EXPLORATION LICENCE 4915, MARAKAI AREA NORTHERN TERRITORY.

REPORT FOR THE AREAS RELINQUISHED 22ND SEPTEMBER 1990.

Prepared for Kakadu Resources Limited,

by

G.R. Orridge,
Geonorth Pty Ltd,
DARWIN NT.

December 1990.

CONTENTS.

1. INTRODUCTION.
2. REGIONAL GEOLOGY.
3. PREVIOUS EXPLORATION WORK.
4. PROSPECT GEOLOGY.
5. WORK CARRIED OUT IN 1990.
6. CONCLUSIONS AND RECOMMENDATIONS.
7. REFERENCES.

FIGURE 1. Location Map.
FIGURE 2. Tenement Map. 1 : 50,000.
FIGURE 3. Regional Geology. 1 : 100,000.

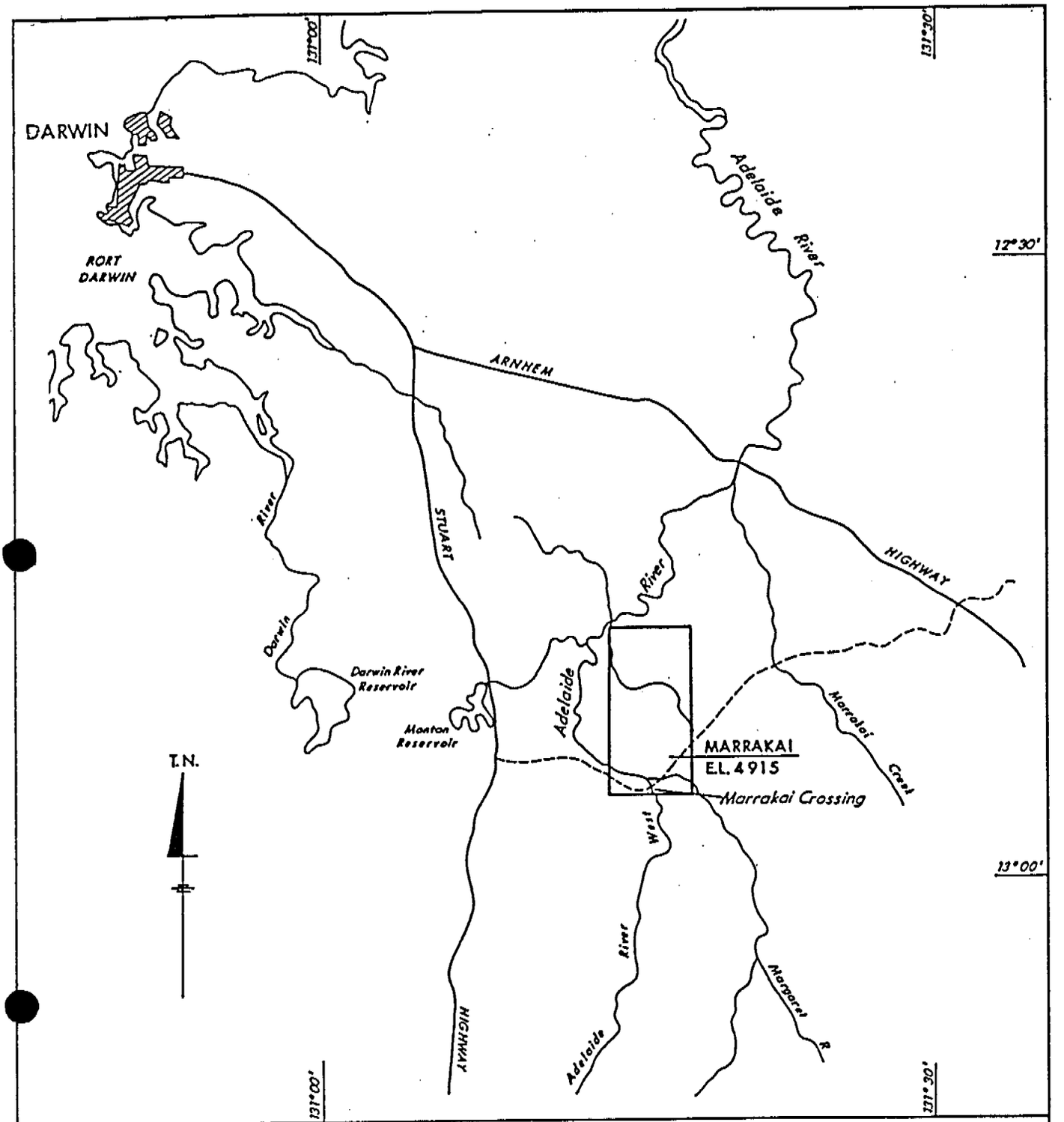
1. INTRODUCTION.

