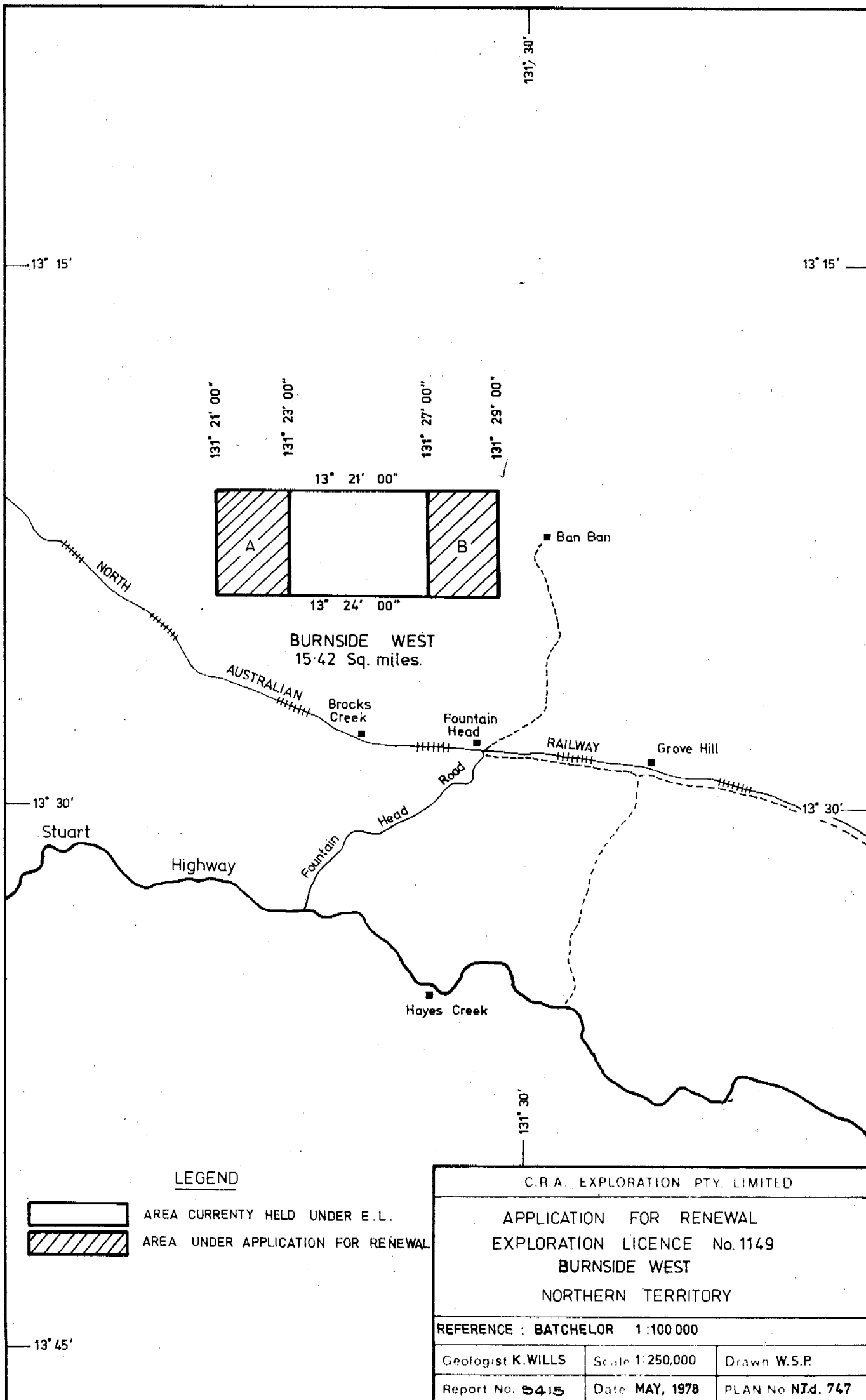
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- Plmh Halfway Peak Formation

C.R.A. EXPLORATION PTY LIMITED

LOCATION OF ANOMALIES  
BURNSIDE WEST AREA  
PINE CREEK BASIN

Geologist K.W. & I.M.	Scale 1:25,000	Drawn CROUCHER
Report No. 5415	Date APRIL 1978	Plan No. N.T.D. 717 B





# LEGEND



AREA CURRENTLY HELD UNDER E.L.  
AREA UNDER APPLICATION FOR RENEWAL

C.R.A. EXPLORATION PTY. LIMITED

APPLICATION FOR RENEWAL  
EXPLORATION LICENCE No. 1149  
BURNSIDE WEST  
NORTHERN TERRITORY

REFERENCE : BATCHELOR 1:100 000

Geologist K. WILLS	Scale 1:250,000	Drawn W.S.P.
Report No. 5415	Date MAY, 1978	PLAN No. NT.d. 747