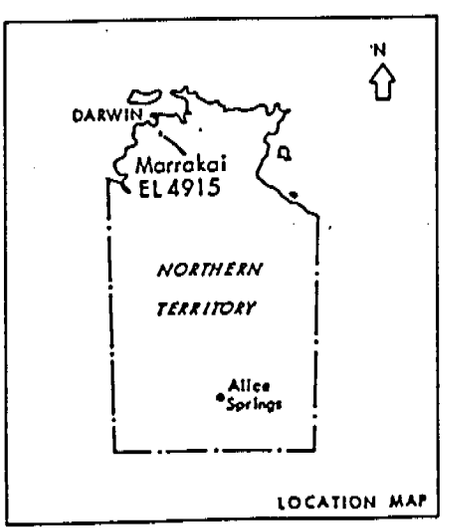
Exploration Licence 4915 is situated 70 kilometres southeast of Darwin on the Noonamah 1 : 100,000 sheet area. Access is by an unsealed road which leaves the Stuart Highway 70 kilometres south of Darwin and crosses the Adelaide River at Marakai Crossing (Figure 1).

The Licence was originally granted to Mineral Resources Corporation for a six year term commencing 23rd September 1986, and was transferred to Kakadu Resources on 2nd September 1987. The original area of 32 graticular blocks (107 sq. km.) was progressively reduced to 4 blocks (13 sq. km.) by September 1990 as shown in Figures 1 and 2.

During the first three years of the Licence exploration work included drainage geochemical sampling for gold, follow up of anomalous drainages by two phases of geological reconnaissance and rock chip sampling, interpretation of enhanced regional aeromagnetics, and trenching and sampling of a gold-anomalous quartz stockwork zone in the extreme southeast of the area. The trenched prospect was later taken up under MCN's 3749 & 3750 (Figure 2). During the 1987/88 period the work was undertaken by Freeport Australia Minerals Limited under a joint venture with the titleholders.

The present report describes the results of exploration work carried out in portions of the Exploration Licence relinquished at the end of the fourth year.





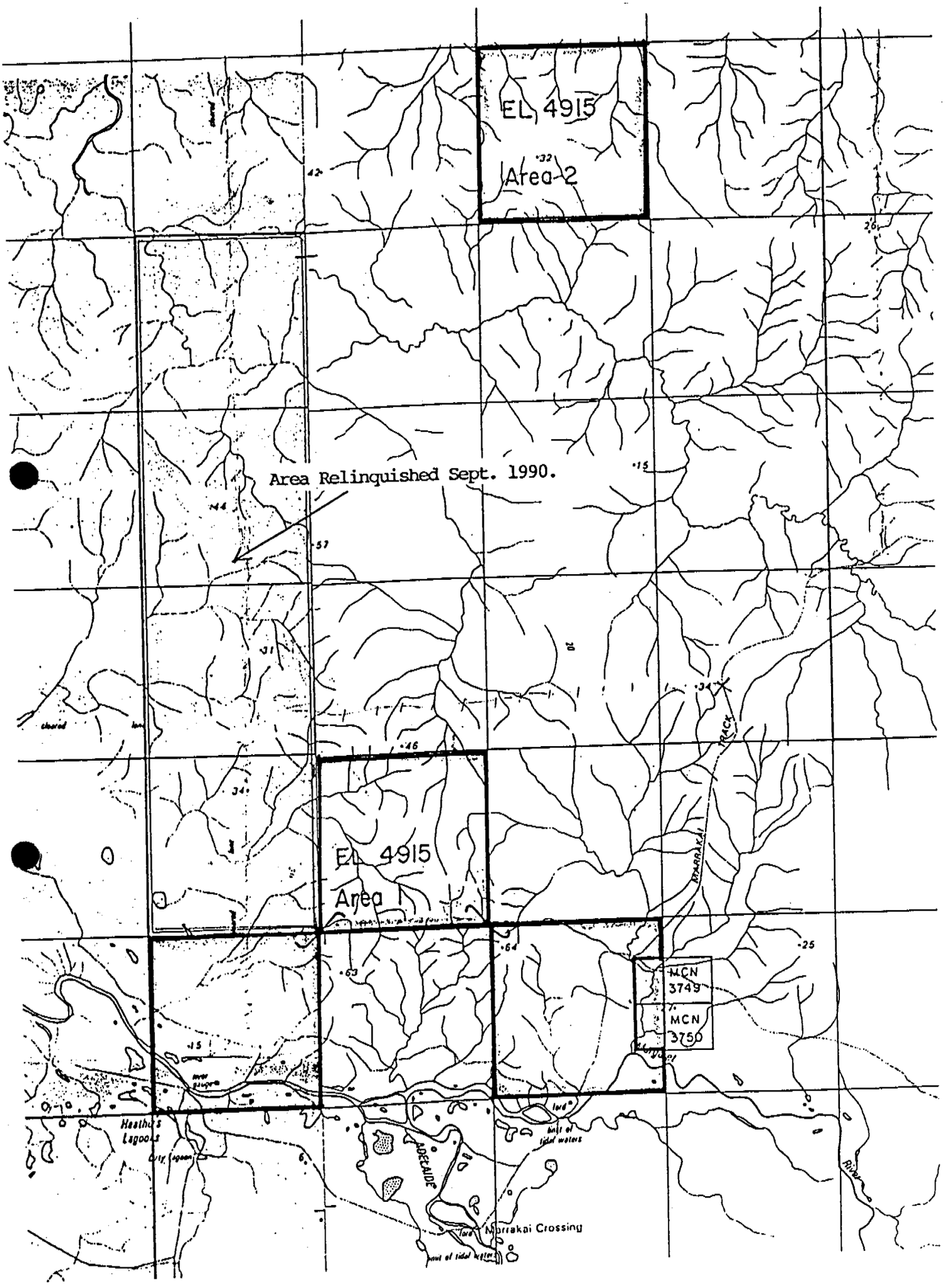
10 0 10 20 Km

SCALE 1:500 000

Marrakai E.L.4915

LOCATION MAP

Author: K.L.Washburn	Date: Jan., 1988	FIG. 1
Drawn: J.D.L.	Dwg.No: 027/A4/1	



TENEMENT MAP. 1 : 50 000.

FIGURE 2

2. REGIONAL GEOLOGY.

The main features of the regional geology are illustrated in Figure 3.

The Exploration Licence lies in the northeast part of the Early Proterozoic Pine Creek Geosyncline, on the eastern flank of the basement highs formed around the Archaean Rum Jungle and Waterhouse granitoid complexes. The major NE - SW Giants Reef Fault is situated 10km to the northwest, and the NW - SE Noonemah Fault traverses the area. Strata identified in the area are sediments and felsic tuffs belonging to the Mt. Partridge, South Alligator and Finniss River Groups in the middle to upper parts of the Early Proterozoic succession. They include the upper part of the Wildman Siltstone, and the Koolpin, Gerowie Tuff, Mt. Bonnie and Burrell Creek Formations. The stratigraphic succession and lithologies are summarised in Table I.

The rocks have been subjected to lower greenschist facies metamorphism, and a weak penetrative foliation is evident in the more pelitic rocks. They are deformed into a series of folds, trending between NNW and NNE, and plunging mainly to the south, but with local reversals producing elongate domal structures.

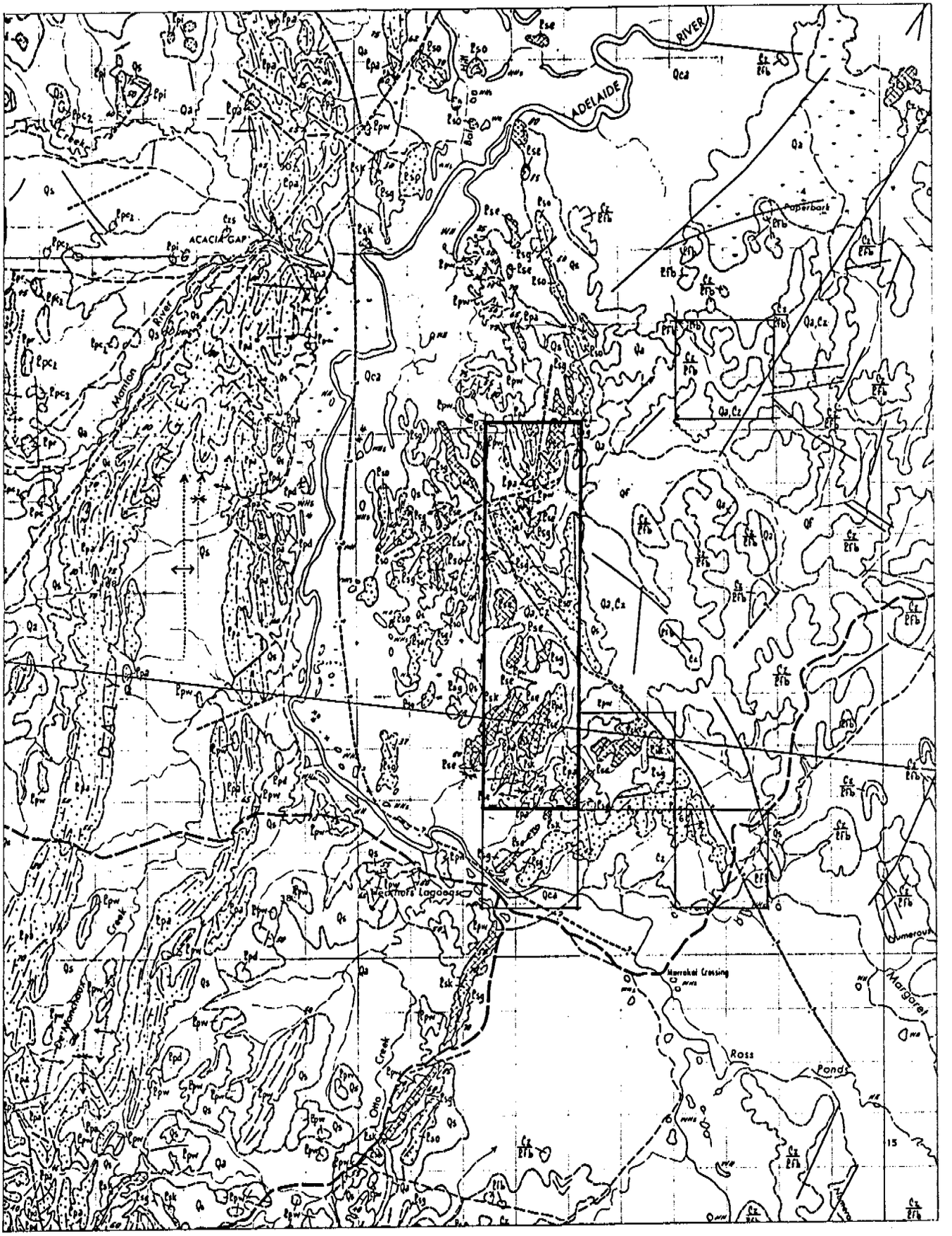
In terms of its regional geological context the area can be considered to have potential for the discovery of gold-quartz vein systems analogous to existing mines of the district. The most prospective situations would be fracture zones along anticlinal hingelines, particularly where intersecting Koolpin, Mt. Bonnie or Burrell Creek Formations.

Goldmines at Tom's Gully and Goodall lie 35km to the east and southeast (respectively) of the EL, and the Rum Jungle/Woodcutters basemetal and uranium field is 25km to the southwest.

The four blocks surrendered September 1990 are bisected by the Noonamah Fault. North of the fault the structure consists of a southerly plunging anticline with a core of Koolpin Formation. South of the fault is a complex NNW plunging anticline with a core of Wildman Siltstone (Figure 3).

TABLE I - SUMMARY OF EARLY PROTEROZOIC STRATIGRAPHY.

FINNISS RIVER GROUP	Burrell Creek Formation	Siltstone, shale, greywacke quartz pebble conglomerate.
SOUTH ALLIGATOR GROUP	Mount Bonnie Formation	Red - brown siltstone, greywacke, banded iron form'n.
	Gerowie Tuff.	Tuffaceous shale, chert and siltstone, minor thin banded iron formation.
	Koolpin Formation	Carbonacious shale and siltstone.
	Ella Creek Member	Ferruginous and siliceous breccias, banded iron formn and conglomerate.
MOUNT PARTRIDGE GROUP	Wildman Siltstone	Grey to buff coloured shale and siltstone.
	Acacia Gap Quartzite Member	Orthoquartzite, sandstone, minor interbedded shale.



Psk Koolpin Formation.

Pse Ella Ck. Member of Koolpin Fmn.

Ppw Wildman Siltstone.

Ppa Acacia Gap Quartzite Member of Wildman Siltstn.

Pfb Burrell Creek Formn.

Pso Mt. Bonnie Formation

Psg Gerowie Tuff.

REGIONAL GEOLOGY 1 : 100 000

FIGURE 2

3.PREVIOUS EXPLORATION WORK.

3.1 DRAINAGE GEOCHEMISTRY.

Stream sediment sampling was carried out by Freeport over the whole of the original EL area at a density of about 2.5 samples per square kilometre. Samples were analysed for gold by cyanide leach. The suite of samples showed a relatively high background and variance, with values ranging from 0.44ppb to 9.08ppb and an estimated threshold of about 5ppb; the high background is probably due to the presence of ironstones and carbonaceous shales in the South Alligator Group sediments. Possibly anomalous values exceeding 5ppb occured in three drainage catchments, one being associated with Koolpin Formation close to the Noonamah Fault in the central part of the relinquished area.

3.2. ROCK CHIP SAMPLING.

Rock chip sampling was undertaken in two phases. Initially Freeport collected 218 samples of vein quartz, ironstone and iron formation in a routine traversing of the entire area. Subsequently Kakadu Resources collected a further 33 samples concentrated in the anomalous catchments indicated by the drainage survey.

The Freeport work reported 20 gold - anomalous rock chips, most of which were in Burrell Creek Formation, notably in the extreme southeast of the area where values of 5.95ppm and 2.29ppm occur. This area was opened up by excavating four shallow bulldozer trenches which exposed a NW trending zone of quartz stringers in greywackes and siltstones, of about 12m width and at least 400 metres in length. Chip sampling over 2m widths in the trenches gave relatively low values, the best result being 0.15ppm Au, 1200ppm As.

The sampling by Kakadu Resources gave negative results, the highest value being 0.3ppm Au. No rock chip samples are recorded from from the anomalous drainage area on the Noonamah Fault.

4. PROSPECT GEOLOGY.

The area covered by the Exploration Licence consists of gently undulating country, with small rocky ridges and local alluvial plains. Outcrop of bedrock is sparse and virtually restricted to the ridges. However the undulating country is covered by very thin skeletal soils and rock rubble, with bedrock at shallow depth. Secondary low level laterites occur along some of the drainages, but the original high level laterite capping has been totally eroded. Drainage channels are well defined.

Under these topographic conditions stream sediment sampling would have been very effective in identifying areas of mineralisation. Conversely rock chip outcrop sampling may have been inconclusive since exposure is virtually restricted to resistant silicious and ferruginous rock types, particularly banded iron formations in the Mt. Bonnie Formation, superficial breccia cappings over Koolpin Formation, and silicified zones in the Burrell Creek Formation, which are not necessarily the most prospective rock types.

The Wildman Siltstone formation occurs in the northern and southern portions of the relinquished area, where it occupies the cores of complex plunging anticlines. Lithologies include pale buff coloured siltstone, with outcropping bars of fine grained quartz sandstone or quartzite. The latter are commonly traversed by a dense network of quartz - filled tension gashes presumably related to relatively brittle failure of the competent beds during folding. The results of drainage and rock chip sampling indicate that this quartz is not associated with mineralisation.

Koolpin Formation also occurs in the anticlinal cores. Its presence is indicated by bouldery outcrops of siliceous and ferruginous breccias which probably are superficial expression of pyritic sediments (black shales, cherts, limestones) in the sub-outcrop. Sampling by Homestake outside the relinquished area recorded four rock samples from the Koolpin with anomalous gold values in the range 0.12 to 0.64ppm Au.

Gerowie Tuff occurs in small areas in the central parts of the relinquished area. It is expressed as low ridges covered with rubble of pale grey chert, cherty tuff and siliceous siltstone. Freeport note one sample containing 1.14ppm Au from a one metre wide quartz vein (outside the relinquished area), but otherwise their are no indications of mineralisation in this unit.

Mount Bonnie Formation forms a series of relatively strong ridges around the anticlinal closures. Outcrops are mainly of banded ferruginous chert (iron formation), but extensive areas are covered with maroon phyllite rubble, and this lithology is no doubt dominant in the sub-outcrop.

Rock chip sampling by Freeport and Kakadu Resources did not detect any significant values in this formation. However the stream sediment work highlighted anomalous drainges originating in Mt. Bonnie Formation at two locations in the retained areas.

Burrell Creek Formation does not occur in the surrendered parts of the Exploration Licence. Elsewhere it consists of interbedded greywackes and siltstones, and is generally poorly exposed except where low ridges are formed by relatively resistant zones of silicification and quartz veining.

5. WORK CARRIED OUT DURING 1990.

Work in the relinquished areas during the 1990 year was restricted to a review of previous exploration results, a re - examination of the aerial photography, and a brief reconnaissance of the outcrop. No further sampling was considered warranted.

6. CONCLUSIONS.

1. Given the prevailing conditions of outcrop and topography, the drainage geochemical survey completed by Freeport is considered to have been a very effective method for locating gold mineralisation.

2. The gold anomalies detected were of low magnitude and small areal extent.

3. Extensive rock chip sampling and geological traversing did not reveal any indications of mineralisation of possible economic interest, except in the area now covered by Mineral Claims.

4. Although the source of the drainage anomalies was not totally resolved, the generally discouraging results of the extensive sampling programs indicates that the chances of discovering a commercial gold deposit in the surrendered portions of EL 4915 are remote.

6. REFERENCES.

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